**Overview:** A new study published in Nature, *Mapping the World’s Free-Flowing Rivers*, finds that only 1/3 of the world’s longest rivers remain free flowing. This study is the first to map the location and extent of the world’s remaining rivers. We’ve created this document to breathe life into these findings with narratives of rivers around the world. Below you’ll find examples of rivers that are free-flowing, jeopardized by dam development, or set free by dam removal projects.

**ASIA**

**Country:** Cambodia

**River:** [Mekong](https://www.worldwildlife.org/places/greater-mekong)

**Overview:** The Mekong is the 12th longest river in the world, spanning many countries. The Mekong countries have long been tapping their natural resources for economic growth and have installed numerous dams for hydropower and other purposes. However, there remains a long stretch of highly connected mainstem river in the Lower Mekong that facilitates movement of sediments, nutrients and fish between the river, the Tonle Sap lake and the Mekong Delta. Two dams proposed along this stretch of the lower Mekong river, the Sambor and Stung Treng hydropower projects, could be the final straw for the Mekong river. These dams, proposed in Cambodia’s portion of the river, would have detrimental effects for local food security as Mekong fish provide 76% of protein consumed in Cambodia. Additionally, [a river dolphin population, which recently increased for the first time in years](https://www.worldwildlife.org/stories/irrawaddy-dolphin-numbers-increase-for-the-first-time-in-20-years), would likely die off due to the proximity of the population to the planned Sambor Dam. Studies have indicated that Cambodia is a favorable environment for solar energy. While hydropower has a role to play in grid stability, solar can also be an alternative to hydropower that can be cheaper, quicker to install and less risky in terms of long-term sustainable development.

**Country:** China

**River:** [Chishui](https://www.worldwildlife.org/magazine/issues/fall-2017/articles/rebirth-along-china-s-yangtze-river)

**Overview:** More than a thousand miles away from the Yangtze economic delta, the Chishui River, the only tributary of the Yangtze without a mainstream dam, begins its course. Known in Chinese as the Red River for its ruddy sediment, the free-flowing Chishui straddles three provinces that are among the poorest in the country. All three provinces compete to extract resources from the Chishui and the health of the river has begun to suffer. The three provinces have started coordinating on conservation efforts and pollution controls, with the government creating a “River Chief” model that requires heads of provinces, cities, counties, and townships to take responsibility for the health of their rivers and lakes. To convince local municipalities—and local people within the Chishui Basin—to shift their economies to a more sustainable development path, the national government is pushing one model of development in particular: ecotourism. Businesses along the Chishui, like the famous liquor company, Moutai, have also begun investing in upstream protection and restoration of the basin.

**Country:** India

**Rivers:** Headwaters of the [Ganga](http://www.free-flowing-rivers.org/stories/168-uttarakhand)

**Overview:** Uttarakhand, India is home to the headwaters of the Ganga, one of the most sacred rivers in Hinduism. The headwaters of the Ganga also provide habitat for important biodiversity, from tigers to golden mahseer, a large migratory fish that is highly prized as a game fish. Many of Uttarakhand’s rivers are dammed, crowded by roads and floodplain development, and polluted by agriculture, industry and waste. Two key mainstays of Uttarakhand’s economic growth are hydropower and a tourist trade that offers visits to holy sites, wildlife viewing, whitewater rafting, kayaking, and other activities—all of it dependent on vibrant rivers. Through a stakeholder engagement process that builds upon the free-flowing rivers methodology, a holistic framework is being developed in Uttarakhand to identify and prioritize stretches of high conservation value Himalayan rivers and ultimately support work toward their legal protection. This information can help local, state, and national leaders make informed decisions to protect and conserve freshwater resources for people and nature.

**Country:** Myanmar

**Rivers:** Irrawaddy and Salween

**Overview:** Myanmar is still relatively undeveloped with largely pristine ecosystems—including Southeast Asia’s last two long, free-flowing rivers, the Salween and Irrawaddy, which also have significant hydro-potential. The country has an ambitious agenda to grow and bring energy to its rural populations, and that’s going to take a lot of infrastructure—including dams. Myanmar has a choice—build many new dams, or carve a new path that balances the benefits of free-flowing rivers with the opportunities of alternative energy sources, like solar and wind. It’s worth noting that these rivers support substantial fisheries that are a primary source of protein for local communities. The Irrawaddy river dolphins live in the mainstem river and cooperate with local fisherman to herd fish into nets. Sediment and nutrient flows also support floodplain agriculture and healthy coastal deltas. WWF supported the government led and IFC-funded Strategic Environmental Assessment of Hydropower Dams for the country, which has recommended keeping these two critical free-flowing rivers free of dam development.

**AFRICA**

**Country**: Zambia

**River:** [Luangwa](https://www.worldwildlife.org/stories/saving-a-beloved-home-along-the-luangwa-river-in-zambia)

**Overview:** The Luangwa River is one of the longest remaining free-flowing rivers in Southern Africa. The basin is home to 25 chiefdoms, and it boasts some of the most pristine habitats left in Zambia for elephants, lions, leopards, wild dogs, and a myriad of other wildlife. A dam has been proposed on the Luangwa that would flood almost the entire Luembe chiefdom, destroying habitats and displacing thousands of people. The reservoir would inundate 29.5% of the length of the Luangwa River within South Luangwa National Park, at least six safari camps, and as much as 80% of adjacent hunting areas. It would also reduce the area of valuable wildlife corridor between South Luangwa National Park and Lower Zambezi National Park. There has been an outpouring of community-based advocacy. Local groups have painted murals protesting the dam, there have been public rallies against the dam and a petition has been circulated to ask the government to stop the dam.

**EUROPE**

**Country**: France

**River**: [Selune river](http://wwf.hu/en/news_/1/france-launches-largest-dam-removal-project-on-the-continent)

**Overview**: With thousands of dams already degrading Europe’s rivers, France’s plan to remove two large dams could signal the start of a new era on the continent–with countries focusing on reviving their rivers and on large scale dam removal rather than construction. In November 2017, the French government agreed to remove the 35 metre-high Vezins and 15 metre-high ‘La Roche qui boit’ dams from the Selune river in Normandy. Freeing up the Selune will represent the largest dam removal project in Europe to date–and a will be major step towards bringing life back to the river, including wild salmon and eel whose migrations have been blocked by the dams for decades.

**Country:** Austria, Slovenia, Hungary, Croatia, Serbia

**River:** [Mura](https://www.worldwildlife.org/stories/dams-planned-along-the-mura-river-would-devastate-the-amazon-of-europe)

**Overview**: The Mura river—a relatively well-connected stretch of river that serves as one of the last refuges for wildlife and rare fish like otters and the Danube salmon—was at significant risk of dam development. Eight dams were proposed, the first of which was in Hrastje-Mota. These dams would have devastated wildlife habitat and more than 31 miles of river. After urging from WWF and others,

in February 2019, the Slovenian government signed an agreement to stop all hydropower plant development that would devastate the Mura. Keeping this stretch of river connected ensures that endangered migratory fish species can continue to move up and downstream, and water and nutrients can flow to floodplain forests, oxbows, and agricultural areas.

**NORTH AMERICA**

**Country:** Canada

**River:**  [Liard River](https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fblog.wwf.ca%2Fblog%2F2018%2F11%2F02%2Fmeet-wild-river-guardians%2F&data=02%7C01%7CBrooke.Hirsheimer%40wwfus.org%7Cd4ce7c7f96bc4909d6aa08d6c8335240%7Cdb6aaa89c7f8485186769cc7f73b3411%7C0%7C0%7C636916520124667032&sdata=uPzLYu3vL69st81Z7kcjk%2BPreMpV%2BzvXvJuJFU%2FrlNo%3D&reserved=0)

**Overview:** Canada is home to some of the last long free-flowing rivers on Earth. In 2017, WWF-Canada identified the ten longest of these free-flowing rivers which are also relatively unthreatened. Called wild rivers, these rivers represent some of the last bastions of wildness globally. The longest of these wild rivers is the Liard River. With its headwaters in the Yukon, the Liard runs through Northern British Columbia and into the Northwest Territories where it meets up with the Mackenzie River. The Liard River watershed is home to many important species, such as grizzly bear, moose, wolverine, ptarmigan, snowy owl and Rocky Mountain elk (Francis, 2014). It also supports the Nahanni population of wood bison, which were successfully reintroduced in the 1980s (Larter and Allaire, 2007). The region is the traditional territory of many Indigenous nations including the Kaska Dena, the Acho Dene Koe, and the Decho Dene. While currently free from threats, concern is growing within the watershed with observations of very low water levels, low precipitation and later freeze ups, as well as increased jet boating and poor waste management associated with growing recreational use of the area. Resource development is also a concern, with proposed upstream mine tailings dams posing a threat to community supplies of safe, clean drinking water. WWF-Canada is working with communities to establish baseline monitoring programs, so they can better understand what is happening on the ground and use that information to inform water and land management strategies. As communities build capacity along this magnificent wild river, they will be better equipped to manage stressors, ensuring it stays wild now and into the future.

**Country:** Mexico

**River:** [Usumacinta](https://www.worldwildlife.org/stories/water-for-nature-water-for-all)

**Overview:** In June 2018, Mexico decreed water reserves in nearly 300 river basins, representing 55% of the country’s surface water and guaranteeing water supplies for 45 million people. The new water reserves will also improve the health and protection of 82 Natural Protected Areas, 64 Ramsar wetlands, and Mexico’s last few free-flowing rivers, including the Usumacinta, which is the most biodiverse river in Central America. Manatee, jaguar and black hawk-eagle are all resident species. The river is also critical for local communities and indigenous people. A "water reserve" allocates a scientifically assessed amount of water in a river for nature, essentially ensuring the river maintains enough natural flows so that it can do its job and continue to provide water for people and nature. In taking this approach, Mexico has chosen a climate-smart pathway of storing the water not in dams, but in nature–in rivers, wetlands, soils and aquifers. WWF worked with Mexico’s National Water Commission to calculate how much water could be allocated to human activity and how much water should remain in the river to sustain a healthy ecosystem.

**Country:** United States

**River:** [Elwha River](https://therevelator.org/elwha-dam-removal/)

**Overview:** There are over 80,000 dams mapped in the United States. Over the last several decades there has been an effort to take down dams and restore rivers, with nearly 1,500 dams already having been removed across the US. The Elwha River in the Pacific Northwest of the United States provides a striking example. Two hydroelectric dams–the Elwha Dam constructed in 1914 and the Glines Canyon Dam completed in 1927–blocked passage for migratory salmon. Local people reported a huge decline in adult salmon after the Elwha Dam was constructed. This heavily affected the Lower Elwha Klallam Tribe, who relied on the river’s salmon and other associated species in the watershed for physical, spiritual and cultural reasons. Salmon are a keystone species because they bring nutrients from the coast inland, nourishing both terrestrial and aquatic species that benefit from this supply of nutrients. In the mid-1980s the Elwha Klallam Tribe and environmental groups started to push for the removal of the Elwha and Glines Canyon dams. Eventually the Elwha River Ecosystem and Fisheries Restoration Act of 1992 was put in place, mandating the “full restoration of the fisheries and ecosystem.” After 20 years of planning, work to remove the Elwha Dam began in 2011, the largest dam removal in US history. The removal of the Glines Canyon Dam was completed in August 2014. While it’s still too early to predict how large the rebound will be for salmon and other fish populations, several species of adult fish have returned, including sockeye salmon and bull trout and there has been considerable changes in the coastal ecosystem as nutrients and sediments from upstream have been transported back into these habitats. Sources: <https://therevelator.org/elwha-dam-removal/> and ([Bellmore et al. 2019](#_ENREF_1))

**SOUTH AMERICA**

**Country:** Argentina

**River:** [Santa Cruz](https://www.worldwildlife.org/stories/plans-for-mega-dams-put-argentina-s-santa-cruz-river-its-wildlife-local-livelihoods-and-perito-moreno-glacier-at-risk)

**Overview:** The Perito Moreno Glacier’s fate is tied to the Santa Cruz River, which runs from Lake Argentino all the way to the Atlantic Ocean. A pair of mega dams under construction on the river’s banks could flood more than 135 square miles of the surrounding region–an area almost twice as big as Buenos Aires–and transform Argentina’s last long free-flowing glacial river into a series of brackish pools. Completing the dams could also prevent fish from moving between key feeding and spawning locations and wipe out some of the hooded grebe’s most important remaining habitat. The legal process for approving and building the hydropower complex was rushed and didn’t allow proper public participation. It’s not too late to halt construction on these dams and put the finances for them into renewables like wind and solar.

**Country**: Columbia

**River:** [Bita River](http://freeflowingriver.org/stories/93-rio-bita)

**Overview**: Colombia is one of the world’s most biodiverse countries. As the country’s continued peace and economic growth fuel rapid development, its natural heritage is at stake. The free-flowing Bita River has recently been designated as protected, spotlighting the nation’s commitment to securing its natural capital. The Alliance for Bita River, a coalition of fisherman, tourism representatives, Colombian Naval command, social and environmental organizations, scientists, and locals have been working toward the goal of a sustainable Bita River since 2014. Thanks in large part to the work of the Alliance, the Colombian government named the Bita River basin a Ramsar site—a wetland of international importance—in June 2018. Covering 825,000 hectares, it’s the largest of the country’s 11 Ramsar sites and one of the few in the world to encompass an entire free-flowing river basin.

**Country:** Brazil

**River/ Wetland:** [Pantanal](https://www.worldwildlife.org/stories/an-important-win-for-the-world-s-largest-tropical-wetland)

**Overview:** Brazil´s national water agency, Agência Nacional de Águas (ANA) recently announced it was suspending authorizations for new hydroelectric dams in the Brazilian portion of the Pantanal region until May 2020. This decision is positive for the health of the Pantanal wetland, the world’s largest tropical wetland, which is highly dependent on water flows from upstream. However, the suspension is only through 2020 and only applies to rivers under federal jurisdiction—those that flow through more than one state or on the border between states. There are more than 100 hydroelectric projects planned for the Upper Paraguay River Basin, of which only approximately 20 will be suspended by the ANA resolution. To achieve greater effectiveness, and as recommended by the ANA, the suspension of new dam projects should also be extended to rivers under state jurisdiction.

**Country**: Brazil

**River:** Tapajos

**Overview**: The Tapajós Basin is one of the main tributaries of the Amazon River, covering 492,000 square kilometers and forming one of eight areas of endemism in the Amazon. The dozens of dams and infrastructure projects proposed for this basin pose a major risk to the thousands of riverside communities, including the Munduruku people, the hydrology, and the wildlife that depend on the river as well as the larger Amazon system. The story of hydropower development in the Tapajós, including [the amendment of national park and other protected area boundaries](http://www.free-flowing-rivers.org/stories/45-tapajos-and-juruena-rivers), underscores that rivers within protected areas may not have durable protection. Long-term conservation of free-flowing rivers in Brazil may require specific designation of protection for a river (i.e., complementary to the protected area status for the surrounding land) or protection via the hydropower planning process, in which certain rivers are removed from eligibility for development. In 2016, WWF-Brazil generated the "[Conservation Vision for the Tapajós Basin](https://panda.maps.arcgis.com/apps/Cascade/index.html?appid=7bb1e4b72aa44eef91b0f263ea6ba514)" to provide decision makers recommendations for how to most sustainably steward the Tapajós.