

REPORT

# CHINESE HYDROPOWER

DAMNING TIBET'S CULTURE, COMMUNITY,  
AND ENVIRONMENT

INTERNATIONAL  
CAMPAIGN  
FOR TIBET

DECEMBER 2024





## About ICT

The International Campaign for Tibet (ICT) is a not-for-profit advocacy group that works to promote human rights and democratic freedoms for the people of Tibet. First established in Washington, DC, in 1988, we are the largest Tibet support group in the world with offices in Amsterdam, Berlin and Brussels. We monitor and report on events inside Tibet, advocate for the human rights and the right to self-determination of Tibetans in national and international platforms, and work to preserve Tibet's unique cultural identity.

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**GIS map production and analysis:** Kasyan Green

**Cover images:** Landscape view of Yena monastery, Derge (Chinese: Dege) county, Kardze (Ganzi) Tibet Autonomous Prefecture, Sichuan, undated, anonymous; the Yebatan hydropower dam under construction, as reported in Chinese state media, 12 December 2023, China Focus; and protestors at Yena monastery pleading with visiting local officials against Khamtok (Gangtuo) dam on 20 February 2024, Radio Free Asia via citizen journalist

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**December 2024**

## Geographical note

Tibet is comprised of the three main regions of Amdo (northeastern Tibet), Kham (eastern Tibet) and U-Tsang (central and western Tibet). After the annexation of Tibet by the People's Republic of China (PRC) in 1951, Tibet was artificially segmented into different political autonomous regions. The Tibet Autonomous Region was established by the Chinese government in 1965 and covers the area of Tibet west of the Yangtse River (Tibetan: Driчу), including part of Kham, although it is often referred to now as 'central Tibet' in English. The rest of Amdo and Kham have been incorporated into provinces of the PRC, where they were designated as Tibetan Autonomous Prefectures and Tibetan Autonomous Counties. As a result, most of Qinghai and parts of Gansu, Sichuan and Yunnan Provinces are designated by the Chinese authorities as 'Tibetan'. ICT uses the term 'Tibet' to refer to all of these Tibetan areas currently under the illegal occupation of the PRC.

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## EXECUTIVE SUMMARY

The People's Republic of China's (PRC) hydropower and dam projects are increasingly leading to massive human rights violations and environmental damage in Tibet. Since Asia's largest rivers originate in the Tibetan plateau, the construction of hydroelectric dams in Tibet also threaten the water supply, livelihoods and health of up to 1.8 billion people across China, South and Southeast Asia.

This report draws on detailed regional research coupled with advanced Geographic Imaging Software (GIS) analysis and mapping based on a sample study of 193 hydroelectric dams constructed or planned in Tibet since 2000. It presents in-depth analysis and a clear picture of the impact each dam will have on the local population in Tibet, religious sites and the surrounding land. A striking example of the wide-scale impact of dams is the construction of the 2,240-megawatt Khamtok (Chinese: Gangtuo) hydroelectric dam project in the eastern Tibetan county of Derge, which will forcibly expel thousands of Tibetans, destroy their villages and irretrievably demolish valuable cultural assets, such as centuries-old Buddhist monasteries.

Given the breadth of environmental, climate, social, and geopolitical costs of hydropower dams in Tibet, the report also offers viable pathways for truly renewable energy and necessary considerations for improving regional knowledge and cooperation on water management.

### KEY POINTS

Recognition of Tibet as a source of natural resources, such as minerals and water, is not new. The People's Republic of China's more than 70-year occupation of Tibet continues to inflict gross human rights violations on the Tibetan people, often directly linked to exploitation of Tibet's natural environment. Thus, the most essential investment the PRC must take to right the wrongs of its decades of resource plunder is to enter meaningful dialogue with Tibetan leaders to reach a political solution that also includes the Tibetan people's right to freely decide the use of their natural wealth and resources. The most politically marginalized communities should not pay the highest price of China's ambitious hydropower plan.



Photo: Christopher Michel, CC BY 2.0

*“I regularly emphasize the importance of maintaining a sense of the oneness of humanity, the idea that every human being is a part of us. The threat of global warming and climate change is not limited by national boundaries; it affects us all.”*

*His Holiness the 14<sup>th</sup> Dalai Lama*

Perhaps the most prominent example of the People's Republic of China's exploitation is its accelerating construction of hydropower dams along Tibet's major rivers. The integrity of these rivers is fundamental to Tibet's rich environment and its unique civilization. Also, up to 1.8 billion people throughout China, South and Southeast Asia depend on their healthy flow for subsistence, health, and economic development. China's rampant, command and control hydropower plans put all this at peril.

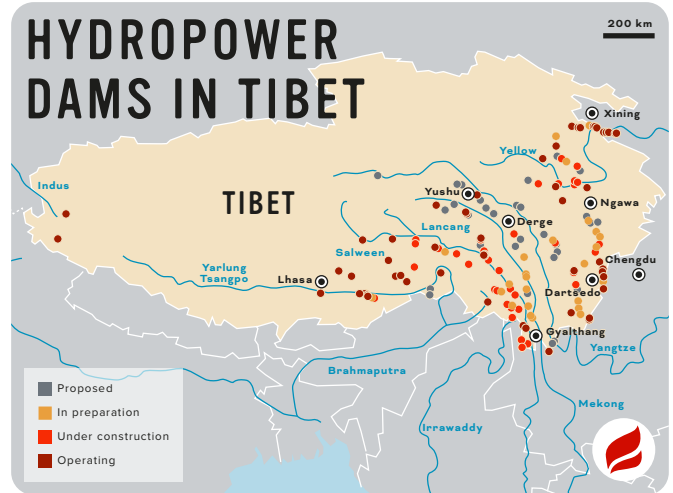
Until this report, the scope and scale of China's single-minded push for ever more dams in Tibet has not been fully appreciated. The Chinese government has strategically obfuscated details of the hydropower expansion across Tibet, because the plans attract justified concern and scrutiny from environmental experts, local communities, and downstream countries.

Utilizing rigorous in-region research and advanced GIS analysis and mapping, of a sample study of 193 hydropower dams built or planned across Tibet since 2000, the analysis reveals the scale of hydropower expansion, as well as the impact each dam will have on local populations, religious sites, and surrounding land cover. In addition, an accompanying interactive map (available at <https://savetibet.org/chinese-hydropower/>) allows readers to explore individual dams, watersheds, and nearby settlements.

If completed, the 193 hydroelectric dams in the sample study would generate over 270 GW of hydropower. This is on par with Germany's energy production capacity in 2022. Of the 193 dams studied, almost 80 per cent of dams are large or mega dams (>100MW) which carry the most significant risk to the Tibetan civilization, environmental sustainability, and the climate. Over half the dams (59%) are either in proposal or preparation stage. This suggests that China's ambitious hydropower energy plan is still a long-term project. Fortunately, it also indicates that hope remains to alter this destructive course.

Particularly in the locations proposed by China, large scale dams suffer from a slate of environmental harms. Dams are both susceptible to and can cause an increased risk of earthquakes, landslides and flash floods. They also cause environmental damage to vulnerable and biodiverse ecosystems by inundating land, reducing water quality and flow, and interrupting aquatic life. Dams also block soil, water, and nutrient flows, which are essential for supporting life in downstream countries.

Dams routinely cause the expulsion of Tibetans from their traditional homes and lands, and often permanent exclusion from their land and water-based livelihood activities. From the 34 dams with public 'relocation' figures, at least 144,468 people are known to be affected by hydropower dams, with 121,651 people already expelled since 2000 and a further 22,817 to be expelled. If we extrapolate from available data to all 193 dams in our database, we esti-



Hydropower dams in Tibet.

mate a lower limit of 750,000 people have been and will be expelled due to hydropower dams in Tibet. Data analysis from available population data for residents living within a designated dam impact area for 134 dam sites with known geolocations estimates an upper limit of 1.2 million people potentially affected by the hydropower dams. When extended to capture all dams across Tibet (including the 45 dams without a known geolocation), this figure could be far higher.

**China's dam building spree also stands to fuel South and Southeast Asia's existing water-related political instability.** Climate induced water scarcity indicates that hydro-diplomacy is now more crucial than ever, especially given South and Southeast Asia's status as a hot spot for water scarcity. Unfortunately, the PRC's claims of absolute sovereignty over Tibet's water and adversarial approach to riparian policy actively thwarts progress toward a regional accord. Together with its economic and military power, the PRC wields its high ground, restrictions on sharing hydrological data, and refusal to pursue regional accords, as diplomatic weapons to reward, coax or punish downstream countries in service to its hegemonic agenda.

**Hanging over all hydropower discussions is the specter of the advancing climate crisis and the urgent need to meet ambitious carbon emissions targets to mitigate the inevitable impacts of climate change.** Chinese authorities regularly justify hydropower expansion as necessary to meeting the country's carbon pollution reduction targets. However, the scientific literature challenges this. Hydropower is not a carbon neutral energy source. Dams can release large amounts of methane, which is an extremely potent greenhouse gas. Dam emissions are often aggregated over long periods of time, obscuring the need to immediately reduce emissions. Lastly, once in place sunk costs, institutions, and norms threaten to lock in the greenhouse gas emissions lifespan of the initial dam despite better alternatives. Considering the shrinking window to address climate change, sustainable energy like solar and wind power options should be invested in.

**Low impact renewable energy is critical to meet the moral and scientific imperative of reducing the pace of climate change, while limiting impacts on communities, not only on Tibet, but globally.** This means China must radically shift course so the benefits of renewables like wind and solar can be captured while avoiding the detrimental effects of hydropower damming. However, *how, where, and what* is developed is crucial. Upfront environmental assessments and inclusive decision-making processes are essential, including free, prior and informed consent from affected communities. Location siting must consider sensitive ecosystems, wildlife needs, sacred sites, and local community priorities. Co-management should be prioritized. For example, installations combined with grazing have the potential to simultaneously support clean energy while facilitating traditional Tibetan pastoral rhythms. Portable solar also can support nomadic ways of life.

## CONCLUSION

The results of China's single-minded push for hydropower can be seen in the pictures of monks, nuns, and laypeople pleading with government officials to save their temples and towns from a hydropower dam in Derge. The numbers and maps demonstrate the scale and scope of China's unbridled agenda. In them one sees hundreds of thousands of individuals expelled from their traditional homes, environmental degradation, the well-being of 1.8 billion people, and climate chaos. Sadly, with the absolute absence of a civil society sector under the Xi Jinping regime, the prospects for even a modicum of representation, healthy debate, and sustainable development are grim.

To blindly pursue hydropower in Tibet without considering the numerous environmental, climate, social, cultural, and geopolitical risks would repeat past mistakes of unchecked development, and more acutely impact an ecologically and culturally unique region that remains geopolitically contested. Inadequate hydropower, water and environmental management will only sow seeds of domestic and regional fragility and instability. Fortunately, alternatives exist. Developed properly, truly renewable and sustainable energy holds the capacity to maintain traditional Tibetan ways of life while contributing to combatting climate change. Accomplishing that goal will require the PRC to make a radical course change that embraces human rights, regional accord, and climate responsibility. The most fundamental is returning to meaningful dialogue with Tibetan leadership to reach a political solution that also includes the Tibetan peoples' right to freely decide the use of their natural wealth and resources. The international community cannot stand on the sidelines. Justice demands action and the stakes are simply too high.

## KEY RECOMMENDATIONS

1. Cease all planning, proposing, and construction, including projects underway, of large-scale hydropower dams within Tibet.
2. Protect the right of Tibetans to participate in all development projects as per the 1986 UN Declaration on the Right to Development the International Covenant on Economic, Social and Cultural Rights.
  - a. Ensure the right to free, prior, and informed consent of impacted communities and the right to a cultural life across all transactions.
  - b. Stop all forcible displacement of communities.
  - c. Civil and political rights should be protected so that individuals are empowered to raise concerns without fear of persecution. This includes rights to freedoms of expression, assembly and association, and the right to enjoy effective access to judicial and administrative proceedings, including redress and remedy.
3. Invest in properly sited and inclusively developed solar and wind power, as they do not carry the demonstrable environmental, climate, and social costs of hydropower. These projects should prioritize co-management, co-benefits, and maintenance of traditional ways of life, and in particular they should correspond to the needs of the local Tibetan population. Co-benefits include employment opportunities for affected communities, as well as accessible technical education and training courses.
4. China should sign and adhere to the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Water Resources to ensure basic principles of equitable and reasonable use, and no-harm in water management.
5. If China is sincere in acting as a global leader, China should engage in multi-lateral transboundary water policy forums to establish a mutually beneficial management architecture and data sharing norms. Hydrological data and dam project plans should not be used as bargaining tools leveraged against downstream states.
6. Regional governments should encourage robust basin-wide environmental and social impact assessments of water-related infrastructure. Such assessments should incorporate cumulative downstream impacts including siltation, river pressure indicators, disruptions of community economic development, and climate change.
7. International bodies should emphasize that hydropower dams and their ability to control waterflows downstream creates water insecurity in a region that is a hot spot for climate induced scarcity and prone to water related political instability.
8. Governments, the European Union, and international bodies must promote opening the Tibetan plateau for scientific research and international cooperation. This includes promoting unrestricted access and enabling wider consultations on achieving a sustainable and responsible renewable transition.

9. International financial institutions, including the World Bank and the Asian Development Bank, should refrain from all financial support for Tibet-based hydropower projects.
10. The violation of the rights of Tibetans is a result of the occupation of Tibet. Therefore, as the Tibetan people have the right to self-determination, which includes the right to freely dispose of their natural wealth and resources, the negative implications of Chinese infrastructure projects, particularly hydropower, on the rights of Tibetans and Tibet's environment must be part of a political solution. This must be achieved through dialogue between the representatives of the Dalai Lama and the Chinese government. The international community should redouble efforts to urge the Chinese government to enter into a meaningful dialogue with the Tibetan side.



# GLOSSARY

## HYDROPOWER DAM

Hydropower dams convert the potential energy of flowing water into mechanical energy. Hydropower dams can be single stand-alone dams or multiple cascading dams. A hydropower dam can either impound water in a reservoir for delayed release or divert water through turbines as a so-called ‘run-of-the-river’ dam.

## DAM STATUS

A proposed dam is defined as one announced in government planning documents, but with no approval or preparatory activities underway. Dams classified as ‘in preparation’ are undergoing pre-feasibility and feasibility studies, as well as a so-called administrative environmental impact assessment. Dams ‘under construction’ have already begun building work, and dams classified as ‘operating’ have begun generating electricity.

## INSTALLED HYDROPOWER CAPACITY

Installed capacity is the amount of energy the hydropower dam can generate under normal operating conditions. This is commonly measured in megawatts (MW) and gigawatts (GW). 1000 MW (1 GW) can power about 750,000 homes for a year.

## DAM SIZE

Dams are classified into size categories based on their installed power capacity: Small (1-10M), medium (11MW-100MW), large (101MW-500MW), and mega (above 500MW).

## AREA OF IMPACT

The area of impact attempts to capture the spatial influence of dams and is defined by integrating both distance from the dam and proximity to river networks. For each dam, we generate a circular buffer proportional to the dam’s size.



## SCOPE AND METHODOLOGY

This report documents and maps hydropower dams located in historical Tibet, defined as regions inhabited and previously administered by Tibetans prior to the annexation and occupation of Tibet by the People's Republic of China (PRC). This includes the so-called Tibet Autonomous Region and the areas of Tibet the PRC artificially split into what it labels "Tibetan autonomous prefectures" and counties within Qinghai, Gansu, Sichuan, and Yunnan. This report does not include hydropower dams on the Min River tributaries (upstream river of the Yangtze River), as they are located on an unclear border area between historical Tibet and Sichuan. However, some dams that lie in border areas, just outside the political boundary of historical Tibet, have been included in the study, as life and people on the ground do not adhere to absolute boundaries.

The map and subsequent analysis are based on a sample study of 193 hydropower dams built since 2000. The year 2000 is selected as hydropower dams were first launched as part of the 2000 Open the West campaign that sought to boost infrastructure and economic development in the west.

The database includes hydropower dams that are single or multi-level cascading dams, and run of the river, reservoir or water diversion dams. This report does not include pumped hydropower projects.

All hydropower dams have been identified through hydropower plans, existing public dam databases, hydropower industry news, and Chinese-language articles. All 193 hydropower dams are located on six of the rivers and tributaries that make up part of the major river systems sourced from Tibet (see table 1). This list is not exhaustive, as many more dams exist that have not been found or corroborated (due to their small size or lack of updated information).<sup>1</sup> The real figure may exceed 300.<sup>2</sup> This sample study is also biased toward large and new dams due to media attention given to government plans to utilize the hydropower 'treasure house' of Tibet.

The details of each hydropower dam were collated into a database defined by the following variables: name, river, status, location, height, installed hydropower capacity, and known figures of expelled populations.

The status of dams is classified into four categories: proposed, in preparation, under construction, and operating. A proposed dam is defined as one announced in government planning documents, but with no approval or preparatory activities underway. Dams classified as 'in preparation' are undergoing pre-feasibility and feasibility studies, as well as a so-called administrative environmental impact assessment. Dams 'under construction' have already

begun building work, and dams classified as ‘operating’ have begun generating electricity.

The analysis also classifies dams into size categories based on their installed power capacity: Small (1-10M), medium (11MW-100MW), large (101MW-500MW), and mega (above 500MW). It is notable that definitions of dam sizes differ by country and even within countries. This report uses measures that are standard in Europe and America.<sup>3</sup> In contrast, Chinese measures of dam sizes are noticeably inflated. The larger classifications of small (1-50MW), medium (10-300MW), and large dams (300MW-1GW) measures distort assessments of scale and therefore policy decisions.<sup>4</sup>

All maps were generated using precise geolocation data collected by researchers and created by geographers and remote sensing experts on ArcGIS and QGIS software. More details on the methodology and data sources are provided on the report webpage. Note, due to Chinese government regulations that restrict publication of geolocation data deemed “critical infrastructure”, only the location of dams down to the county level are published.

**TABLE 1: THE MAJOR RIVERS FOR HYDROPOWER GENERATION**

	Rivers	Tibetan	Chinese
1.	Yangtze • Tongtian • Jinsha • Yalong • Dadu	• Drichu འབྲི་ཆུ • Nyagchu ཉག་ཆུ • Gyarong Ngulchu རྒྱལ་རོང་རྒྱལ་ཆུ	长江 (Chang jiang) • 通天河 (Tongtian) • 金沙江 (Jinsha) • 雅砻江 (Yalong) • 大渡河 (Dadu)
2.	Yellow	Machu (upstream Yellow) མ་ཆུ	黄江(河) (Huang jiang/he)
3.	Yarlung Tsangpo	Yarlung Tsangpo ཡུལ་རྒྱལ་གཙང་པོ་	雅鲁藏布江 (Yalong Zangbu jiang)
4.	Lancang (Mekong)	Dzachu ཇུ་ཆུ	澜沧江 (Lancang jiang)
5.	Salween	Gyalmo Nguchu རྒྱལ་མོ་རྒྱལ་ཆུ	怒江 (Nujiang)
6.	Indus • Sulej	Senge Zangbo སེང་གེ་ལ་འབབ།/སེང་གེ་གཙང་པོ་ • Langqen Zangbo ལྷང་ཆེན་ལ་འབབ།/ ལྷང་ཆེན་གཙང་པོ་	印度河 (Indu he), 狮泉河 (Shiquan he), or Senge Zangbu 森格藏布 • 朗钦藏布 (Langqen Zangbo)



# INTRODUCTION

The recognition of Tibet as a source of natural resources and political control is not new. The People’s Republic of China was aware of the Tibetan Plateau’s strategic location and plethora of natural resources (minerals, oil and water) when it annexed Tibet in 1951 by military force. The Chinese government’s more than 70-year occupation continues to inflict perennial and brutal human rights violations on the Tibetan people, often linked directly to resource extraction.

One of the most illustrative examples is water. It’s clear why hydropower is such an appealing source of electricity for China. Tibet is the source of Asia’s eight major rivers, which produce enormous kinetic energy as they fall thousands of kilometers down from the Himalayas and 4,500m high Tibetan plateau into the plains.

China dominates dam construction worldwide. With over 22,000 dams, China has reportedly exploited virtually every feasible site in every watershed outside the Tibetan plateau proper.<sup>5</sup> The government has now set its sights on Tibet to capitalize on what some call the ‘power tower’<sup>6</sup> of Asia.

The Tibetan people will bear the brunt of the Chinese government’s efforts to power China. This includes the irreparable harm to environmental and social ecosystems caused by the dislocation of entire populations from their traditional lands and homes, the demolition of sacred sites, and the flooding of fertile lands. The Tibetan people’s experience is therefore integral to understanding the breadth and scale of the social, environmental, cultural, climate and geopolitical impacts of dams.

This report seeks to bring attention to this foreboding situation by documenting the scale of hydropower expansion across Tibet and outlining the costs they create. The report offers alternative pathways to achieving a more responsible renewable energy transition that both genuinely respects the Tibetan people’s rights and contributes to addressing global climate change.

## DERGE PROTESTS SOUND THE ALARM ON HYDROPOWER IN TIBET

Hydropower dam projects were first promoted in Tibet as part of the ‘Great Western Development’ (aka ‘Open up the West’) Campaign in 2000, and particularly accelerated in southeast Tibet in 2016.<sup>7</sup> Over the last 24 years, the



Tibet: Asia's Water Tower.

hydropower expansion across Tibet and neighboring areas of Sichuan and Yunnan is globally unique in its scale and speed.

The controversy regarding hydropower dams in Tibet was recently rekindled in the exile Tibetan and international community on February 14, 2024, when over 100 Tibetans gathered at the local government office in Derge County, Kardze (Chinese: Ganzi) TAP, in Sichuan to peacefully oppose the planned Khamtok (Gangtuo) hydropower project. The project will submerge six monasteries and expel at least 4,287 residents from their homes.<sup>8</sup> In a subsequent protest at Yena (Yinnan) monastery, Tibetans begged local officials to reconsider the construction of the dam, resulting in at least several hundred arrests and injured protesters.

At great personal peril, the Khamtok dam protesters successfully alerted the international community to the PRC's ambitious hydropower projects in Tibet, as well as the significant cultural, social, environmental and climate costs of dams,<sup>9</sup> and crucially, the absence of any representation or avenues to address Tibetans' perspectives.

It had been a long time since the international community saw, in real time, organized resistance in Tibet. After the 2008 protests and self-immolations that spread across Tibet, the Chinese government imposed a stringent and sophisticated system to pre-empt and quickly suppress acts of even the most benign individual resistance.

As expected, local Derge government officials launched a crackdown by detaining hundreds of protesters, increasing village surveillance, raiding houses and enforcing a communication blackout. Six months after the protests, exile Tibetans are still unable to connect with residents in the region.



Landscape view of Yena monastery, Derge (Chinese: Dege) county, Kardze (Ganzi) Tibet Autonomous Prefecture, Sichuan.

Source: Anonymous.

The Khamtok dam case is particularly illuminating for two reasons. First, the case clearly demonstrates how little the PRC values Tibet's ancient, preserved and living civilization. Government officials remained undeterred by the imminent destruction of an 8th century Wontoe monastery (one of the 6 monasteries to be impacted) which houses 14th century Buddhist murals that survived the Chinese Communist Party's invasion and the cultural revolution.

Second, although Khamtok dam is one of almost 200 hydropower dams planned or built across Tibet in the last 20 years, the residents stand out as the first community to broadcast the protests against their erasure and effectively raise the alarm on hydropower dams, despite the serious threat of long-term persecution and isolation.

The protest and its repercussions warrant in-depth investigation. This has been echoed by academics in the field, who lament the "major lack of scholarship on China's hydropower spree". Rouseaya and Habich-Sobiegalla accurately note, "its [hydropower's] status as a sensitive topic explains why Southwest China's hydropower expansion remains under the radar".<sup>10</sup>

*"[I]ts [hydropower's] status as a sensitive topic explains why Southwest China's hydropower expansion remains under the radar."*

*Rouseaya and Habich-Sobiegalla, 2021*



Protestors at Yena monastery pleading with visiting local officials on 20 February 2024.

Source: RFA via citizen journalist.

## Hydropower and the West to East Power Transmission Plan

### ENERGY DEMAND

The PRC’s hydropower campaign in Tibet is driven by a confluence of four factors: 1) high energy demand across China, as well as rising energy demand in Tibet, 2) the realities of global climate change and global push for renewables, 3) the hydropower potential of Tibet’s rivers, and 4) excess capital coupled with new engineering technologies that the PRC interprets as justifying construction within Tibet’s challenging regions.

Energy demand in both Tibet and eastern China are rising. In Tibet, increased Han-migration into Tibet, infrastructure, and other construction projects, combined with the forced dislocation of semi-nomadic and agricultural Tibetans into urban centres are increasing the demand for electricity. Between 2012 and 2022, the Tibet Autonomous Region’s power consumption increased by 314 per cent to 11.98 billion KW.<sup>11</sup>

In eastern China, continued economic development and greater recognition of climate change has increased the demand for “cleaner” energy sources. China has committed to reaching carbon peak by 2030 and achieving net-zero emissions by 2060. To reach these targets, China is looking to hydro, solar, and wind power in what it considers its western regions.

To facilitate the distribution of energy, Tibet’s power grid has been connected to the central China grid under the Tibet-China Networking Project via the Qinghai grid and Sichuan grid.<sup>12</sup> Connecting Tibet to the national China power grid was ostensibly designed to support the construction and operation of the Qinghai-Tibet railway project. However, the long-term goal is to convert Tibet into an energy exporter. China seeks to achieve this under the West-to-East Power transmission project (西电东送项目), which will use the connected grids to transfer surplus hydropower from Tibet’s rivers to power eastern and central China.<sup>13</sup> It is notable that China also has more ambitious plans to export energy to South and Southeast Asia.<sup>14</sup>

This long-term goal is not far in the future. Since 2015, the Tibet



Power balance and national power grids across Chinese provinces, 2018.

Source: Hennig and Magee, 2021.

Autonomous Region (TAR) has cumulatively exported 15.422 billion kilowatt hours (kWh) of energy across China. By 2050, the TAR is planned to have over 10 high-voltage transmission channels with an outbound volume of 500 billion kWh.<sup>15</sup> For comparison, in 2023 Germany produced 515 billion kWh of electricity while the United States of America produced 4.18 trillion kWh from power all powerplants.<sup>16</sup>

Overall, China's hydropower strategy focuses on the hydropower potential of its major rivers in the Tibet Autonomous Region, and southwestern provinces of Yunnan and Sichuan. In the decade between 2020 and 2030, the National Development and Reform Commission expects hydropower to expand in the southwest region by 80-120 GW.<sup>17</sup> Sichuan is expected to have a hydropower capacity of over 120 GW in 2050, with the TAR and Yunnan expected to have hydropower capacity of around 100 GW each – contributing 62% of China's total hydropower production in 2050.<sup>18</sup> The Jinsha River is the largest hydropower base with a hydropower potential of 120 GW.<sup>19</sup> The other rivers of Tibet, such as the upper Yangtze (2nd), Salween/Nu (3rd), Lancang/Mekong (4th), Yalong (5th), Dadu (6th) and upper Yellow River (7th) and also feature on the list of top 13 hydropower bases. Given the economic importance of the Jinsha, Yalong and Dadu Rivers, their connection to the Sichuan power grid and existing transmission lines into eastern and central provinces, dams on these rivers feature significantly in the national five-year development and energy plans: 12th Five-Year-Plan (FYP, 2011-2015) on energy development, 13th FYP (2016-2020), and 14th FYP (2021-2025).<sup>20</sup>

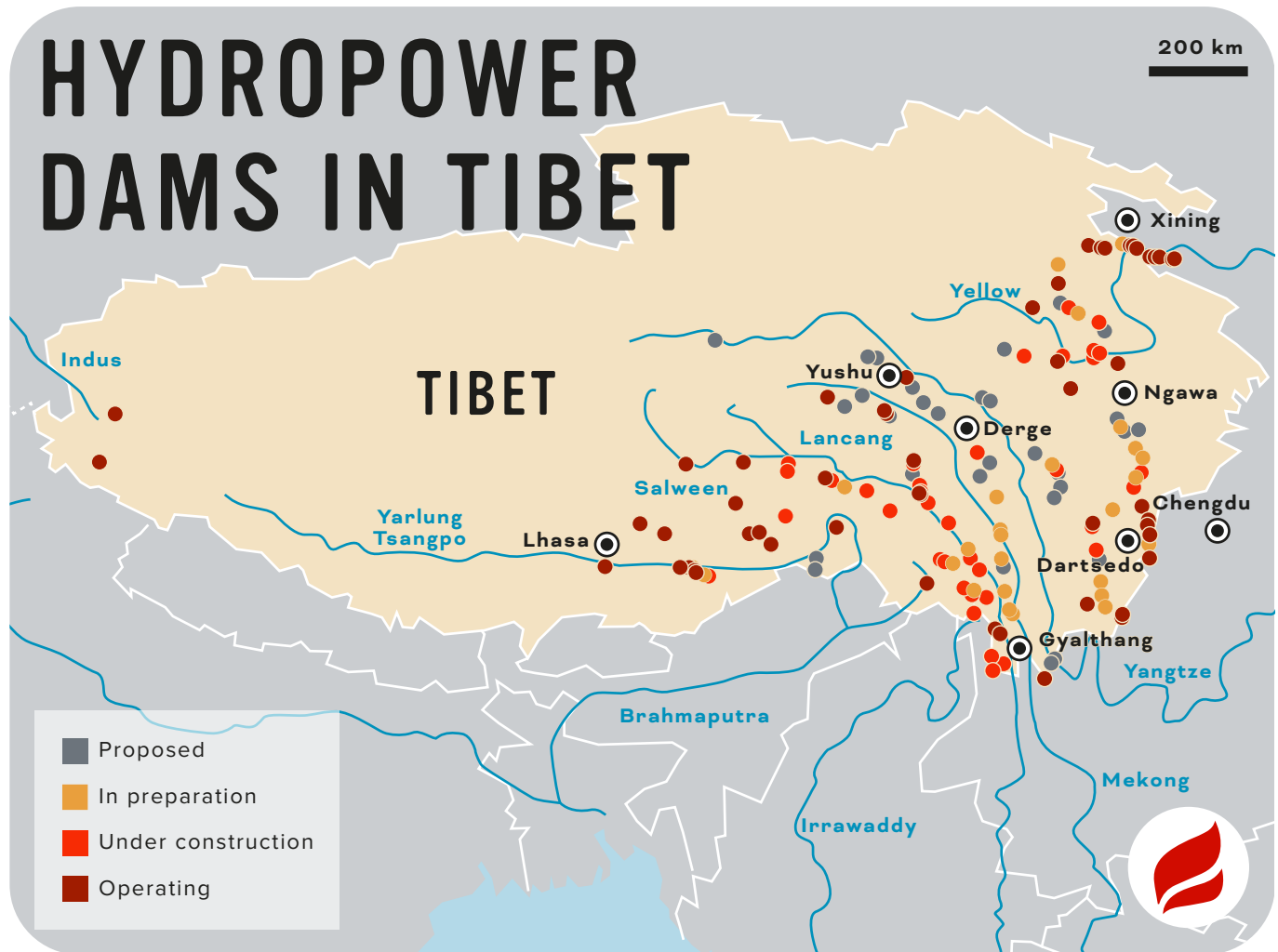
With Tibet as the remaining center of hydropower potential, the dam industry is now focusing on concentrated hydropower expansion into Tibet.<sup>21</sup> The Sichuan provincial government is already looking to exploit Tibetan areas like Kardze (Ganzi) and Ngawa (Aba) Tibetan Autonomous Prefectures, which have up to 40GW of unexploited hydropower potential.<sup>22</sup>

Pumped storage hydropower is also expanding. While not featured in this analysis, China aims to add an additional 80GW of pumped storage hydropower across China by 2027, with at least 17 sites in Tibet.<sup>23</sup>



# HYDROPOWER PROJECTS ACROSS TIBET

## 1. THE SCALE



Hydropower dams in Tibet.

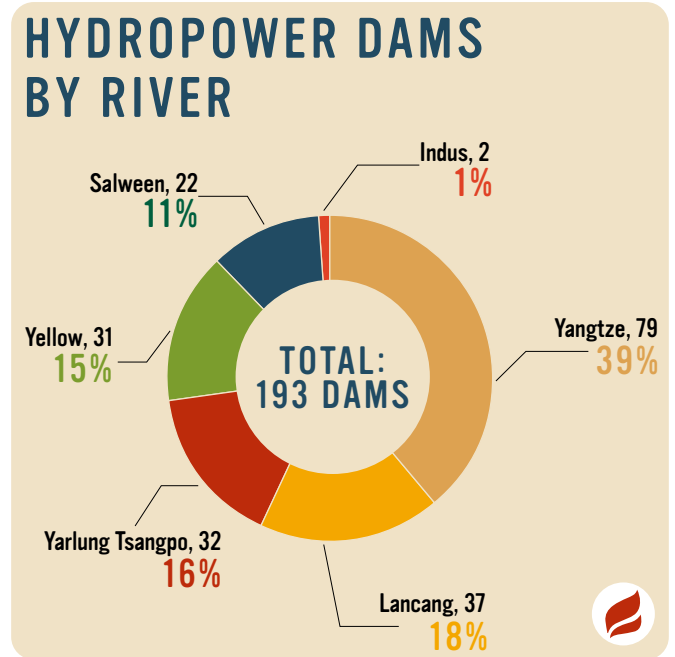
Since 2000, at least 193 hydropower dams are planned or have been built across Tibet, representing an unprecedented scale of hydropower expansion in recent years. The above map illustrates the location and status of 148 dams with known geolocations.

### YANGTZE THE KEY HYDROPOWER BASE

Examining the database, three key findings stand out. First, the majority of dams are located on the upper reaches of the Yangtze River, which includes the upper Yangtze tributaries: Jinsha, Yalong and Dadu Rivers. A total of 69 dams are planned along the upstream tributaries of the Yangtze River in Tibet, which is almost double the next most dammed river of the Lancang with 37 dams. Given Jinsha is the largest hydropower base in China and their proximity to the Sichuan grid and connecting transmission lines, the emphasis on these upstream tributaries comports with the special focus outlined in the 12th and 13th Five-Year Plans.<sup>24</sup>

### THE MAJORITY OF DAMS ARE STILL PLANNED

Over half the dams – 59% – are either in the proposal (38%) or preparation (21%) stage. This suggests China’s



Hydropower dams by river.

**TABLE 2: NUMBER OF DAMS BY STATUS AND RIVER**

	Yangtze River		Lancang		Yarlung Tsampo		Yellow River		Salween		Indus		Total	
Proposed	35	51%	18	49%	11	34%	5	16%	4	18%	0	0%	73	38%
In preparation	6	9%	9	24%	6	19%	7	23%	12	55%	0	0%	40	21%
Under construction	16	23%	2	5%	2	6%	3	10%	3	14%	0	0%	26	13%
Operating	12	17%	8	22%	13	41%	16	52%	3	14%	2	100%	54	28%
<b>Total</b>	<b>69</b>	<b>36%</b>	<b>37</b>	<b>19%</b>	<b>32</b>	<b>17%</b>	<b>31</b>	<b>16%</b>	<b>22</b>	<b>11%</b>	<b>2</b>	<b>1%</b>	<b>193</b>	<b>100%</b>

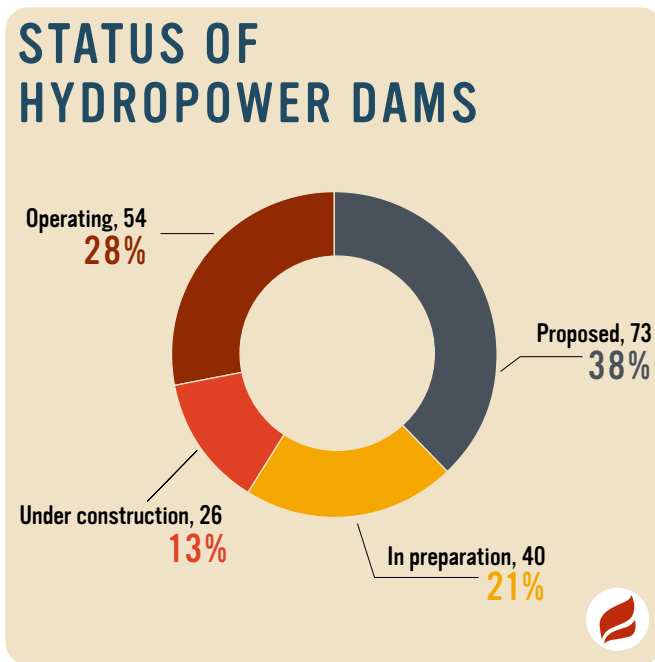
ambitious dam building and hydropower energy plan is still a long-term project, and there remain technological, environmental, governance, and financial barriers to their construction. This is particularly evidenced on the Lancang and Salween Rivers (Nu River), where 73% of the dams are in proposal or preparation stages. This is in large part due to the special advocacy that culminated in a 2004 moratorium on new dams. The Salween River has attracted significant environmental and social advocacy, because of its status as China’s last free-flowing rivers (albeit it with a few dams), rich biodiversity and location passing through the UNESCO protected Three Parallel Rivers natural site.<sup>25</sup>

The data also reveals that dam building slows as you move upstream due to the increasingly difficult topographic challenges and higher construction costs created by the altitude and remote location. In addition, as more hydropower dams are built downstream, the economic rationale weakens because there

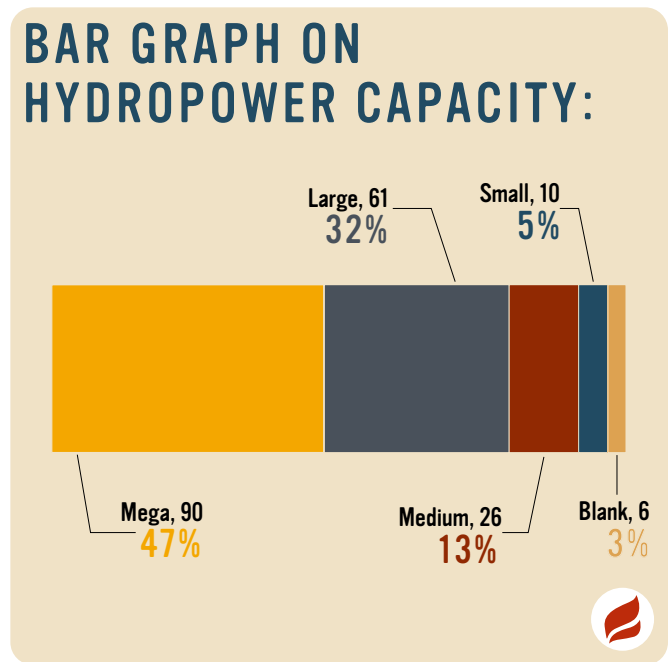
is less willingness to pursue challenging hydropower investments in riskier conditions upstream if investments have already been made downstream. All these factors indicate opportunities remain to prevent the construction of new dams upstream. As will be explained, there are multiple ecological, social, and human rights considerations that make doing so imperative.

**ALMOST 80 PER CENT OF DAMS ARE LARGE OR MEGA DAMS**

Third, mega and large dams account for 79% of the dams, with 151 dams having an installed hydropower capacity of over 100MW. Almost half of all sampled dams (47%) are mega dams, defined as having an installed power capacity of over 500MW. Of these, 60 dams (31%) have an installed power capacity of at least 1GW (1000MW). The top five largest dams have an installed capacity of over 10GW and are planned for the Yarlung Tsangpo River. The largest of these dams is Motuo dam, which is planned to have an installed power capacity of 60GW – triple the capacity of the world’s largest dam, China’s Three Gorges Dam (22.5GW). Such projects, if completed, would far exceed the energy needs of local communities.



Status of Hydropower Dams.

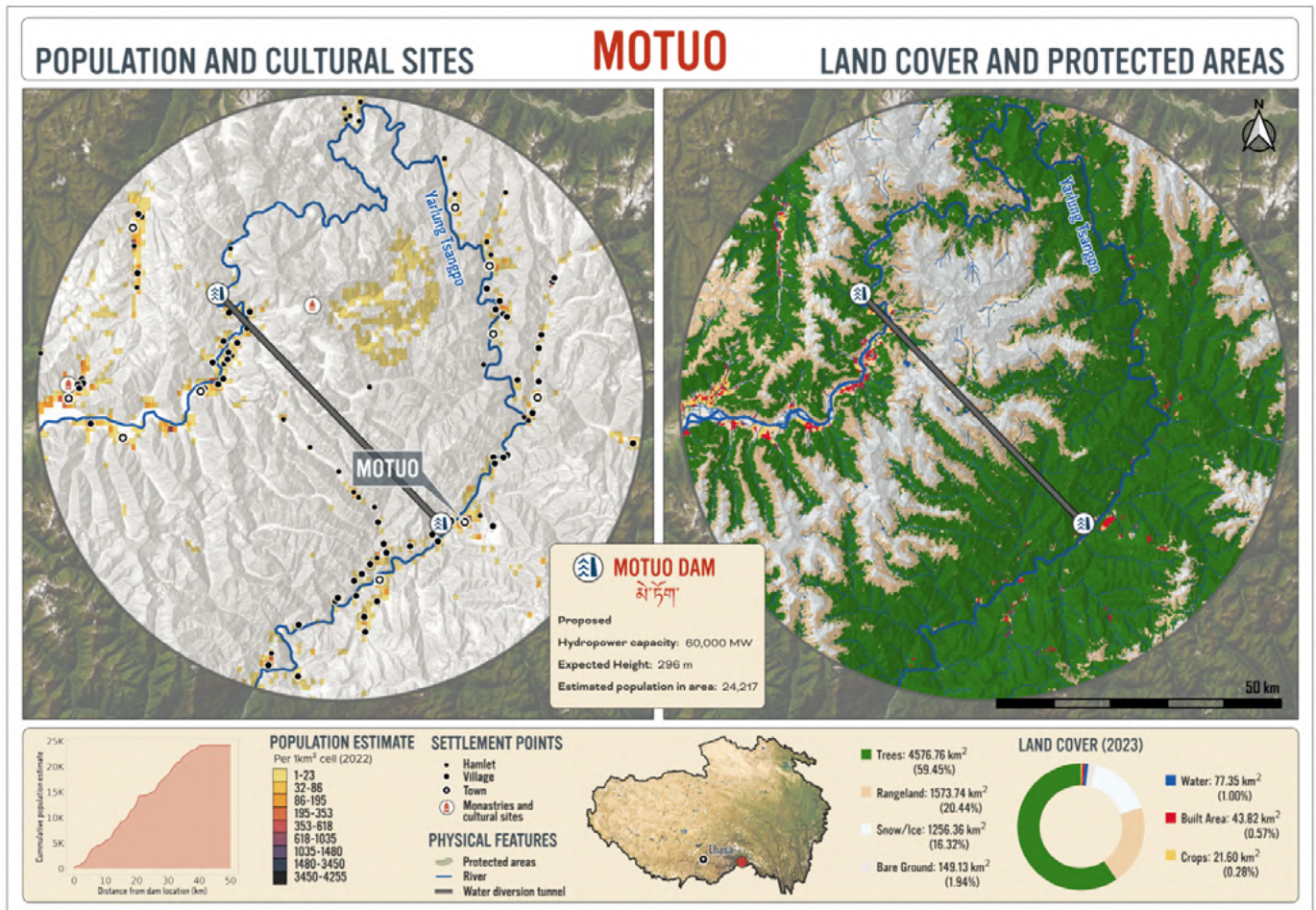


Hydropower capacity.

**TABLE 3: LARGEST MEGA DAMS ON THE YARLUNG TSANGPO**

Largest mega dams on the Yarlung Tsangpo (TAR)	Status	Capacity (MW)
Motuo (མེ་ཏུ་ཤེ།)	Proposed	60,000
Aniqiao	Proposed	20,000
Daduka	Proposed	17,000
Beibeng (འབྲས་ལྗངས།)	Proposed	11,000
Hanmi	Proposed	10,500

### Case study 1: Motuo dam



The Medog (Motuo) hydropower project is China’s most ambitious hydro-power project. Currently in preparation stage after being prioritized in the 14th FYP, the PRC aims to capitalize on the enormous hydropower potential of a 2000m drop in elevation over 50km by building a tunnel through the Namcha Barwa mountain (7,782m).<sup>26</sup>

Medog sits on the border and suture where India meets Tibet, making it prone to earthquakes and landslides, as well as geopolitical tensions over a contested national border. The construction and diversion of the river will interrupt the river’s water flow in India, and any major disasters would cause enormous damages in the form of flash floods.

The 50km radius surrounding the planned project is lush with 60% of the land covered with trees. Given the sheer size of the hydropower project and the risks that construction will create landslides, it is highly likely that at least 928 residents living within an impact area (defined as 2km wide x 25km upstream and downstream from the mid-point of the tunnel) will be expelled, with an estimated total of 24,217 residents living within a 50km radius will be impacted by the dam construction and supporting infrastructure. This includes the 14,934 residents living in Medog county.<sup>27</sup>

## 2. IMPACTS OF HYDROPOWER PROJECTS

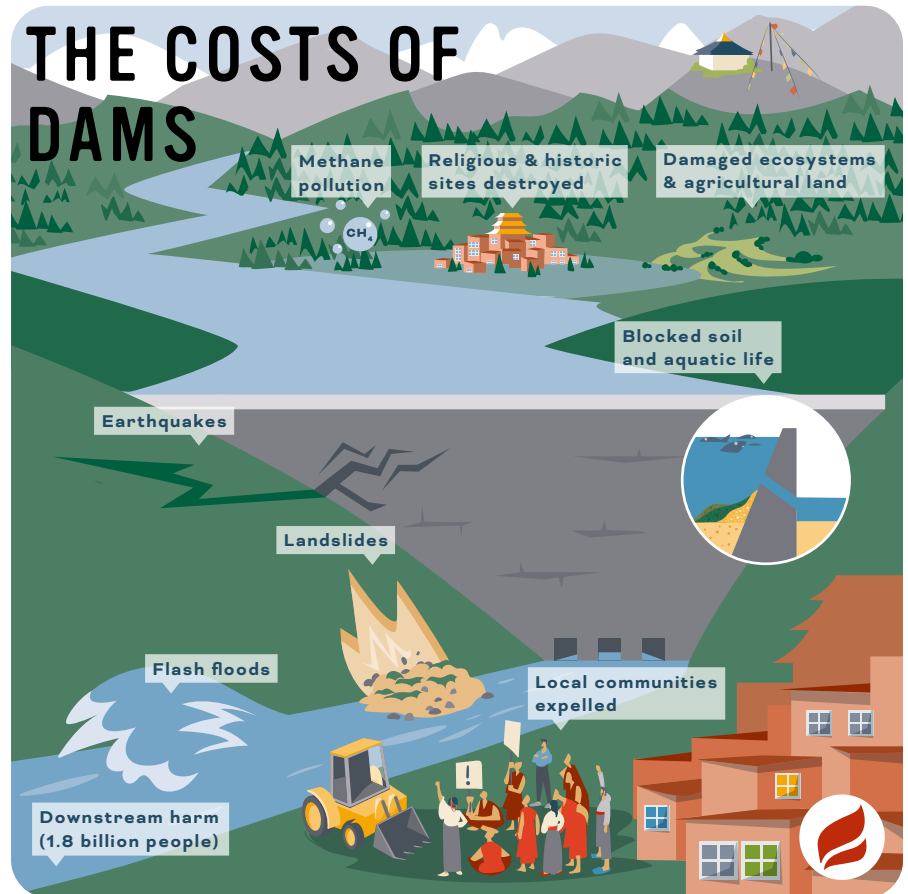
Hydropower projects carry significant inherent risks which must be understood in order to properly evaluate both individual projects and international schemes. These include impacts on the environment, local communities, regional political stability, and the global climate.

### EARTHQUAKES, LANDSLIDES AND FLASH FLOODS

Dams are both susceptible to and can cause an increase in the risk of earthquakes, landslides and flash floods.

While some dams can assist with flood prevention, their location in seismic regions also makes them a hazard. Many of the major rivers of Tibet lie in seismic regions. For example, hydropower stations on the Dadu, Yalong, Lancang, Salween, and Yarlung Tsangpo Rivers are in seismic activity zones where faults grind up against each other.<sup>28</sup> A 2012 study by Canadian NGO Probe International reported that 48% of the 130 dam sites in 'western China' are located in zones of high to very high seismic hazard.<sup>29</sup> Earthquakes in this region can destroy reservoir tanks and cause landslides that either destroy dams or create barrier lakes blocking the river flow and causing flash floods.<sup>30</sup>

For example, the 6.8 magnitude earthquake that hit Luding county on the Jinsha river in the Kardze (Ganzi) TAP, Sichuan on September 5, 2024, caused over 4,000 landslides and 93 deaths.<sup>31</sup>



The cost of dams.

Two successive dam-related landslides occurred on 10 October and 3 November, 2018, on the Jinsha River creating 61m-high x 1.5km-long and 96m-high x 1km-long barrier lakes on the Jinsha River, respectively. The barrier lakes threatened downstream villages of Boluo and Jinsha, as well as the cascading Yebatan, Lawa, Batang, and Suwalong dams. Nearly 75,000<sup>32</sup> people were reportedly evacuated and damage to buildings and infrastructure caused USD \$960 million in economic losses.<sup>33</sup> A 2024 study further confirmed the very high risk of landslide induced barrier lakes on the upper reaches of the Jinsha.<sup>34</sup>

On the Yarlung Tsangpo-Brahmaputra River, glacial lake outburst floods (GLOFs) are one of the most severe hazards in the region, increasing in frequency since 1980.<sup>35</sup> Warming temperatures are accelerating glacial melt and the creation of glacial lakes. When destabilized by an avalanche or landslide, glacial lakes can burst and release large, rapid volumes of water causing enormous destruction to downstream communities and infrastructure.<sup>36</sup>

In 2018, a melting glacier caused a landslide that created a natural dam in the Sedpongpu region, several kilometers upstream from the planned 60GW Medog (Motuo) hydropower dam site. Due to the flash flood risk, human activity in the area was restricted, including workers who were set to begin land clearing work for hydropower construction.<sup>37</sup>

Dams with large and deep reservoirs also can induce tremors and earthquakes (known as reservoir-induced seismicity) by adding pressure and leaking reservoir water into fissures.<sup>38</sup> Scientists continue to investigate the potential link between the 2008 7.9 magnitude Wenchuan earthquake in Sichuan and the Zipingpu reservoir.<sup>39</sup>

## ENVIRONMENTAL FOOTPRINT

Dams also cause environmental damage to vulnerable and biodiverse ecosystems, such as the World Heritage inscribed Three Parallel Rivers region (southeast Tibet) and the Sanjiangyuan nature reserve (northeast Tibet). In addition to adversely altering ecologically unique ecosystems by inundating agricultural land, forests, grasslands and wildlife habitats and digging into mountainsides, dams interrupt aquatic life, soil, water, and nutrient flows, essential for supporting life in downstream countries.

The UNESCO World Heritage inscribed Three Parallel Rivers region (where the Jinsha, Lancang and Salween rivers run parallel to each other) is of particular concern, because of upstream dam-building. The site constitutes 0.4 per cent of the PRC's land area but makes up over 25% of the country's higher plants and animals, with at least 77 national protected animals. The development of cascade dams along the three parallel rivers will change the hydrology, geomorphology, and integrity of the river ecology. The current development plan ignores the humanitarian, geological and tectonic effects, especially with regard to disasters and environmental resource management.<sup>40</sup> Environmental protection organizations have also expressed concerns



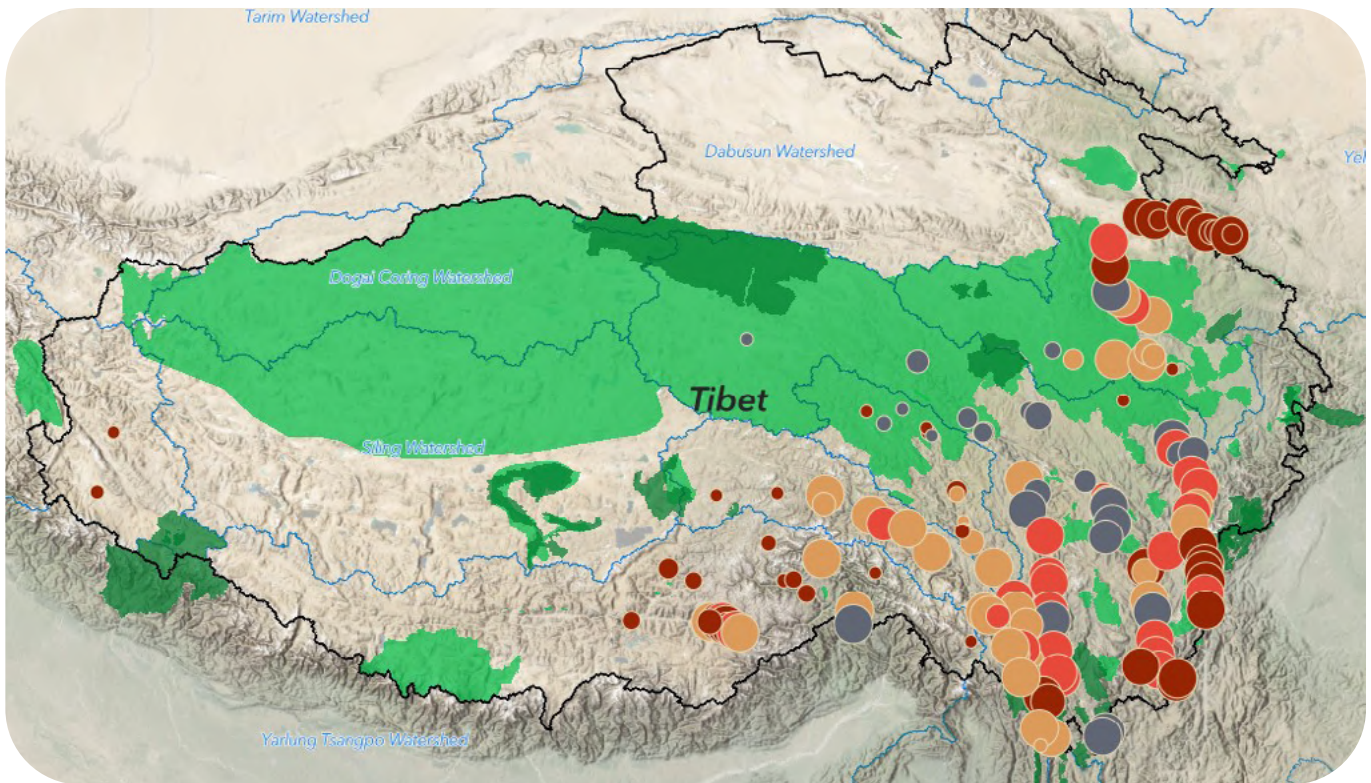
Top: Survivors of Luding earthquake induced landslides taken to safety in Moxi town, Luding county, Sichuan, as reported in Chinese state media.

Source: Xinhua, 7 September 2022.

Bottom: Flooded houses in Boluo Township, Jiangda County, Tibet, 13 November 2018, as reported by state media.

Source: Xinhua News Agency.

about the large number of species in co-current areas, as well as migratory fish.<sup>41</sup>



Map of hydropower dams in Tibet by status and size against protected areas (green), December 2024.

Source: ICT, Kasyan Green 2022.

Many Chinese commentators fear that the dam building spree in south-west China is strangling the rivers and will lead to the loss of 100 species of fish on the Yangtze River.<sup>42</sup>

River fragmentation, where dams either impound water or divert the river into turbines, slows down water flow, decreases the capacity and purity of water, and obstructs the flow of nutrients, soil and aquatic life. This in turn causes severe seasonal water shortages and the destruction of aquatic animal habitat.<sup>43</sup>

There also is a concern that the availability of high energy sources may bring energy and resource intensive industries to remote, ecologically fragile regions. In the southern province of Yunnan, which has surplus hydropower, the central government has promoted Aluminum and Silicon smelters and attracted at least one energy intensive data center.<sup>44</sup>

It should be noted that differing views exist regarding smaller dams.<sup>45</sup> Some policy analysis claims that there may be more limited social and environmental costs. However, others indicate smaller dams result in cost and benefit inefficiencies.<sup>46</sup> Regardless, no project should proceed unless communities have participated in the decision-making process, and all other alternatives have been considered.

## LOCAL POPULATIONS EXPELLED

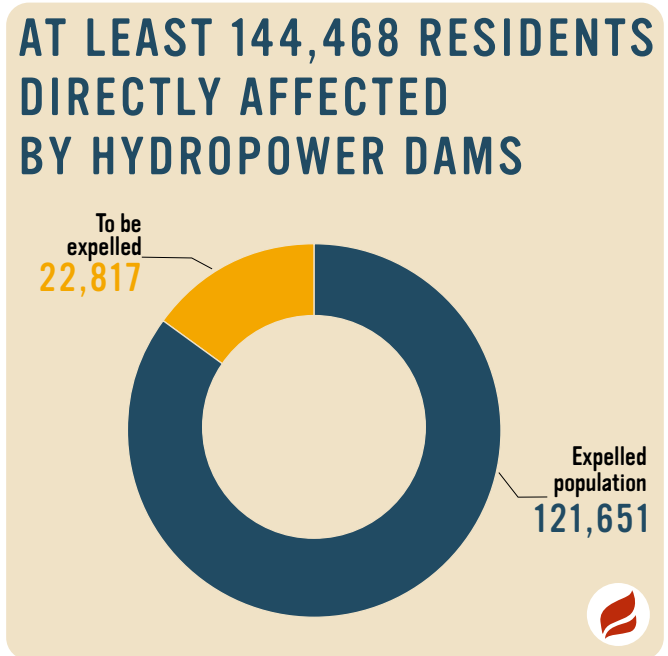
Dams routinely cause the expulsion of residents from their traditional homes and lands and often permanent exclusion from their land- and water-based livelihoods.<sup>47</sup> Residents are either forced or coerced into moving without consultation and provided inadequate compensation or access to a fair process for seeking remedy to damages incurred.

In our database, **at least 144,468 people are known to be affected by hydropower dams**, with 121,651 people already expelled since 2000 and a further 22,817 to be dislocated. This figure, calculated from publicly available ‘relocation’ data for 34 dams (17.6% of our database), provides only a small window into the scale of hydropower-induced dislocation. To illustrate this point, Qinghai province, which accounts for about 16% of dams in our database, announced it will expel 120,000 residents in the upper reaches of the Yellow River by 2030. This region is predominantly inhabited by Tibetans.

As it is difficult to collect detailed data for all dams, available, but limited, public data can be used to estimate the upper and lower limits of affected populations. While imperfect, such analysis indicates the potential scale of hydropower expansion and its effects on communities in Tibet. We estimate at least 750,000 people have been expelled or face expulsion orders due to hydropower dams across Tibet.<sup>48</sup> This represents the most conservative figure. Analysis from available population data for residents living within a designated dam impact area of 134 dams (with known geolocations) estimates an upper limit of 1.2 million people potentially affected by the hydropower dams.<sup>49</sup> The figure could be far larger, as it excludes 23% of dams without a precise geolocation to generate population data analysis.

**Due to the sparse location of Tibetan regions, the PRC deems dams in Tibet as an easy target for this pattern of dislocations.** Regulations exist stipulating the rights of residents, such as the 2006 regulations on “resettlement” and land expropriation for dam projects, and the 2017 regulation on land acquisition compensation and resettlement.<sup>50</sup> However, relevant institutions responsible for upholding the laws simply do not implement them.

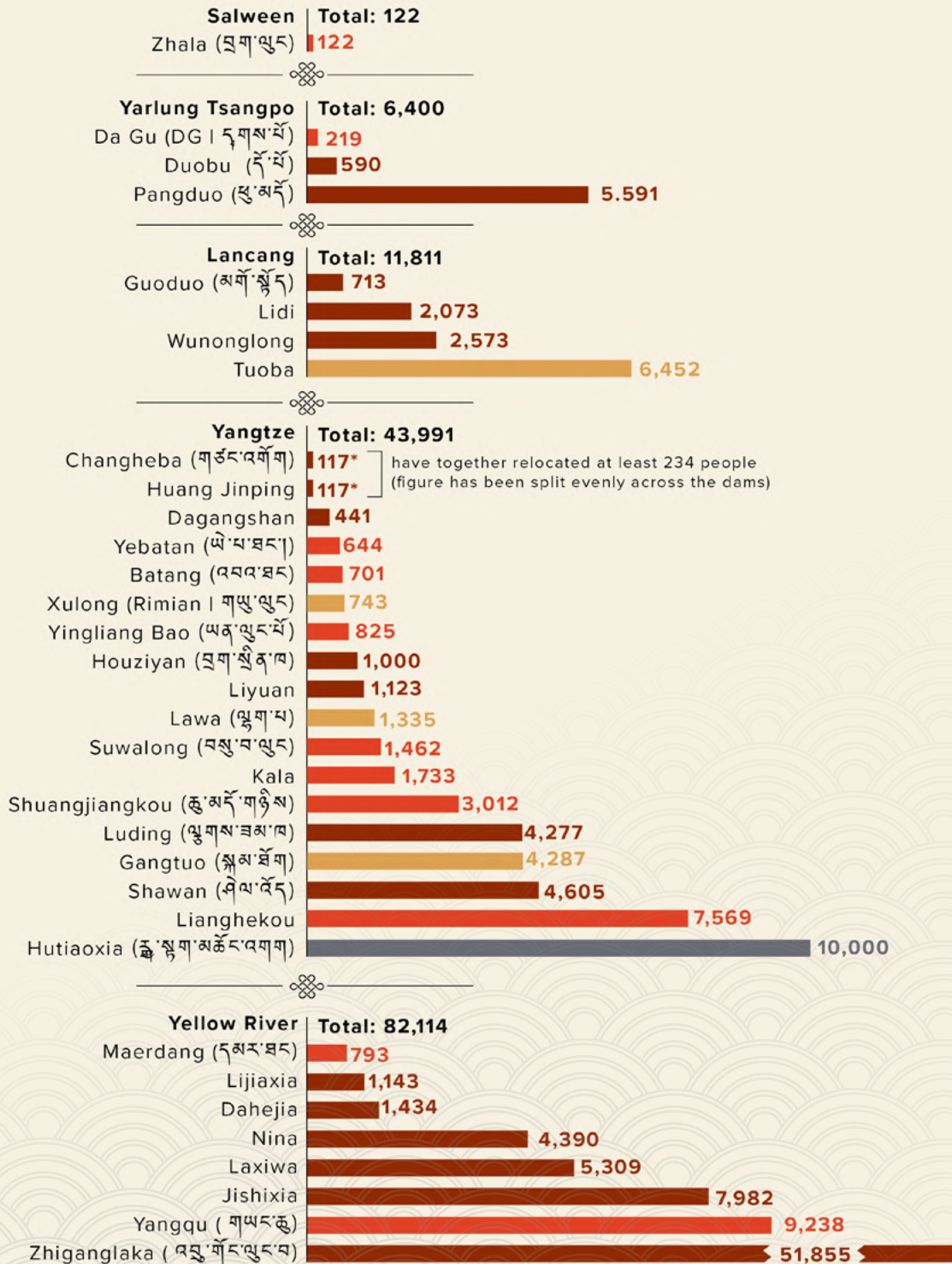
While average compensation figures for displaced residents have improved since the 1980s, no effort exists to improve the rights of residents. In particular, the rights of ethnic groups to be informed, to participate, to express views and to monitor procedures are not respected during the development of hydropower projects.<sup>51</sup> Furthermore, local cadres are incentivized to expel residents as quickly and cheaply as possible without any regard for the proper application of “resettlement” guidelines.<sup>52</sup>



Residents directly affected by hydropower dams.

## EXPULSED POPULATION FIGURES BY HYDROPOWER PROJECT

■ Proposed   ■ In preparation   ■ Under construction   ■ Operating



Note: This graph only includes dams with publicly available relocation figures. An additional nine dam sites reportedly planned or completed a relocation drive, however they are not included as no figures are publicly available.

Yu Xiaogang, the Director of the environmental NGO Green Watershed, who visited displaced residents affected by the Dachaoshan dam in southern Yunnan noted “the people don’t often know what rights they have.” This is despite China signing the UN Declaration on the Rights of Indigenous Peoples in 2007, which stipulates

**“States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.” (Article 32)<sup>53</sup>**

While the Tibetan people, in a strict legal sense, cannot be considered as “indigenous people”, the principles of the Declaration still apply, as they mirror the standards previously guaranteed in the 1986 UN Declaration on the Right to Development which states:

**“The human person is the central subject of development and should be the active participant and beneficiary of the right to development.” (Article 2)<sup>54</sup>**

When residents know and invoke their rights by submitting petitions, raising concerns, or refusing to consent to their eviction, they are regularly forcibly removed by public security, armed police forces or company security and their properties subsequently demolished.<sup>55</sup> Despite the deeply traumatic experience of losing land that is fundamental to their identity, local community concerns are unheeded. Some Tibetans are aware of the futility of raising their concerns and can only resist in silence. When Lobsang, a local Lama affected by the almost 300m high Lianghekou hydropower dam (3GW), that expelled 7,569 residents and demolished several monasteries, was asked if residents resisted, he replied, “[t]he government is very big, and the valley is very small. So much is lost, but we cannot resist or fight, [...]. When you say something and try to protect your place, the government gives you another name: separatist.”<sup>56</sup>

More recent research on a new high altitude “relocation” campaign in the Tibet Autonomous Region documents the use of systematic and escalating coercive tactics to achieve 100% “voluntary” agreement, highlighting the complete absence of consultation and genuine consent.<sup>57</sup>

***“The government is very big, and the valley is very small. So much is lost, but we cannot resist or fight, [...]. When you say something and try to protect your place, the government gives you another name: separatist.”***

*Lama named Lobsang, South China Morning Post, 26 June 2017.*

## A CIVILIZATION IN PERIL: ANCESTRAL HOMES, CULTURAL SITES, SACRED LANDS, LIVELIHOODS AND DIGNITY

When populations are forcibly displaced, sometimes over 100km away, they have to contend with creating a new life, far from their homes, their monasteries, sacred lands and environment, means of livelihood, and community ties and structures. These factors shape their culture, sense of self and place in the world, and ultimately their dignity.

Based on research collected in 2013 from displaced populations living in the Yalong basin, when residents are placed into villages, households are worse-off as compensation does not account for changes in land use patterns, access to natural resources and other ecosystem services available in their previously remote mountain homes. Displaced households also need support building a new livelihood and social network, including Mandarin language and technical skills to navigate the modern labour market.<sup>58</sup> The below extract from the Tibetan writer Tsering Dronrup's short story 'Black Fox Valley' captures the mundane but extreme way Tibetans, especially older Tibetans like the fictional grandfather Jamyang, feels uprooted, disconnected, and lost in their new environments after being dislocated.

"In those days, he knew this little town like the back of his hand, but now, with development surging at the pace of a galloping horse, the place had changed beyond recognition. He wasn't at all confident he'd be able to find his way back to Happy Ecological Resettlement Village, and even if he could, there was no way he'd be able to remember that house number – which might as well have been written in hieroglyphics – so he lost his nerve. Now deprived of the ability to go out, he began to feel like a prisoner in his own home. He spent every day sitting despondently in the doorway, his view curtailed by the rows and rows of houses blocking the horizon".<sup>59</sup>

Expelled residents also struggle with simple but significant changes in housing conditions and diet. For example, many Tibetans expelled under "environmental and development" policies have faced serious issues with housing quality and the cost of food, fuel, electricity and water. Houses are often incompatible with the Tibetan climate, overheating in summer and freezing in winter and leaking. Dislocated nomadic families also lose access to livestock and their nutritious byproducts as well as free-flowing river water, while agricultural families lose access to fertile land and water.

And while there is a presumption that monasteries can be simply rebuilt in new locations, it is not a simple task, as their sacredness is connected to the place when they were empowered or imbued with significance by major events or historical figures that left imprints cumulated over generations. What's more, the spiritual importance of monasteries is further diminished as the communities they serve are also displaced and disconnected.<sup>60</sup> As argued by Yu Xiaogang, the director of the NGO Green Watershed, "The mainstream view is that hydropower provides rare development opportunities for the poor. But the people who lived in the Yalong River valley for generations have had to give up the living skills they are familiar with, leave behind social capital accumu-

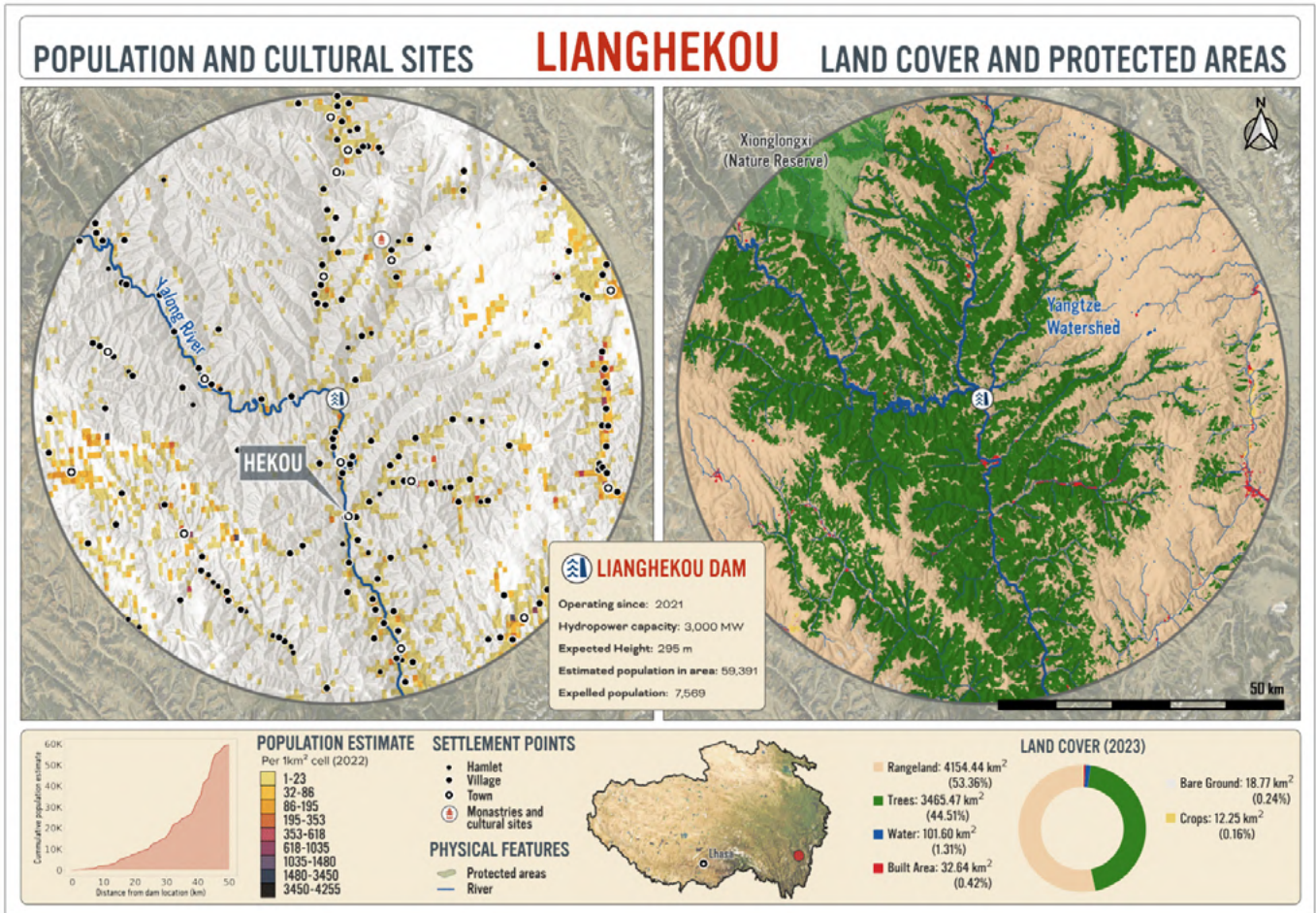
*"Now deprived of the ability to go out, he began to feel like a prisoner in his own home. He spent every day sitting despondently in the doorway, his view curtailed by the rows and rows of houses blocking the horizon."*

*Jamyang in 'Black Fox Valley',  
Tsering Dondrup, 2012.*

lated over generations, move to an unfamiliar society with different customs, and start a whole new life.”<sup>61</sup>

The state claims that hydropower projects bring economic development, improved incomes, and enhances the human quality (behavior, education, ethics, and aspirations) of ‘backward’ communities. However, dislocating Tibetans disempowers them and makes them dependent on the state. By disconnecting Tibetans from their socio-cultural world, the Chinese state is forcing them to conform to state policies that seek to create productive Chinese citizens and workers that are loyal to the Communist Party and state and express the cultural preferences and aspirations of the Han majority.<sup>62</sup> The social and cultural costs of dams are significant and the following experiences from Lianghekou and Yangqu dams demonstrate the scale of these costs.

## Case study 2: Lianghekou dam



The experience of residents expelled by the 3GW Lianghekou dam illustrates some of these long-term impacts. The Lianghekou dam has been operating since 2021 in Yajiang county, Kardze (Ganzi) TAP, in Sichuan. The dam officially expelled 7,569 residents living as far as 100km upstream and was rebuilding at least five monasteries at higher ground. The analysis of the impact area (defined as 2km wide x 25km upstream and downstream) estimated approximately 6,734 people were potentially impacted by this dam.

When zooming out, almost 60,000 people live within a 50km radius of the dam. In interviews with a South China Morning Post correspondent, local Tibetans lamented not only the loss of their homes and farmland, but also the loss of their sacred mountain and future livelihood.

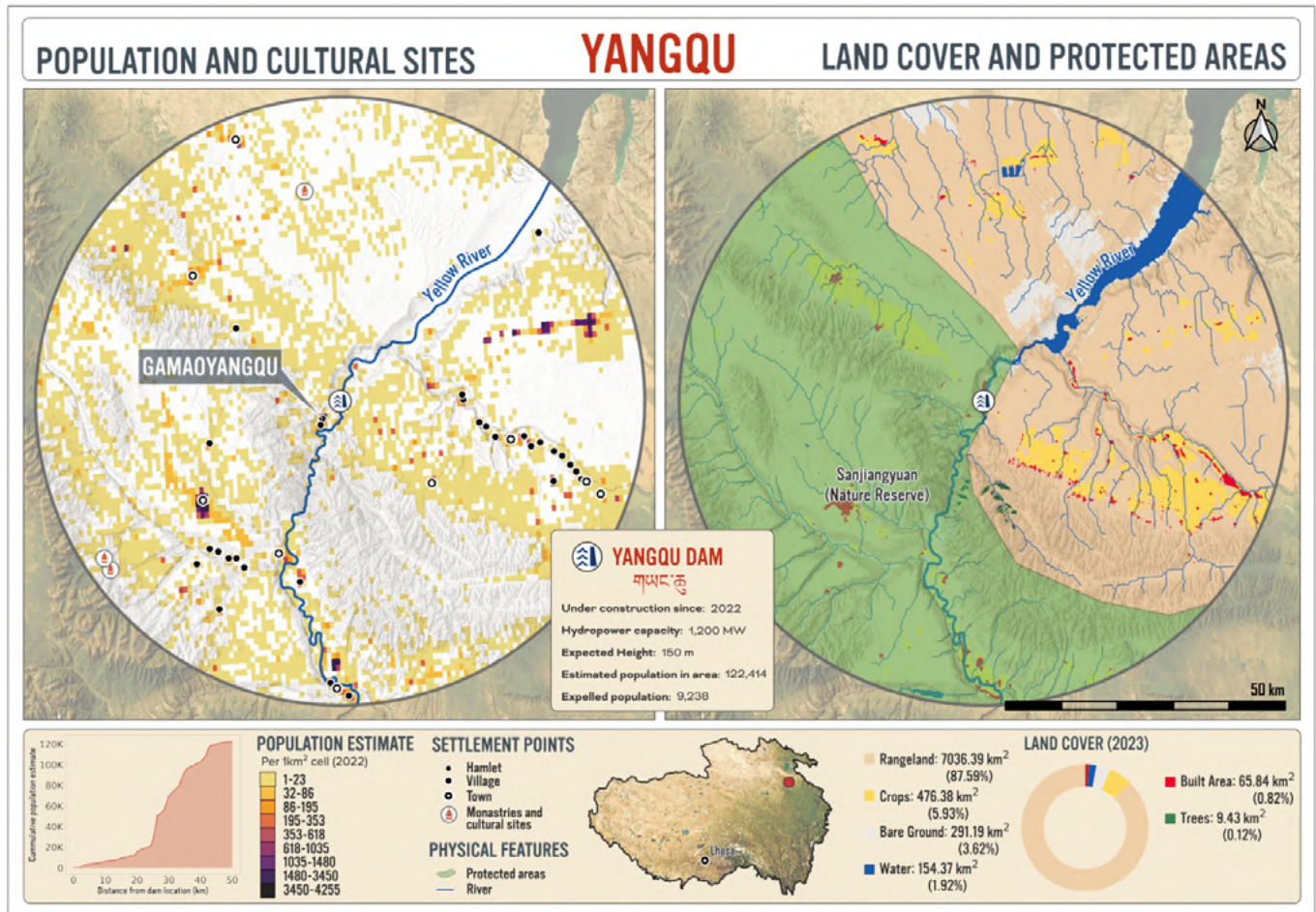
Tashi Yungdrung, a villager and farmer highlighted how Tibetans would not remove a single stone from the local sacred mountain Palshab Drakar, and surmised that the sacred mountain may be exacting revenge for the extractive dam construction underway saying “Last year, people said that a big forest fire happened because they blasted a road into the holy mountain [Palshab Drakar], and it took revenge.”<sup>63</sup>

Similarly, Li Zhaolong, a Tibetan from Zhaba village, reportedly received significant government compensation to build a new home, but he noted that the lump sum fund was not enough to support the traumatic lifestyle and livelihood shift, lamenting, “[b]efore we were farmers, and now we have no land. [...] We can’t move to a township, because we are uneducated and there will be no way to make a living there.”

*“Before we were farmers, and now we have no land. [...] We can’t move to a township, because we are uneducated and there will be no way to make a living there.”*

*Li Zhaolong, resident displaced by Lianghekou dam, 26 June 2017.*

### Case study 3: Yangqu dam



The 1.2 GW Yangqu dam is currently under construction on the Yellow river in Drakar (Xinghai) and Mangra (Guinan) county in Tsolho (Hainan) TAP and Golok (Guoluo) TAP in Qinghai province. Once completed, the dam will have expelled 9,238 residents. While 122,414 residents live within a 50km radius from the dam, the analysis of the impact area (defined as 2km wide x 25km upstream and downstream) estimated approximately 9,329 people living along the river will be impacted by this dam.

The region surrounding the dam is primarily rangeland (87%), with west and southwest areas protected under the Sanjiangyuan (Three Rivers) nature reserve.<sup>64</sup>

According to sources inside Tibet, the construction process has already destroyed the Atsok Gon Dechen Choekhorling Monastery, built in 1889 and housing 160 monks before its demolition.<sup>65</sup> Despite enjoying the status as a county level culturally significant protected site and petitioning against the ‘relocation’ order for the last two years, the monastery’s protected status was revoked in April 2023 and structures destroyed by July 2024.<sup>66</sup> The monastery and its artefacts were declared of ‘no significant value or importance’ and demolished. Footage of what appe-



Yangqu dam under construction.  
Source: Radio Free Asia, 12 April 2024, via citizen journalist.

ars to be a 'relocation' ceremony shows local Tibetans paying their respect to the site by praying and prostrating themselves in front of the monastery and stupas.<sup>67</sup> . According to sources reported by Radio Free Asia, the 160 monks from the monastery are currently living in makeshift tin huts, despite being assured of alternative housing nearby. Furthermore, it appears that only a few tens of thousands of Chinese yuan have been allocated for the reconstruction planned in two to three years.<sup>68</sup> Such treatment of dislocated residents is consistent with the broader literature on dam-induced expulsion that concludes 'relocation' schemes are often an afterthought and usually designed to be completed as fast and as cheaply as possible.<sup>69</sup>



Top: Atsok Monastery in Dragkar county, Tsolho Tibetan Autonomous Prefecture, Qinghai province.

Source: Radio Free Asia, 12 April 2024, via citizen journalist.

Bottom: Aerial view of Atsok Monastery from the monastery's social media WeChat account.

Source: Tibet Watch, 6 June 2024.

## **Power asymmetry: Transparency, accountability, and rights**

There is a clear disparity between the center of hydropower potential and the locus of political power. Despite Tibet being the source of the greatest hydropower potential in the world, Tibetans do not have the political power to decide how their resources are used and when they are forced to abandon lives that have been created over generations. The political powers – Chinese Communist Party Officials and Chinese energy companies – sitting in Beijing decide whether Tibet’s energy is exploited and how the benefits and costs are distributed and justified. This asymmetry is especially egregious since the exploitation of Tibet’s rivers almost exclusively benefits China’s mega cities and disproportionately and irreversibly harms local Tibetans and their environment.

Adding insult to injury, the political leaders structure decisions and craft rationales<sup>70</sup> in favor of hydropower expansion in Tibet, and paint Tibetans as the resource-rich, ‘uncivilized’, and ostensibly lucky recipients of Chinese’s generous infrastructure projects.<sup>71</sup> This, once again excludes Tibetans, leaving them with limited information and no opportunities to negotiate how their environment and lives are irreversibly altered.

### **COMMERCIAL INTERESTS**

The government (local and central) and corporate actors (hydropower developers and power sector planners) reap the greatest benefits from hydropower expansion through local investments and profits from the energy market.<sup>72</sup> These actors deploy a range of tools and rationalities to legitimize hydropower expansion. In particular, they either overlook or downplay hydropower’s problematic environmental, social and climate costs to frame hydropower as a ‘clean and sustainable’ energy source to capitalize on the discursive, legal and policy instruments that support the renewable energy transition.<sup>73</sup> They also frame hydropower as bringing development to remote regions. Most crucially, government and corporate actors suggest that the mere availability of Tibet’s hydropower potential is sufficient reason to exploit the rivers that support up to 1.8 billion people. As aptly captured by Fan Xiao, a geologist and chief engineer of the Sichuan Geology and Mineral Bureau. “Talk of hydro development only serves vested interests and local governments, to spur GDP, disguised as pursuing carbon neutrality.”<sup>74</sup>

Some of the key energy sector players focused on hydropower expansion include China’s five main public energy conglomerates responsible for electricity generation and transmission: China Huaneng Group, China Datang Corporation, China Huadian Corporation, China Guodian Corporation, and State Power Investment Corporation.

### **LACK OF TRANSPARENCY IN PLANNING AND APPROVAL PROCESSES**

Lack of transparency about hydropower dam building plans and processes exacerbates distrust and uncertainty among local communities as well as

*“Talk of hydro development only serves vested interests and local governments, to spur GDP, disguised as pursuing carbon neutrality.”*

*Fan Xiao, former geologist and chief engineer of the Sichuan Geology and Mineral Bureau, 1 April 2021.*

downstream residents and countries. While the state has apparently recognised the importance of managing water quality, geological risks and social impacts created by new dams, the implementation remains questionable.

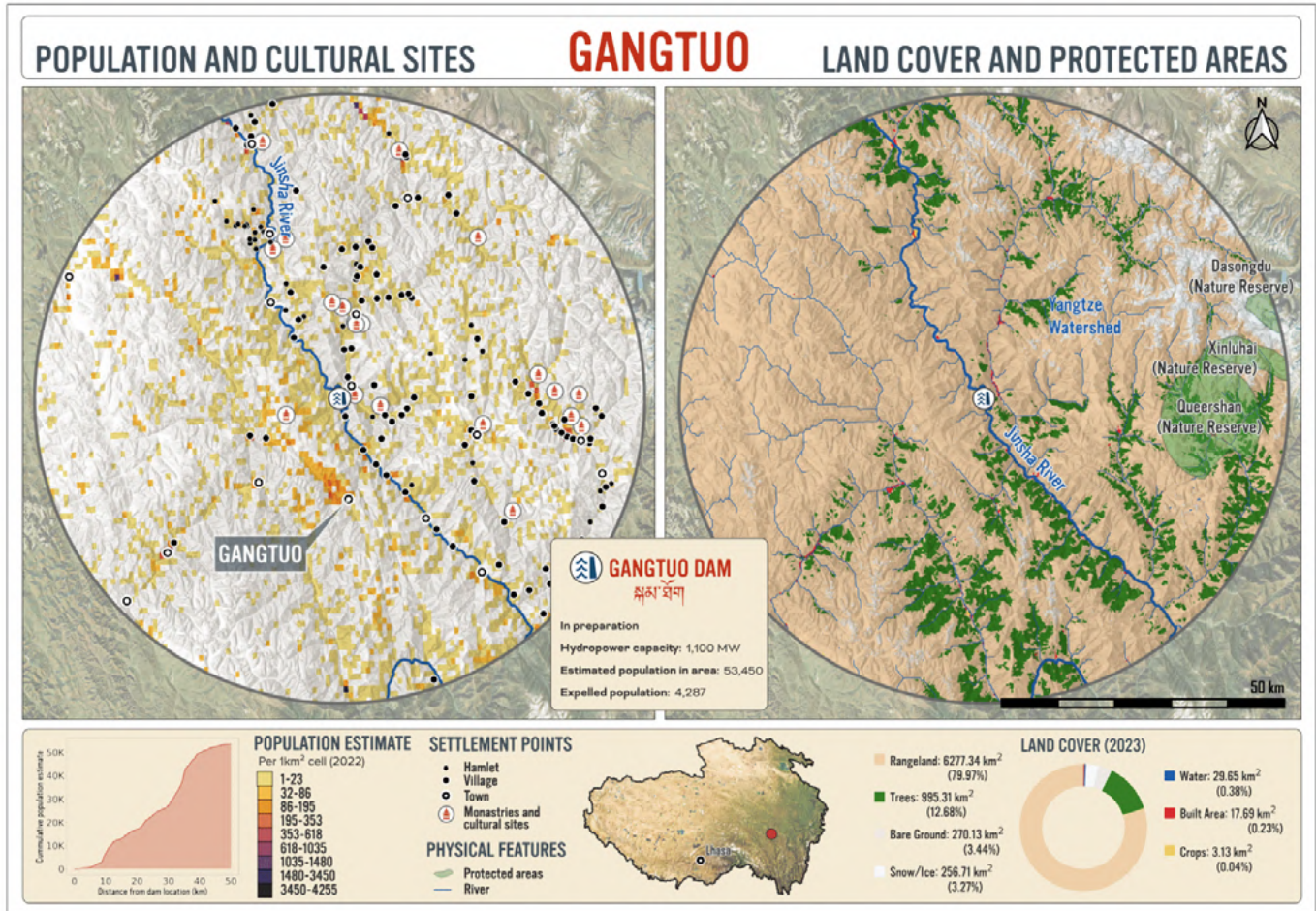
The approval process for new dams requires pre-feasibility and feasibility studies, as well as environmental impact assessments. While the PRC's 2003 Environmental Impact Assessment Law<sup>75</sup> requires major projects to undergo an EIA, implementation is notoriously weak. EIAs rarely consult public stakeholders, nor do they collect a range of opinions. Potential participants are unable to attempt a meaningful engagement with the process, as they are not provided sufficient information about the project to provide comments.<sup>76</sup> In addition, the assessments are reportedly conducted by individuals hand-picked by power companies. In some cases, hydropower dams are completed without submitting EIAs<sup>77</sup>. If EIAs are completed, only the summaries are published, and final impact statements are sometimes copied almost verbatim across projects.<sup>78</sup>

Once EIAs are completed, the State Council and the National Development and Reform Commission have the authority to approve all plans for large dams, important dams, and dams located on trans-provincial and transnational rivers. Smaller dams and those that are located within one jurisdiction are approved by local level government. All dam planning, design and impact studies are overseen by the relevant river basin commission, which is theoretically also responsible for ensuring new dams fit into a comprehensive basin development plan.<sup>79</sup> In reality, basin-wide assessments are not completed due to the scale of the task.

These approval processes are not transparent and therefore impede civil society engagement. In particular, new constructions raise concerns that proper studies and checks have been dismissed in favour of ad-hoc decision-making by individuals subject to powerful lobby groups funded by the energy companies.<sup>80</sup> During the eleventh Five-Year Plan period (2006-2010), applications for hydropower plans were suspended due to questionable environmental approvals for large projects.<sup>81</sup> Even earlier in 2005, Premier Wen Jiabao shelved plans to build 13 dams on the UNESCO protected Salween (Nu) River, only to end the moratorium on new dam approvals on the Salween River in 2010.<sup>82</sup>

Lack of information also causes serious anxiety for villagers who are told they must move, but not given a time frame.<sup>83</sup> While access to government documents detailing compensation standards and dam plans are theoretically available via freedom of information requests, they are difficult for farmers to access due to a lack of language and technical skills, and knowledge of bureaucratic processes.<sup>84</sup> Downstream countries also feel the pressure.<sup>85</sup>

### Case study 4: Gangtuo dam



The case study of the 1.1 GW Khamtok (Gangtuo) dam captures many of the challenges created by hydropower dams in Tibet, in particular the impact dams have on culture and communities, and the lack of transparency, public participation, and accountability.

The Khamtok dam is currently in preparation on the Dri Chu River (Jinsha River, tributary of the Yangtze River). The dam straddles Jomda (Jiangda) County, Chamdo prefecture in the Tibet Autonomous Region in the west and Derge county, Kardze TAP, Sichuan province in the east. Official records for the development of the dam indicate 4,287 residents will be expelled from their homes. However, our analysis of the dam impact area (defined as 2km wide x 25km upstream and downstream) estimates 14,554 residents living along the river will be impacted. This larger figure is consistent with testimony given by a source familiar with the area.

When analyzing the 50km-radius region surrounding the dam, approximately 53,450 residents live in the region. The land is predominantly rangeland (80%), with more fertile areas and settlements occurring along the river and its tributaries.

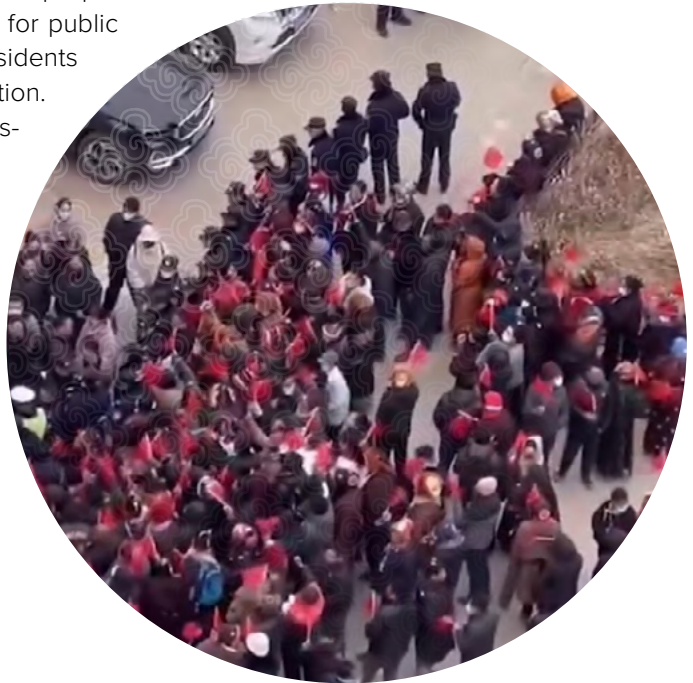
Throughout the planning process, Tibetans have not been engaged or consulted. Rather, multiple efforts by Tibetans to plead with government officials were dismissed, deflected and suppressed, with the most recent protests resulting in arrests, beatings, and a communication crackdown.

When the dam was approved by the National Development and Reform Commission in 2012, residents appealed against the decision and were assured by government officials that construction would only proceed if over 80% of residents consented. Despite these assurances, preliminary activities such as pre-feasibility studies continued, and the dam was featured in the 13th FYP. Active preparations for relocation and construction accelerated in 2022. It is notable that the dam did not undergo a dedicated environmental impact assessment. Instead, the dam was included in a general and broad-based environmental impact assessment for the upper reaches of the Driчу (Jinsha) River as far back as 2011.

In 2022, after local government officials began relocation preparation work and imposed bans and 5–10-year prison sentences for public gatherings and protests against the dam construction, residents appealed to the county government to stop the construction. On February 14, 2024, over 100 Tibetans peacefully protested in front of local government office in Derge. A second protest broke out at Yena monastery (one monastery that will be flooded) on February 20. Monks and lay residents pleaded with officials visiting Yena monastery to stop the hydropower dam. Several hundred people were subsequently arrested and injured for their social action, while police were deployed across Wontoe township. Although many of the detainees were released, at least five individuals remain in detention accused of disrupting social order.

**“We didn’t do anything against the Chinese. We didn’t break the law. We followed their rules, why do we have to leave our own home? The monastery was our home for generations, it is our home today. Why are you giving trouble to these peaceful people? Why are you guys doing this? What is the reason you people are beating us?”**

*Elderly monk, footage dated 21 February 2024, Radio Free Asia.<sup>86</sup>*



Top: Yena monastery in Derge(Dege) County, Kardze TAP, Sichuan.

Source: Anonymous

Bottom: Tibetans in Dege county, Sichuan province protest the Chinese government’s construction of the Khamtok (Gangtuo) hydropower dam, 14 February 2024.

Source: RFA via citizen journalist

What is clear about Khamtok dam and the local resistance is that the stakes are extremely high with at least six monasteries to be destroyed by the dam reservoir and supporting infrastructure. Tibetan Derge residents are risking long-term persecution and government-imposed isolation to protest the destruction of their cultural and religious history, community and the environment. From available information, at least two of the six historic monasteries survived the violent destruction of the Cultural Revolution: Wontoe monastery and Yena monastery. Wontoe monastery<sup>87</sup>, in particular, houses sacred Buddhist murals that date back to the 14th century whose provenance, according to oral history, dates to the 8th century.



Sacred murals of Wontoe monastery, Derge facing destruction by Khamtok (Gangtuo) hydropower dam.

Source: High Peaks Pure Earth, 5 March 2024



## REGIONAL STABILITY

Estimates indicate that nearly half the global population will face water scarcity by 2025.<sup>88</sup> This sobering fact indicates that hydro diplomacy is now more crucial than ever as regions across the globe confront competing demands for economic development, population growth, and basic subsistence, all of which depend on reliable water quality and availability. Climate change will compound existing stressors and is already introducing new, significant complications such as increased severe weather events and changes in monsoon cycles.<sup>89</sup> Consensus also exists that the South and Southeast Asian region constitutes a hot spot in terms of these cross-sectional issues.<sup>90</sup> As the headwater for the region's eight major riparian systems, what transpires in Tibet defines the range of possibilities for all downstream concerns and solutions. Thus, China's posture toward water policy has the potential to either contribute to resolving or exacerbating current and growing water and food security risks.

Unfortunately, over 70 years of the PRC's occupation of Tibet and its adversarial approach to riparian policy actively thwarts progress toward a regional accord. And while not the only factor, the PRC's unparalleled hydropower development schemes are driving discord within an already fraught regional architecture that has suffered for decades from complex multi-and-bilateral tensions, as well as long standing mistrust.<sup>91</sup>

### CHINA: HYDROPOWER AND HEGEMONY

Arguably, the severe water policy situation in Tibet and its effect on downstream countries can be summarized by the Chinese government's overarching agenda of control.

As an unrivalled hydro-hegemon with the largest military and economy in the region, China is sometimes referred to as an "upstream superpower."<sup>92</sup> This is also born out in its behavior. China embraces the antiquated and dangerous principle that upstream countries have complete "sovereignty" over any waters in their State, including transboundary. According to scholar Natasha Hall of the Center for Strategy and International Studies, the PRC has routinely "... sought to block agreements governing the use of international rivers, maintaining that upstream countries must be free to develop their part of shared waterways."<sup>93</sup> Specifically, China regularly refuses to join inclusive planning processes and treaties that require genuine accountability. This includes even the most basic form of cooperation, data sharing, which is essential for mitigating and preparing responses for water related disasters such as droughts, floods, and poor water quality.

Together with its economic and military power, the PRC wields hydrological data as a diplomatic bargaining tool to reward, coax or punish downstream countries. For example, the PRC paused hydrological data sharing with India

in 2017 after the Doklam border skirmishes along the contested border.<sup>94</sup> Earlier negotiations to extend data sharing agreements were also intentionally not clarified until China was happy with the political climate. Similarly, China began sharing the long requested year-round hydrological data on the Lancang-Mekong River **only** after downstream countries signed a Mekong-US partnership in September 2020.<sup>95</sup>

In all of these ways, China's assertion of total control regardless of downstream consequences perpetuates a cascade effect of extant distrust and competition throughout the region. Nations like India, Pakistan, Thailand, and Vietnam are put in a vice of having to simultaneously respond to China's disregard for their water rights while protecting their own resources, often by embracing similar practices.<sup>96</sup> Illustrating this dynamic, crossfire inevitably develops between China and India - the next largest regional power center.

India also depends on Tibetan waters and has a vested interest in maximizing control of water flows. India particularly fears that China's large dam projects on the Yarlung-Tsangpo/Brahmaputra will "turn off the tap" that supplies water to India's northeast and agricultural plains. Such fear incentivizes India to engage in regional maneuvering, infrastructure development, and financial methods to maximize its water use and put the squeeze on its downstream neighbors. In this region, water also intersects with broader territorial disputes between China, India and Pakistan. Hydropower projects, supporting infrastructure and urban development is used as a tool to build settlements, support military bases, and cement territorial claims.<sup>97</sup> So, China's hydroelectric policies are felt across the entire region, exacerbating discord and limiting other nation's options.

A full analysis of the implications of this web of political brinkmanship and maneuvering is beyond the scope of this report. However, suffice it to say that the race to expand hydropower and attendant infrastructure certainly fuels rising and significant points of contention, including real and perceived power plays.<sup>98</sup> This cycle of conflict and growing tension has not gone unnoticed by prominent security studies and entities, including CSIS and NATO.<sup>99</sup>

In sum, China's belligerent dismissal of cooperative processes, refusal to enter dialogue over specific dam projects, and their construction plans are hard to interpret as anything other than another tool in its regional hegemonic agenda. Water becomes another means of pressuring downstream countries to bow, either directly on water policy or on other priorities.



# COURSE CHANGE: Building a Responsible Energy Transition for Tibet

## HYDROPOWER: THE MYTH OF CLIMATE NECESSITY

Hanging over all hydropower discussions is the specter of the advancing climate crisis and the urgent need to meet ambitious carbon emissions targets to mitigate the already inevitable impacts of climate change.

Climate science indicates that aggressive action must happen to reach the necessary emissions reductions targets by 2035 to keep on a trajectory to maintain a chance of achieving the global target of 1.5 degrees Celsius (2.7 degrees Fahrenheit) above pre-industrial temperatures by the 2050s.<sup>100</sup> Tibet is one region where climate-induced warming will occur faster, resulting in impacts experienced earlier and with more severity.<sup>101</sup> In response to such climate threats, decarbonization policy increasingly emphasizes the rapid deployment of low-emissions renewable energy sources like solar and wind power and supporting infrastructure, such as transmission lines.

In terms of hydropower, while historically interpreted as contributing to emissions reductions, the rationale requires scrutiny, particularly since Chinese authorities regularly justify their extensive construction plans of large-scale hydroelectric projects as integral to the country's carbon pollution reduction targets.<sup>102</sup> At least three key factors challenge the premise of hydropower as a sustainable and renewable energy source.

First, a large body of scientific research is challenging the validity of hydropower as a reliable technology for reducing emissions within the necessary period to impact global temperature targets articulated above.<sup>103</sup> These findings are being increasingly recognized by prominent international bodies, such as the United Nations.

Hydropower's negative climate profile is largely attributed to the significant volumes of methane that can be produced as vegetation decomposes under artificially created reservoirs.<sup>104</sup> Methane is a potent greenhouse gas, roughly 80 times more harmful than carbon dioxide. Its contribution to the climate crisis must be taken seriously and even potential sources scrutinized. Methane production has created concerns in China. Speaking on the construction of the 3GW Lianghekou dam in Kardze (Ganzi) Tibetan Autonomous Prefecture, Fan Xiao, the chief engineer from the Sichuan provincial government's geology and mineral resources bureau noted that studies show reservoirs in the region emit huge amounts of methane and carbon dioxide.<sup>105</sup> The United Nations has also acknowledged the negative impacts of methane production from dams. In response to the February 2024 protests in Derge, Tibet against



a hydropower dam, a July 2024 communication to China by 13 Special Procedures states “[...] dams would cause significant, and possibly irreversible, environmental (biological and climate) negative impacts to the Tibetan plateau..., [such] as ecosystem health and climate stability.” The communication also emphasized, “Hydropower dams also have significant negative impacts on the environment, as they can increase negative climate impacts including methane and other emissions.”<sup>106</sup>

A third factor that distorts the presumed merits of hydropower is the time frame over which emissions are calculated. Often, dam emissions are aggregated over long periods of time (up to 100 years), beginning from an initial emissions pulse.<sup>107</sup> This approach is deeply flawed. Stretching the emissions profile into the future obscures the need to immediately reduce emissions.<sup>108</sup> Another complication with hydropower’s relationship to climate is that as warming accelerates, water flows will become more erratic, reducing dams’ reliability and increasing volatility over time. For example, the summer 2022 drought in Sichuan halved the hydropower generation capacity in the province over two months, where hydropower produces 80 per cent of the energy.<sup>109</sup> This resulted in some cities rationing their power supply, with impacts even felt in manufacturing hubs on the eastern coast that rely on energy imports from Sichuan. In contrast, wind and solar will face less risk, making them superior environmental and financial investments.

Finally, once in place dam projects are nearly impossible to shut down. This makes the issue of “carbon lock in” even more pressing. “Carbon lock in” refers to sticky technologies, sunk costs, institutions, and norms that lock us into the carbon emissions lifespan of an initial technology,<sup>110</sup> for example, investment in a gas power plant and supporting infrastructure like pipelines. “Carbon-lock in” also includes the political and social dynamics that suppress renewable energy investment “in spite of environmental externalities and existence of cost-neutral or even cost-effective remedies.”<sup>111</sup> Though more often associated with fossil fuels, hydroelectric dams easily fit into this “lock-in” rubric. The “lock-in” effect also applies to the non-carbon aspects of dams, including the many other risks and harms analyzed in this report. Due to the longevity of hydropower dams, once built, “lock-in” becomes an acute risk. In the case of the PRC, this effect is exacerbated by the fact that policy decisions are often made with short time horizons. As argued by Fan Xiao, chief engineer of the Sichuan government’s geology and mineral resources bureau, “[w]hether a project creates actual benefits or profit once it’s built is not a concern of current government officials.”<sup>112</sup>



## RENEWABLE ENERGY IN TIBET: Imagining an alternative Future

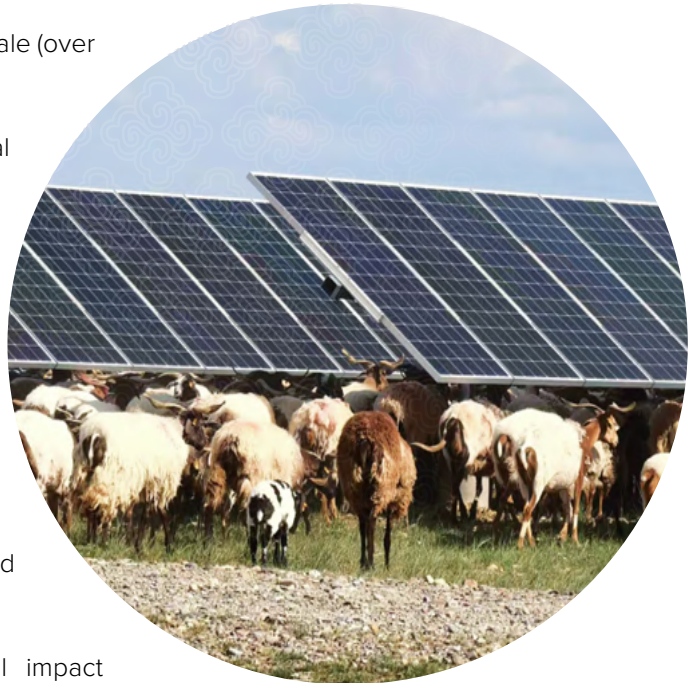
It is now clear that hydroelectric dams, particularly large-scale (over 100MW), are fraught from multiple perspectives.

Low impact renewable energy is critical to meet the moral and scientific imperative of reducing the impacts of climate change, while limiting impacts on communities, not only on Tibet, but globally.

However, while solar and wind power produce low emissions energy, more is at stake, especially in the context of Tibet. *How, where, and what* is developed define success. In Tibet, this means radically shifting course so the benefits of renewables can be captured while avoiding the detrimental effects of hydro damming, while also jettisoning the prevalence of human rights violations regularly occurring in conjunction with energy and other infrastructure development.<sup>113</sup>

**How:** Upfront, independent and robust environmental impact assessments coupled with an inclusive decision-making process is a matter of basic justice and is substantively crucial. Without engagement, the inputs necessary to build an integrated policy that meets the aspirations of the Tibetan people—and protects the environment—will not occur. Only such an assessment establishes alternatives and weighs the costs and benefits of proposed projects. To be effective, this must include the relative balance of impacts to affected communities. The Chinese authorities' command and control approach disregards these evaluations. All too frequently, the result is brutality and unsustainable outcomes.

**Where:** Another essential factor is siting. Siting that fails to consider sensitive ecosystems, wildlife needs, and the costs versus benefits to local communities may produce low emission energy but will only perpetuate the current cycle of the severe human rights violations inflicted on the Tibetan people. It also carries the potential to exacerbate short- and long-term environmental harm. Multiple methods can mitigate such conflicts. Three common elements include upfront consultation with impacted communities, analytical assessments of broad, cumulative impacts, and localized evaluation of potential impacts, e.g., to sacred lands and sites, ecosystem sustainability, and more<sup>114</sup> This way, “no-go” zones and cross-sectional solutions can be identified. Importantly, despite conventional wisdom, cosmological belief systems can be respected during decision making. Further, engagement must not stop at consultation. The Tibetan people also must be part of the design and implementation of projects to ensure sustainable land use practices.<sup>115</sup>



Sheep and goats graze on grass under solar panels at a photovoltaic industrial park in Gonghe county, Hainan Tibetan Autonomous Prefecture, Qinghai.

Source: Xinhua, 2 August 2024

**What:** Solar and wind are the preeminent forms of renewable energy. Both possess the capacity to avoid the harms of hydropower while providing superior benefits. First, some definitions are in order.

Solar and wind can generally be divided into three types. Utility scale, distributed generation, and closed system microgrids. Utility scale often is labeled “solar or wind farms” due to their density and scale. Distributed generation generally means technologies like rooftop or community solar and wind installations. Importantly, distributed generation can either feed into the larger energy system (e.g., through extended transmission lines) or feed more local networks, or both. Microgrids are most often self-contained systems that use local resources to support specific community needs. Portable systems are also a valuable source of energy.

As discussed above, a serious problem with the PRC’s hydropower development projects is dispossessing Tibetans from their traditional homes or grazing lands, often coinciding with destruction of cultural sites. This is as unconscionable as it is unnecessary.

For example, a renewable energy development process called co-management can avoid this type of human rights violation while providing energy benefits. Co-management is when renewables are sited, constructed, and managed to facilitate pastoral animal husbandry and other agriculture. For example, solar arrays can facilitate grazing because animals are able to graze beneath the panel structures (wind functions in a similar way). Known as “agrivoltaics”, this approach is particularly important because it helps meet global decarbonization goals while also social objectives.<sup>116</sup> In the specific context of Tibet, combining solar installations with grazing has the potential to simultaneously support utility scale renewables, which are necessary to meet global climate targets because of the amount of energy they produce, while supporting traditional Tibetan pastoral rhythms.

Another excellent way to produce sustainable renewable energy is a distributed energy source. Located in or near local communities, the renewable source can be used either solely to fulfil community needs or to simultaneously send power to larger systems. For example, distributed generation could simultaneously power schools, homes, and local businesses all from one source. Portable solar also can further support nomadic ways of life. For example, early policy approaches in Mongolia presents a directly applicable success story. According to the United Nations Development Program, over 200,000 nomadic herder households in Mongolia are utilizing solar energy via transportable panels, demonstrating that government policy holds the potential to facilitate co-benefits when political will exists.<sup>117</sup>



Traditional Mongolian tent ger powered by solar panel in Altai Mountains of Western Mongolia.

## CONCLUSION

Large-scale hydropower projects run counter to the urgent need to accelerate decarbonization. As potential emitters of powerful greenhouse gases, they are irrefutably inferior to solar and wind. Tibet is currently facing the brunt of climate impacts. If China is serious about meeting its emissions targets an obvious step is to cease investment in new hydropower projects that have the potential to only drive the world deeper into the climate bind. Instead, China has an opportunity to reduce climate impacts on its own people, better protect Tibet's unique environment, preserve the Tibetan people's ancient civilization, and demonstrate global leadership by applying its manpower, money, and innovation to real solutions like justly developed, sustainable solar and wind.

Given the enormity of the challenges, and the wrong path chosen by the Chinese government with regard to development and resource policies in Tibet so far, meaningful change can only be achieved by respecting the rights and interests of the Tibetan people. There is a way forward to achieve this – by embracing the Middle Way Policy of the Dalai Lama based on the right to self-determination of the Tibetan people.

Any other choice will reveal whether China's true mission is addressing climate change.



# RECOMMENDATIONS

## FOR THE PEOPLE'S REPUBLIC OF CHINA

1. Cease all planning, proposing, and construction, including projects underway, of large-scale hydropower dams within Tibet.
2. Protect the right to free, prior, and informed consent of impacted communities, the right to a cultural life across all transactions and respect the rights of the Tibetan people as per the Covenant on Economic, Social and Cultural Rights, which China has ratified. This can be achieved through:
  - a. Protecting the rights to freedoms of expression, assembly and association, and the right to enjoy effective access to judicial and administrative proceedings, including redress and remedy.
  - b. Stopping all forcible displacement of communities.
  - c. Creating an institutionalized process for conducting community-wide consultations on the full spectrum of socio-economic, cultural and environmental impacts of dams, and establishing mechanisms where issues can be resolved.
  - d. Establishing an environmental justice centre or similar institution that upholds strong accountability standards by regularly reporting on government transparency in areas of environmental practises, legal education, cases of due process and fair outcomes where compensation or remedy have been achieved.
  - e. Establishing accessible community-level legal education, so communities have legal pathways to raise legitimate concerns.
  - f. Recording community knowledge and building partnerships and co-management models with local communities.
3. Tibetans should be empowered and protected in their right to consent to development projects of any kind based on their assessment of the tangible and intangible costs and benefits to their land and community. This includes protecting the rights to freedoms of expression, assembly and association, and the right to enjoy effective access to judicial and administrative proceedings, including redress and remedy. Communities should also be protected against human rights abuses within their territory and/or jurisdiction by third parties, including business enterprises, in particular with regard to the UN Guiding Principles on Business and Human Rights. This must be supported by investments in:
  - Accessible community-level legal education, so communities have legal pathways to raise legitimate concerns.

- Recordings for community knowledge and building partnerships and co-management models with local communities.
4. Invest in properly sited and inclusively developed solar and wind power, as they do not carry the demonstrable environmental, climate, and social costs of hydropower. These projects should prioritize co-management, co-benefits, and maintenance of traditional ways of life. Co-benefits include employment opportunities for affected communities, as well as accessible technical education and training courses.
  5. The PRC should sign and adhere to the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Water Resources to ensure basic principles of equitable and reasonable use, and no-harm in water management.
  6. If the Chinese government is sincere about acting as a global leader, China should engage in multi-lateral transboundary water policy forums to establish a mutually beneficial management architecture and data-sharing norms. Hydrological data and dam project plans should not be used as bargaining tools leveraged over downstream states.
  7. The Chinese government cannot consistently reject multi-lateral water forums such as the Mekong River Commission nor should it create multi-lateral fora that institute unequal agenda-setting and decision-making structures like the Chinese-led Lancang-Mekong Cooperation.
  8. Engage with representatives of the Dalai Lama in a meaningful dialogue, in order to achieve lasting solutions to violations of the rights of Tibetans, as exemplified in the hydropower projects in Tibet, and to the unresolved China-Tibetan conflict.

## **FOR FOREIGN GOVERNMENTS AND INTERNATIONAL ORGANISATIONS**

9. International networks, forums, and international bodies such as the United Nations agencies should call attention to the risks and harms of top-down governance of the Tibetan people and their environment as unsustainable for Tibet and the region.
10. While commending efforts to invest in renewable energy technologies, governments and international bodies must acknowledge that the climate, environmental and social costs of hydropower dams are incompatible with sustainable energy policy goals.
11. A human rights-based approach to climate policy and the renewable energy transition is essential. The most politically marginalized communities should not pay the highest price for the renewable energy transition.
12. Emphasize that hydropower dams and their ability to control waterflows downstream creates water insecurity in a region that is a hot spot for climate-induced water-scarcity and prone to water-related political instability.
13. Governments, the European Union, and international bodies must promote opening the Tibetan plateau for scientific research and international

cooperation. This includes promoting unfettered access and enabling wider consultations on achieving a sustainable and responsible renewable transition.

14. The violation of the rights of Tibetans is a result of the occupation of Tibet. Therefore, as the Tibetan people have the right to self-determination, the negative implications of Chinese infrastructure projects, particularly regarding hydropower, on the rights of Tibetans and Tibet's environment must be part of a political solution, to be achieved through dialogue between the representatives of the Dalai Lama and the Chinese government. The international community should renew efforts to urge the Chinese government to enter into a meaningful dialogue with the Tibetan side and to support the Dalai Lama's "Middle Way Policy".

## **REGIONAL FOCUS**

15. Regional governments should encourage robust basin-wide environmental and social impact assessments of water-related infrastructure. Such assessments should incorporate cumulative downstream impacts including siltation, river pressure indicators, disruptions of community economic development, and climate change.
16. Cooperate with and support countries and organizations in the region to address data and research gaps and facilitate the creation of a regional transparent transboundary water management system that shares knowledge and experiences of river management. River basin organizations composed of governments and civil society are necessary to plan adaptation and mitigation responses to regional challenges.
17. Streamline and consistently enforce internationally established principles for good practise in development projects: Free, prior and informed consent (FPIC), the sustainable development goals, and rights to safe water, development and livelihood.

## **FOR FINANCIAL INSTITUTIONS AND COMPANIES**

18. International financial institutions, including the World Bank and the Asian Development Bank, should refrain from all financial support for Tibet-based hydropower projects.
19. Individual companies should no longer provide funding of any kind for new hydropower projects or support inputs into the supply chain of the hydropower construction industry in Tibet.
20. All infrastructure investments should comply with the United Nations Guiding Principles on Business and Human Rights and ensure the principle of FPIC of impacted local communities across all transactions.



## ENDNOTES

- 1 See article stating the Qinghai province has built 270 hydropower dams ‘关于中央环境保护督查反馈意见第二项整改任务整改情况的公示’ (Public announcement on the rectification of the second rectification task of the feedback from the central environmental protection inspection), Yushu News Network, 17 October 2018, <http://www.yushunews.com/system/2018/10/17/012719921.shtml>. See also reports Kardze (Ch. Ganzi) TAP of Sichuan province has at least 70 medium to large hydropower stations. ‘More than 70 big and medium-sized hydropower plants displacing Tibetans in Kardze Prefecture’, *Tibetan Centre for Human Rights and Democracy*, 31 October 2019, <https://tchrd.org/more-than-70-big-and-medium-sized-hydropower-plants-displacing-tibetans-in-kardze-prefecture/>. Some small dams have been excluded from the database due to incomplete information. For example, at least 6 smaller dams on the Tongtian and Jinsha rivers and their tributaries (Qiahe, Changu, Xihang, Kema, Zhaqu, and Dengke hydropower stations). See the following sites that are no longer active: <http://rockblack826.blog.sohu.com/146820116.html> [accessed August 2022] and [http://slt.xizang.gov.cn/zwgk/zbxx/200809/t20080912\\_18317.html](http://slt.xizang.gov.cn/zwgk/zbxx/200809/t20080912_18317.html) [accessed August 2022]. Similarly Langcai (郎采) and Jiali (嘉黎) dams on the Yarlung Tsangpo and a further 14 hydropower dams in Zuogong county, TAR are examples of discovered but unverified dams excluded from the database. See ‘成都市打造清洁能源基地 提升水电开发环境保护水平’ (Changdu City builds a clean energy base to improve the environmental protection level of hydropower development), *The People’s Daily*, 18 May 2018, <http://baijiahao.baidu.com/s?id=160076955992781206&wfr=spider&for=pc>.
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- 3 José Luis Carrasco and Andrea Pain, *Sustainable Sanitation and Water Management Sustainable Sanitation and water Management Toolbox*, 2020, <https://sswm.info/ar/water-nutrient-cycle/water-use/hardwares/water-energy/hydropower-%28large-scale%29#>.
- 4 Hennig and Magee, “The Water-Energy Nexus of Southwest China’s Rapid Hydropower Development: Challenges and Trade-Offs in the Interaction Between Hydropower Generation and Utilisation”, 2021, pp 30-31. See also Thomas Hennig, Wenling Wang, Darrin Magee, and Daming He, “Yunnan’s Fast-Paced Large Hydropower Development: A Powershed-Based Approach to Critically Assessing Generation and Consumption Paradigms,” *Water*. 8. 476 (2016): 1-24, page 7.
- 5 *Ibid.*, Hennig and Magee, 2021, page 31.
- 6 *Ibid.*, page 36.
- 7 The first hydropower station (Duodi) in Tibet was built by Rigzin Dorjee in 1927. After the Chinese invasion, the Najin hydropower station was built in 1960 to provide electricity to Lhasa.
- 8 ‘Derge protests put dams back on the agenda’, *International Campaign for Tibet*, 30 April 2024, <https://savetibet.org/derge-protests-put-dams-back-on-the-agenda/>.
- 9 *Ibid.*
- 10 Jean-Francois Rousseau and Sabrina Habich-Sobiegalla, S. (eds) *The Political Economy of Hydropower in Southwest China and Beyond*. International Political Economy Series, (Palgrave Macmillan, 2021), page 4.
- 11 ‘Qinghai-Xizang grid interconnection project transmits over 20 billion kWh of electricity’, *Tibetan net*, 26 February 2024, [https://en.tibet3.com/news/2024-02/26/content\\_500004603.html](https://en.tibet3.com/news/2024-02/26/content_500004603.html).
- 12 Wang Fei, ‘从羊湖抽水蓄能电站迈向超高压时代’ (‘From Yanghu Pumped Storage Power Station to the Ultra-High Voltage Era’), 北极星水力发电网 (Polaris Hydraulic power generation network, 7 November 2018, <http://news.bjx.com.cn/html/20181107/939925.shtml>).
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# APPENDIX

All appendix documents are available online on the webpage:

<https://savetibet.org/chinese-hydropower/>

- LINK TO INTERAKTIVE MAP OF HYDROPOWER DAMS
- MAPPING METHODOLOGY AND REFERENCES
- DATABASE OF HYDROPOWER DAMS



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