Rivers Rights Resistance

Hydropower and the Legacy of the World Commission on Dams

GegenStrömung
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gegenstroemung@gegenstroemung.org
www.gegenstroemung.org
c/o
Institut für Ökologie und Aktions-Ethnologie e.V. (INFOE)
Melchiorstr. 3
D-50670 Köln
infoe@infoe.de
www.infoe.de

International Rivers
344 20th Street
Oakland, 94612 USA
contact@internationalrivers.org
www.internationalrivers.org

V.i.S.d.P. (responsible under German press law): Lisa Kadel
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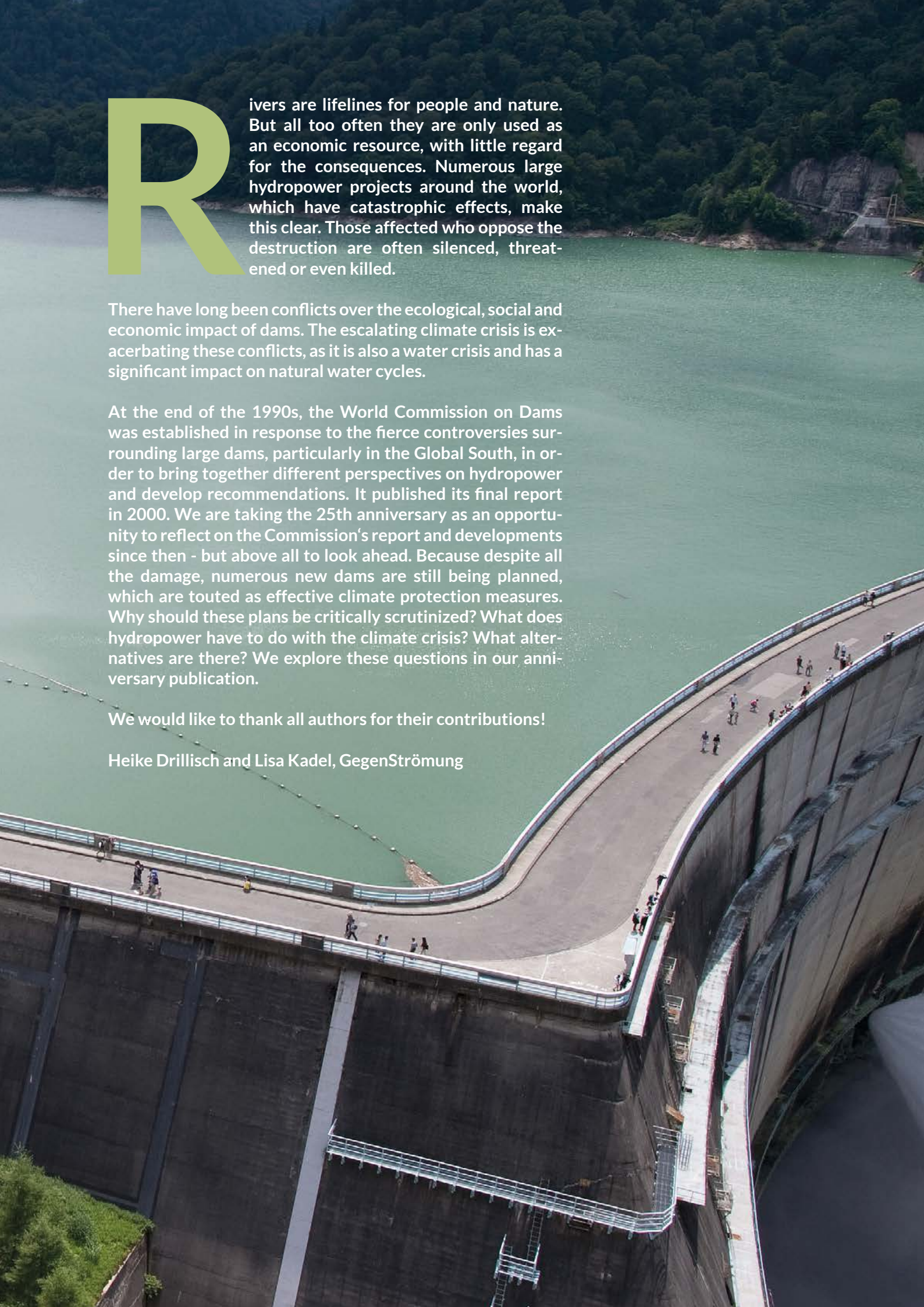


Rivers are lifelines for people and nature. But all too often they are only used as an economic resource, with little regard for the consequences. Numerous large hydropower projects around the world, which have catastrophic effects, make this clear. Those affected who oppose the destruction are often silenced, threatened or even killed.

There have long been conflicts over the ecological, social and economic impact of dams. The escalating climate crisis is exacerbating these conflicts, as it is also a water crisis and has a significant impact on natural water cycles.

At the end of the 1990s, the World Commission on Dams was established in response to the fierce controversies surrounding large dams, particularly in the Global South, in order to bring together different perspectives on hydropower and develop recommendations. It published its final report in 2000. We are taking the 25th anniversary as an opportunity to reflect on the Commission's report and developments since then - but above all to look ahead. Because despite all the damage, numerous new dams are still being planned, which are touted as effective climate protection measures. Why should these plans be critically scrutinized? What does hydropower have to do with the climate crisis? What alternatives are there? We explore these questions in our anniversary publication.

We would like to thank all authors for their contributions!

Heike Drillisch and Lisa Kadel, GegenStrömung

About GegenStrömung/CounterCurrent:

Since 2008, GegenStrömung (CounterCurrent), an initiative hosted by the Institute for Ecology and Action Anthropology (INFOE) e.V., has been committed to supporting dam affected people, particularly in the Global South, and to changing the political framework so that impacts are addressed and harmful projects are not implemented.

At an international level, we work with the **"Rivers for Climate"** coalition (www.undam.org). The coalition campaigns to safeguard the world's rivers by advocating for international policies and financial mechanisms that prioritize ecological integrity, climate resilience, and community rights over the false solution of destructive hydropower. Members of the coalition contributed to this publication.

Content

The World Commission on Dams 25 Years Later: Rivers and Rights Still at Risk

Interview with Deborah Moore, former Commissioner, World Commission on Dams

What was the World Commission on Dams, how and why was it established? What was your role?

Formed in 1998, the World Commission on Dams (WCD) was an independent, investigative body supported by the World Bank and the International Union for the Conservation of Nature (IUCN), following decades of social, economic, and environmental conflict over the impacts of large dams. The WCD's mandate was to review the "development effectiveness" of dams and develop standards and guidelines for future projects. It consisted of twelve members from governments, industry, academia, and civil society. I served as one of the twelve Commissioners, representing civil society and environmental concerns. At the time, I was a senior scientist at the US-based Environmental Defense Fund (EDF), a national, environmental advocacy public interest organization. In this capacity, I had analyzed numerous World Bank and international financial institution-funded water infrastructure projects and found that often big dam and river development projects were not following appropriate safeguard policies and had negative impacts on people and the environment.

The WCD remains the most comprehensive evaluation of large dams ever conducted, reviewing experiences from 1,000 dams across 79 countries, synthesizing existing research, conducting field work, and facilitating a participatory research process with more than 1,400 participants and 940 expert and public submissions.

Many of the findings have since been confirmed by further research, and many issues have worsened, including:

~ Large dams displaced 40–80 million people worldwide, most never regaining their livelihoods. A decade later, researchers estimated an additional 472 million river-dependent people downstream of dams were negatively affected.

~ Dams caused significant and irreversible loss of freshwater species and ecosystems. This trend has worsened and in 2025, IUCN found that 25% of freshwater animals are at risk of extinction.

~ The WCD conducted early research challenging the conventional wisdom that hydropower was "clean energy" free of pollution and found that greenhouse gas emissions from dams and reservoirs were significant. Recent research indicates that 10% of the world's reservoirs have emissions exceeding gas-powered plants, vindicating the WCD's early warnings.

The WCD's groundbreaking framework that shifted focus from purely financial considerations to a comprehensive rights-based approach has had a lasting impact. It assessed how projects affected human rights, land rights, water rights, and environmental rights of all stakeholders – not just investor interests. This rights-centered approach prioritized affected communities as primary beneficiaries of development projects, rather than merely victims of their impacts.

It also strengthened the principle of Free, Prior and Informed Consent of Indigenous Peoples (FPIC). While FPIC has now become generally accepted and institutions like the Convention on Biological Diversity embrace FPIC, this right continues to be violated by governments and business, and institutions like the World Bank have yet to fully embrace it.

How did the Commission work together? What was special about the process?

The WCD exemplified a global, participatory, multistakeholder process. Participatory decision-making has many benefits, including greater legitimacy, more innovation and longer-lasting commitment to implementation. The Commission itself used a method of "sufficient consensus" - when disagreement arose, we moved forward on other issues and returned to sticking point later. As we built alignment across other issues, we were able to resolve differences over time.

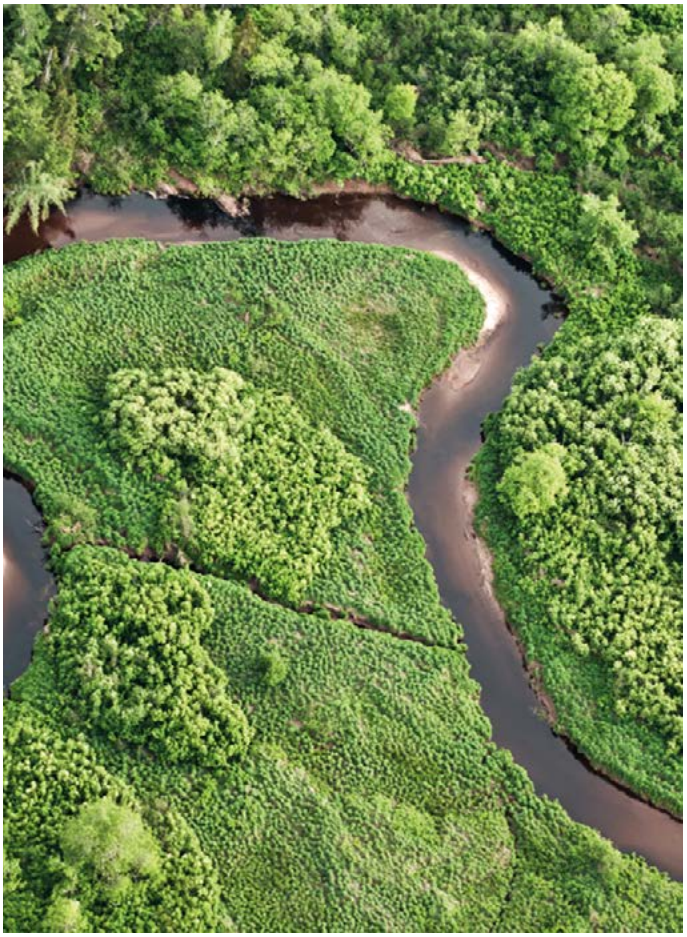
The 12 Commissioners achieved consensus because we were independent of our representing stakeholder groups and developed personal relationships through shared knowledge, field visits to dam projects and affected communities, and hundreds of hours together.

While we Commissioners reached consensus on the final WCD report, we were not able to forge that consensus across the hundreds of participants and stakeholders. Some reverted to pre-WCD positions when not invited to review early drafts of the final report despite having committed to the Commission's independent status, therefore not evolving their learning or perspective as a result of the new evidence presented by the WCD's investigations.

How did implementation of the recommendations proceed?

After publishing its final report in November 2000, the WCD dissolved as planned. It was designed as a fact-finding initiative, not a political negotiation process. While public participation contributed greatly to enrich the WCD's knowledge base and analysis, with hundreds of dam-affected people participating in WCD consultations, case studies, and commission field visits to specific dam sites - the process itself did not result

Deborah Moore



in building enough political power to broadly influence the policy-making process by governments and financial institutions promoting large dam projects.

Yet the WCD framework has become the most important benchmark in international dam building and a de facto standard against which policies are compared. Several governments integrated WCD recommendations into national policy. The World Bank, export credit agencies and the International Hydropower Association, while critical of specific recommendations, endorsed the WCD's strategic priorities. The EU and others decided that carbon credits from large dams can only be sold on the European market if the projects comply with the WCD framework.

However, it is crucial to note that the World Bank is currently reinvigorating its lending for large dams without learning from its past mistakes, including potential support for the Inga dam in the Democratic Republic of Congo, the Upper Arun dam in Nepal, and Rogun dam in Tajikistan despite worsening of financial, hydrologic and political conditions for developing new dams.

What should we learn from the WCD and these 25 years?

At a time when the climate change emergency and multiple crises are upending democratic values, institutions and processes, the WCD was remarkable in designing an open, inclusive, participatory, fair, and thorough process. I remain steadfast in my belief and commitment to multistakeholder, democratic decision-making as we as a global society face ever greater challenges in addressing sustainable development, human rights, inequality, and climate change.

Several developments in the last 25 years offer hope:

~ Recognition of "rights of rivers" - that rivers have inherent legal and enforceable rights to remain living and free - in New Zealand, Bangladesh, Colombia, Ecuador, Peru and Australia.

~ The removal of four large dams on the Klamath River in 2023-2024 through a multistakeholder agreement involving multiple tribal nations, governments, farmers, utilities, and investors. Salmon have returned already! And tribes regained access to lands and sacred sites.

~ The emerging World Commission on Fossil Fuel Phase Out initiative, building on the WCD's global, independent, multistakeholder approach to addressing problems rife with conflict.

One overarching lesson stands out: while joint fact-finding and analysis is crucial for evidence-based decision-making, building movements, strategic communications, and power levers is equally important for lasting change.

What else has changed? We have lost three Commissioners and I honor their memories: Chair Kader Asmal, Vice Chair Lakshmi Jain, and Jan Veltrop. As the youngest Commissioner, now in my sixties, I honor our collective work. The WCD report signed off with the words: *"We have told our story. What happens next is up to you."* I invite the next generation of river defenders, river dependent communities, researchers, business, financiers, and decision makers at all levels to tackle these challenges with love, creativity, and compassion. It's time for you to tell your story. I am now a grandparent, thinking of what the world will be like in 2050 when my grandson will be just 26 years old. I hope he will get to enjoy the sacred, life-giving gifts of healthy rivers.

Want to read more? Sift through all WCD documents yourself? You can find links to further resources at **www.gegenstroemung.org/wcd25**

The Struggle of People Affected by Dams in Brazil

By Francisco Kelvim and Paula Goes, National Coordination of Movement of People Affected by Dams Brazil

In Brazil, the construction of dams for various purposes - particularly those tied to the structuring of the national energy model since the 1970s - has reshaped entire territories and had profound impacts on local populations, that range from forced resettlements to the loss of access to food, water and income sources, to the destruction of culturally and spiritually significant sites for Indigenous people. In response, affected communities founded the Movimento dos Atingidos por Barragens (MAB – Movement of People Affected by Dams) in 1991, as a form of resistance to large-scale development projects. Since its inception, MAB has worked directly to propose changes to Brazil's energy model, fighting for the rights of affected populations, and, more recently, confronting and mitigating the climate crisis.

With over three decades of experience and presence in approximately 20 states, MAB's core goals include: defending rights, securing justice and reparations for affected communities, building a popular, sustainable, and fair energy model, and advocating for a democratic, socially and environmentally just society.

Brazil - a global leader in dam construction

~ 29,000 dams in the country

~ 221 operational hydroelectric plants in the Amazon region with at least 428 more in the planning stages

~ Third largest hydropower potential in the world

~ 4 million affected people in 2025, up from 1 million in 2000

Dam construction alters local biodiversity, displaces entire communities, and floods vast agricultural and forested areas. It also exacerbates poverty, family breakdowns, and social inequality, leading to increased violence, particularly against women and children. The Amazon basin, crisscrossed by major rivers, has long been targeted by policies promoting massive energy projects, such as Belo Monte on the Xingu River, Jirau and Santo Antônio on the Madeira River, and Teles Pires on the Tapajós River tributary. Those projects directly affect life in the Amazon and pose a serious threat to local communities and biodiversity.

In recent years, Brazil has seen a rise in the number of potentially hazardous dams, exemplified by the catastrophic failures of the Fundão dam in Mariana (2015) and the Córrego do Feijão mine dam in Brumadinho (2019). These disasters resulted in the deaths of nearly 300 people and caused widespread environmental devastation, contaminating entire river basins with toxic mining waste.

Since the military dictatorship in the 1970s, Brazil's National Electric Sector has maintained an authoritarian, autocratic, and technocratic energy model that persists to this day. Despite the country's democratization and the 1988 Constitution, which enshrined various human rights, dam projects have continued to drive violations. According to the Conselho de Defesa dos Direitos da Pessoa Humana (CDDPH – Human Rights Defense Council), sixteen human rights are systematically violated in dam construction, including the rights to information and participation, freedom of assembly and expression, freedom of movement, and full reparations for losses. Thus, there is an "existing pattern of dam implementation" that systematically violates the rights of affected populations, hindering significant progress in creating a regulatory framework to protect them, a long-standing demand of MAB.

After years of activism and experience, MAB successfully advocated for a proposed law, now enacted as Law 14.755 (2023), which establishes the Política Nacional de Direitos das Populações Atingidas por Barragens (PNAB – National Policy on the Rights of Populations Affected by Dams). This unprecedented legal framework marks a historic achievement, but its full implementation still depends on government regulation. This breakthrough was only possible after MAB organized a process of national mobilization, which took place at all stages during the law-making process. MAB did intensive work advocating in the Brazilian National Congress and in the Federal Government, promoting a dialogue between the authorities and the civil society about the importance of protecting the rights of affected communities.

Approximately two-thirds of the world's major rivers are now dammed. Despite the severe social and environmental consequences, dams continue to be promoted as a key solution for reducing emissions in national energy systems, particularly in Asia and Africa. In light of this

reality, fostering international solidarity among affected communities is more urgent than ever. As a member of the Movimiento de Afectados por Represas (MAR – Movement of People Affected by Dams), MAB is co-organizing the VI International Meeting of Communities Affected by Dams and the Climate Crisis, to be held in November 2025 in Belém do Pará, Brazil. The central aim of the meeting is to strengthen international solidarity and build a global movement of resistance and advocacy. As the organizers affirm: *"We are rivers that will meet to form a sea."*

Rivers and Hydropower in a Changing Climate

By Theresa Schiller, WWF Germany

25 years after the World Commission on Dams' report, human-induced climate change is a generally recognized fact. In 2015, the international community adopted the Paris Agreement to reduce climate-damaging carbon emissions. The development of hydropower, often touted as a climate-friendly energy solution, has benefited in part from corresponding political decisions. Yet, the effects of climate change are being felt more and more around the world. And in turn, they come with profound consequences for hydropower development.

We feel climate change through water

Climate change is significantly altering the global water cycle. Increasing temperatures are impacting precipitation and evapotranspiration causing more extreme weather events, including more frequent and/or intense floods and droughts. Rivers – key components of the global water cycle – are growingly feeling these effects in form of increased or reduced discharges. They may vary considerably between regions and seasons.

Floods

Floods are first and foremost natural phenomena and belong to the set of processes that regularly occur in intact, dynamic river ecosystems. However, massive modifications of rivers and their catchments, such as river rectifications, diking of floodplains, hydropower plants, and soil sealings heavily decreased their natural capacities to balance water flows in many places.

Flooding of unprecedent magnitude has become one of the most visible and destructive impacts assigned to climate change.

Existing river infrastructure, including hydropower dams, was planned and designed based on hydrological and climate data of the last decades. Extreme weather events are now challenging the capacities of these structures. On top, aging infrastructure raises additional concerns about safety. Dam failures or the need to release water quickly to avoid breaches can worsen downstream flooding, harm or displace communities, damage ecosystems, and cause economic losses.

Droughts

Droughts, like floods, are natural phenomena that are exacerbated by the impacts of climate change. As a result, hydropower reservoirs in affected regions may not fill as expected. A global study estimated reduced power generation for 61-74% out of 24,500 analysed hydropower plants due to climate-driven changes in hydrology.

Reliability and economic viability of hydropower is at stake – and so is energy security.

In regions heavily reliant on hydropower, droughts are already causing blackouts and forcing governments and power industry to buy electricity from other countries, which is usually more expensive and often based on climate-damaging fossil fuels. This can lead to higher consumer prices, less reliable energy supply and a huge unaccounted carbon footprint.

Conflicts

Rivers that supply hydropower projects often also serve other needs, such as irrigation, drinking water, and industrial use – as well as ecosystems and biodiversity. Increasingly intense periods of drought lead to growing tensions over the allocation of limited water resources.

Climate change is not only making water availability more unpredictable, but it is also increasing competition over scarce water resources.

In many regions, disputes over water rights are already a source of political conflict when downstream countries or communities are faced with reduced water availability due to the operation of dams upstream.

Further interdependencies

There are many more interrelations between climate change, riverine ecosystems and hydropower. Water quality can be adversely affected by reduced flows that may increase concentration of pollutants. Rising temperatures, to which dammed waters are susceptible, reduce oxygen concentrations in water and can affect biochemical processes and habitats. Hydropower plants stop sediment transport into the sea by retaining sediment, which is then missing from the coasts to counteract coastal erosion - particularly critical in times of rising sea levels caused by climate change. Hydropower reservoirs may also intensify regional water losses through evaporation due to the large artificial water surfaces they create, and they are potential emitters of greenhouse gases.

Biodiversity

Finally, no debate on hydropower and climate change should take place without addressing the biodiversity crisis we are facing simultaneously. Since 1970, freshwater populations have declined by 85%. Hydropower dams and operations can have massive impacts on natural river dynamics and processes. Yet, many proposed hydropower plants are still planned in regions with highest levels of freshwater biodiversity and where people live most directly from the riverine ecosystem services.

IUCN Red List assessments assume that dams pose a threat to almost 4,000 aquatic, semi-aquatic and terrestrial species.

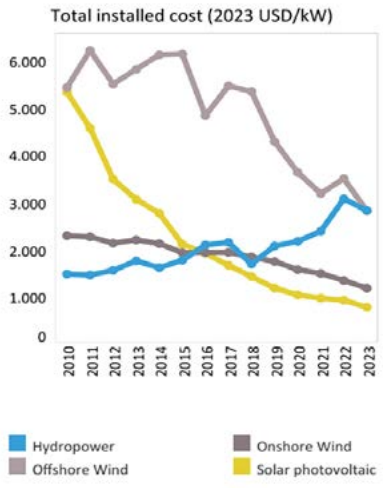
These alarming figures need to be kept in mind when seeking for solutions to averting the climate crisis.

Looking forward

In view of these challenges, holistic approaches at basin level are needed that incorporate alternative renewable energy sources such as wind or solar to ensure energy security and safety while safeguarding biodiversity. These approaches need to be based on regional climate projections and include social and environmental cost-benefit-analyses.

The growing unpredictability of hydrological conditions requires better water management strategies. Existing dams may require retrofitting or changes in operation to reduce risks from flood events. In some regions this might also include water retention measures through nature-based solutions and strategic dam removal. Transboundary cooperation will be essential to manage competing interests and ensure regional stability and long-term sustainability.

The energy sector must urgently invest in resilience, adaptability, diversification of energy sources and nature-friendly solutions to ensure a secure energy future, while contributing to resolving the twin crisis of climate and biodiversity.



Development of energy cost of different technologies

Hydropower – Dam(n)ed by Economics

By Eugene Simonov, Rivers without Boundaries

Hydropower is rapidly losing competitiveness. Due to high cost, it contributed just 1%–5% of new global renewable energy capacity in recent years, according to the International Renewable Energy Agency. In 2023, solar power averaged 4.4 US cents per kWh, while hydropower cost 5.7 cents—30% more. **A decade ago, hydro was four times cheaper than solar.** One reason is the remoteness of remaining unexplored sites, which raises not only construction cost but also **social and ecological impacts, especially for Indigenous communities.** Globally, annual **installation of hydropower went down from 35-40 GW in 2013-15 to 10-20 GW in 2022-24**, while annual installation of solar photovoltaics has risen from 40 GW to 450 GW.

Hydropower projects also take far longer - 5–15 years versus 1–4 for solar or wind - and often far exceed budgets. The Rogun Dam in Tajikistan, for instance, was projected to cost USD 3 billion in 2006. By today, USD 6 billion has been spent on the project, and it still needs more than an additional 6 billion.

Furthermore, **climate change has made hydropower unreliable, with droughts and floods causing seasonal power shortages in countries that rely on hydro, from Zambia to Norway.** According to the International Energy Agency, in 2023 global hydropower generation decreased by over 100 TWh due to unfavorable climate impacts, despite a slight increase in installed capacity. While large dams offer grid-balancing capacity, many countries now manage variability using batteries, pumped storage and other means - often more efficiently and with fewer downsides than conventional hydropower.

The Myth of Clean Hydropower: Dams and Reservoirs Emit Greenhouse Gases and Make Climate Change Worse

By Gary Wockner, Tell The Dam Truth

Thirty years ago, a team of scientists in Brazil made a startling discovery: hydropower dams, long hailed as clean energy, were releasing significant amounts of greenhouse gases. Led by Dr. Philip Fearnside, the researchers began measuring methane emissions at dams and reservoirs in the Brazilian Amazon. Their findings were shocking—some dams emitted more methane than coal-fired power plants producing the same amount of electricity.

Why do dams and reservoirs emit greenhouse gases?

The answer lies in the basic biology of decomposition. When vegetation, sediment, and organic material are trapped in a reservoir, they break down underwater without oxygen, a process called "anaerobic decomposition", releasing both carbon dioxide and methane. This natural process is dramatically intensified in dam and reservoir systems that are not natural lakes. Methane has a warming power over 80 times higher than carbon dioxide in the short term and is thus a particularly dangerous greenhouse gas. Conversely, when vegetation decomposes in the presence of air, it is called "aerobic decomposition", and it only releases smaller amounts of carbon dioxide.

Dam and reservoir greenhouse gas emissions are often worse where:

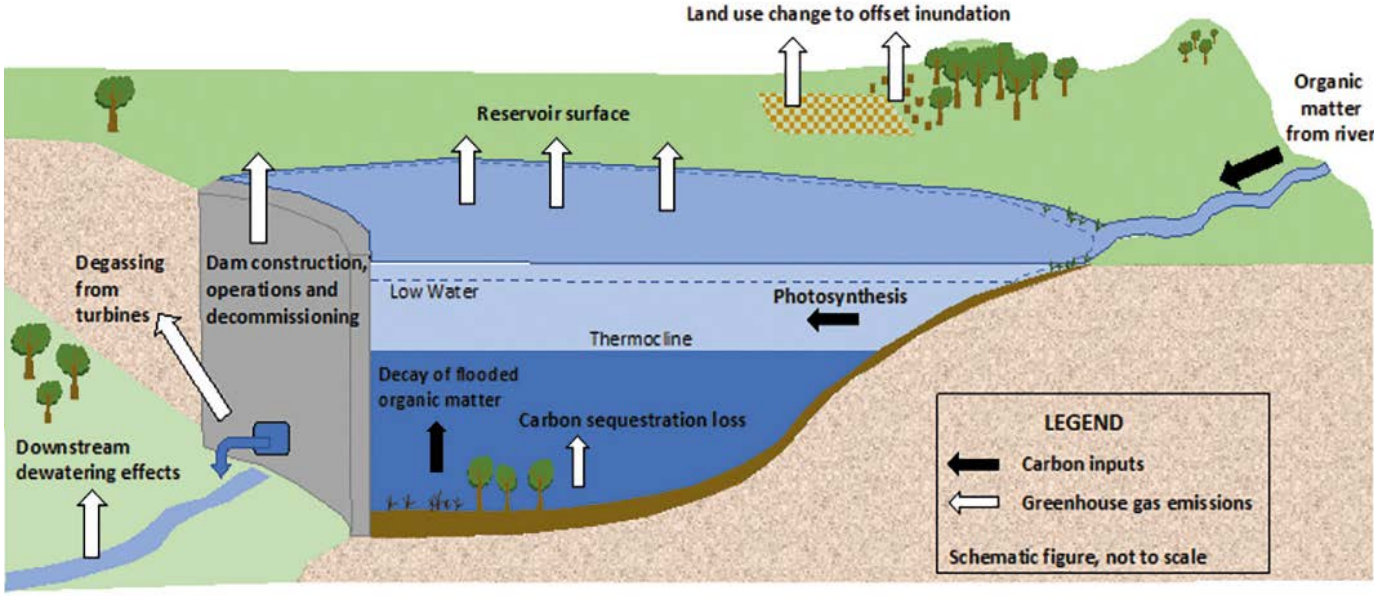
- The dam is bigger and the reservoir is larger, and especially where the surface area of the reservoir is larger;
- The weather is warmer and wetter, and the water temperature of the reservoir is warmer;
- The initial flooding of the landscape involves large areas of vegetation;
- More vegetation, sediment, agricultural pollution or human wastewater and stormwater flow into the reservoir;
- The reservoir's water level goes up and down on a seasonal or cycle or with hydropower operation, causing vegetation to grow on the dry banks of the reservoir, and then become submerged when the reservoir level rises causing that vegetation to drown and decompose;
- The reservoir is newer and the landscape more recently flooded;
- The dam facility diverts a significant amount of water out of the river causing downstream dewatering of wetland areas.

Struggles to recognize dams' climate harms

Since 1974, more than 770 peer-reviewed scientific studies describe greenhouse gas emissions caused by dam and reservoir projects, including those generating hydropower. Some projects built primarily for hydropower production can cause larger emissions than coal-fired power plants producing an equal amount of electricity.

By 2006, the Intergovernmental Panel on Climate Change (IPCC) officially recognized "methane emissions from flooded lands" in national greenhouse gas inventories. A 2016 study by the U.S. Environmental Protection Agency (EPA) found methane emissions from a Midwestern reservoir comparable to those in Brazil, underscoring that this problem wasn't confined to tropical regions.

Also in 2016, an international team of scientists synthesized dozens of studies from around the planet indicating that methane emissions from dams and reservoirs have been widely ignored and dramatically under-estimated. The study, published in Bioscience, made interna-



Emissions pathways in hydropower facilities

How to accurately measure greenhouse gas emissions from dams

In 2023, an organization named "Tell The Dam Truth" created a comprehensive modeling tool to estimate greenhouse gas emissions from dam/reservoir facilities over their lifetime. The "All-Res Modeling Tool" includes:

- Construction;
- Facility operations and maintenance;
- Facility decommissioning;
- Reservoir surfaces;
- Degassing methane through hydropower turbines and non-hydropower bypasses and spillways;
- Carbon leakage: land use changes away from the reservoir, including deforestation and vegetation changes, to replace inundated farmland, grazing land, and homes;
- Land use changes beneath the reservoir, including loss of carbon sequestration by vegetation that becomes inundated and emissions from anaerobic decay of that vegetation, as well as the lost ecosystem function of future carbon sequestration in the inundated former forest;
- Downstream effects caused by altered river hydrographs and reductions in river flows, including carbon loss from dewatering of wetlands, riparian forests, and estuarian ecosystems.

tional news and posited that the IPCC needs to revise its calculations and include dams and reservoirs' significant emissions in climate change scenarios.

Finally, in a game-changing policy directive in 2022, the U.S. Environmental Protection Agency (EPA) began reporting reservoir surface GHG emissions to the United Nations Framework Convention on Climate Change, using guidelines from the Intergovernmental Panel on Climate Change (IPCC). This EPA reporting set the precedent for GHG reporting in the U.S. during dam permitting and re-licensing processes and set a benchmark that all countries in the world should follow.

The Global Expansion of a Dangerous Myth

Despite the mounting science, dam construction continues to accelerate. Governments worldwide still promote hydropower as a clean energy source, including on some of the wildest and most pristine rivers on the planet. In Eastern Europe's Balkans alone, 2,700 new dams are planned—each one pitched as part of the fight against climate change.
This narrative is not only outdated but dangerous. As scientific evidence piles up, it becomes increasingly clear that hydropower can worsen the climate crisis rather than mitigate it.

The Way Forward

The global river protection movement now faces a critical challenge: countering the myth of clean hydro with hard science, targeted advocacy and public education. Recognizing dams as a major source of greenhouse gas emissions is essential to shaping effective climate policy. If the goal is to stabilize the climate, we must stop building new dams and start removing the ones we can. Free-flowing rivers are not only ecological treasures - they are climate solutions.

Climate Banking on Dams: How Development Banks Back Problem Projects

By Eugene Simonov, Rivers without Boundaries

Despite rising costs, high risks and more and more research questioning their climate benefits, big hydropower projects are still getting billions in public funding from development banks. Why? Because under new rules, developed by the banks themselves, for aligning lending with the Paris Climate Agreement, they can easily label these projects as "climate-friendly"—even when they're not. For example, "rehabilitation and desilting" of existing dams is categorically labeled as "aligned", without further assessment of alternatives.

New hydropower projects are assessed under the so-called "joint methodological principles" developed in 2023. Crucially, under these principles, new projects can be deemed "aligned" with mitigation goals simply because a country includes them in its climate plan - regardless of their actual sustainability.

The Case of the Rogun Dam

One major example is the Rogun Dam on the Vakhsh River in Tajikistan, which recently received a USD 350 million grant from the World Bank and may now get a billion more in loans from ten other finance institutions. The bank claims the dam will reduce emissions across Central Asia. But these benefits are based on assumptions that may never come true, like other countries switching from coal to electricity from Rogun 15 or 20 years from now, when the giant reservoir is finally filled.

Banks also say Rogun will help with climate adaptation, like flood control or water storage. But these claims are not backed by clear evidence, and they ignore serious risks for people and nature downstream the hydropower cascade to which Rogun belongs.

Nearly 8,000 people have already been displaced to build Rogun, and 52,000 more face the same threat. It threatens river ecosystems, including a UNESCO World Heritage site, and risks worsening seasonal water shortages for millions in downstream countries like Uzbekistan, Turkmenistan, and Afghanistan. Afghanistan actively protested financing of the dam, but the World Bank turned a deaf ear on that. There is no agreement on emergency management or environmental flows, meaning the releases of water needed to flow downstream to keep the ecosystem alive. Additionally, greenhouse gas emissions from the Rogun reservoir will likely have a similar level of emissions per unit of electricity produced to Tajikistan's current grid, so the project would not bring improvement. And it will lock Tajikistan's energy system in 95% reliance on one source of electricity – the Vakhsh hydropower cascade – for decades to come. This will make the country more vulnerable to climate fluctuations and failure of a single source of electricity and thus perpetuate winter energy blackouts.

The economic rationale is equally shaky. The dam's estimated cost has ballooned to over USD 12 billion, requiring electricity tariff hikes of 16% annually. This hits the poor hardest, pushing more households toward coal and wood, worsening local health and environmental conditions. And with completion not expected until 2040, the project delays faster, cheaper renewable alternatives across Central Asia.

Another way is possible

A study by the Rogun Alert CSO Coalition exposed how the 2023 environmental and social impact assessment failed to explore viable alternatives. The coalition compared the current "highest dam in the world" model with seven alternative scenarios—featuring various smaller dam heights and added solar—under the same USD 6.4 billion budget that was originally estimated for completing Rogun. Each scenario was assessed across six criteria, including timely GHG reduction, energy access, costs, resettlement numbers, and social/environmental risks downstream of the hydropower cascade.

Results showed that lower-dam, solar-heavy scenarios outperformed the base case on nearly every measure. Even the option to decommission the parts of the dam already built ranked more favorably than the full-scale buildout. Yet none of these alternatives were seriously considered by financiers.

In conclusion, the case of Rogun reveals how MDBs use climate frameworks to justify megaprojects without fully evaluating alternatives or acknowledging serious social and ecological consequences. By prioritizing large-scale infrastructure over diversified, locally adapted renewable strategies, MDBs risk locking countries into outdated and harmful energy paths—undermining the very climate goals they claim to support.

Construction site for Rogun, 2016

Hydropower and Carbon Markets: Offsetting Responsibility

By Lisa Kadel, CounterCurrent

Carbon markets under **Article 6 of the Paris Agreement** are supposed to help reduce emissions by allowing countries to "offset" their pollution through projects elsewhere. Countries or companies can register projects that claim to reduce or avoid emissions and earn certificates for them which they then sell. Other emitters can buy the certificate and claim the emissions reduction as their own. But in reality, these markets often fail to cut emissions and **undermine real climate action** while allowing polluters to delay meaningful change. The inclusion of large hydropower projects shows just how broken the system is. Under the Clean Development Mechanism, the predecessor of Article 6, 30% of all projects registered were hydropower projects.

Large dams are far from climate-friendly. Reservoirs, especially in tropical regions, emit large amounts of **methane,** a potent greenhouse gas. Yet these emissions are rarely counted. Many hydropower projects would have been built anyway, meaning their carbon credits don't represent real climate gains – an issue common for many types of offset projects. Worse, dams often displace communities and destroy ecosystems. For example, the Barro Blanco dam in Panama forcefully displaced Indigenous Peoples, violating their right to free, prior and informed consent. Being able to gain carbon credits for their projects gives companies an additional profit motive to build hydropower and ignore or downplay the harms. It's a symptom of a system that rewards false solutions instead of promoting real climate justice.

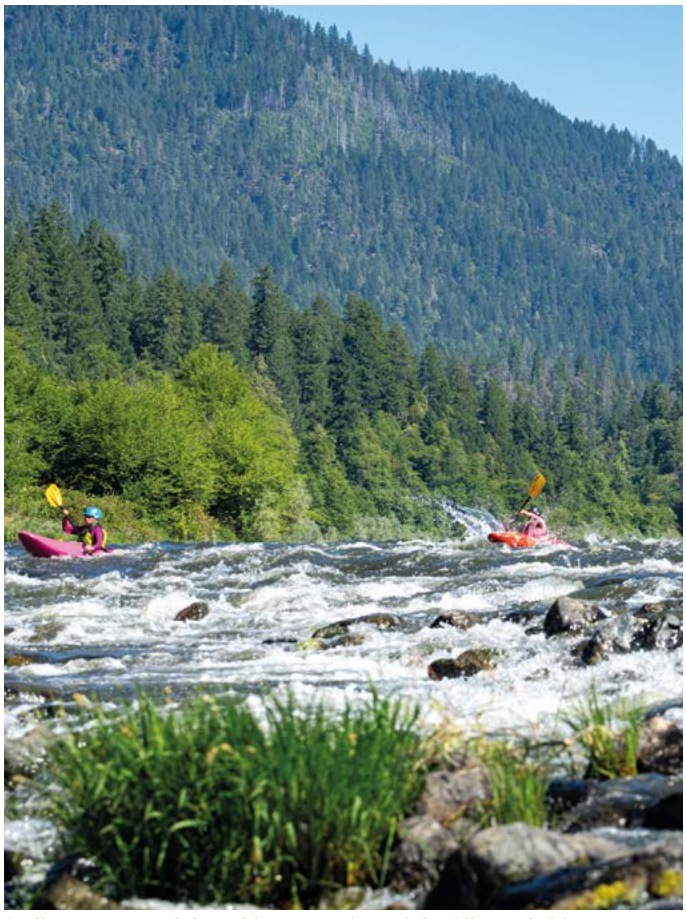
The Power of Free-Flowing Rivers: Restoring Life, Justice, and Climate Resilience

By Hayley Stuart, Ríos to Rivers

This year marks a powerful turning point in the global struggle for river justice. In July 2024, the largest dam removal in world history was completed on the Klamath River, a vital lifeline flowing through Indigenous territories in Northern California and Southern Oregon. For the first time in over a century, salmon are swimming upstream again. Sacred places once drowned beneath stagnant reservoirs are reemerging. And communities—particularly the Yurok, Hoopa, Karuk, and Klamath Tribes—are reconnecting with their river in ways not possible for generations.

The story of the Klamath is not just one of ecological restoration; it's a story of Indigenous leadership, intergenerational organizing, and international solidarity. It's also a signal to the world: free-flowing rivers are critical to our climate future, and dam removal is not only possible, but necessary.

At Ríos to Rivers, we work with river communities around the world to elevate the lived experience and ancestral knowledge of youth who have inherited the consequences of dam building—and who are leading movements to undam and protect what's left. Through our collaboration with the **Rivers for Climate Coalition and its UnDam the UN campaign,** we advocate for rivers to be recognized not as simple systems whose most important use is generating electricity, but as dynamic, life-giving systems whose value goes far beyond megawatts.



Indigenous youth kayaking a section of the Klamath River

Why Free-Flowing Rivers Matter

Free-flowing rivers are keystone systems; meaning that their health and the health of the keystone species within them are valuable indicators and influencers of the health of surrounding ecosystems. They provide clean water, nourish ecosystems, recharge aquifers, sustain fisheries, transport nutrients, and support diverse cul-

tural and spiritual traditions. In many places, they are the original highways of commerce and migration. Yet today, just over one-third of the world's long rivers remain free-flowing.

The ecological costs of damming rivers are well-documented: disrupted sediment transport, blocked fish migrations, declining biodiversity, and collapsing food webs. And as we face the accelerating impacts of the climate crisis, it is becoming clearer than ever that damming rivers is a false climate solution.

Hydropower has long been touted as "clean" energy, yet it comes at a high carbon cost. Reservoirs—especially in tropical regions—are major emitters of methane, a potent greenhouse gas. As the planet warms, so too does the instability of hydropower, with droughts drying up reservoirs and floods putting aging infrastructure at risk of catastrophic failure.

In contrast, **free-flowing rivers are climate allies.** They build resilience by allowing natural systems to adapt. They maintain cooler temperatures that support aquatic life. They buffer extreme weather. And when healthy, they sequester carbon in floodplains and wetlands.

The Klamath as a Blueprint for the Future

The removal of four dams on the Klamath River was not a decision made lightly. It took decades of grassroots pressure, legal battles, cultural revitalization, and unlikely coalitions. But the result is a powerful precedent: Indigenous communities, backed by science and supported by a diverse movement, can lead large-scale ecological restoration.

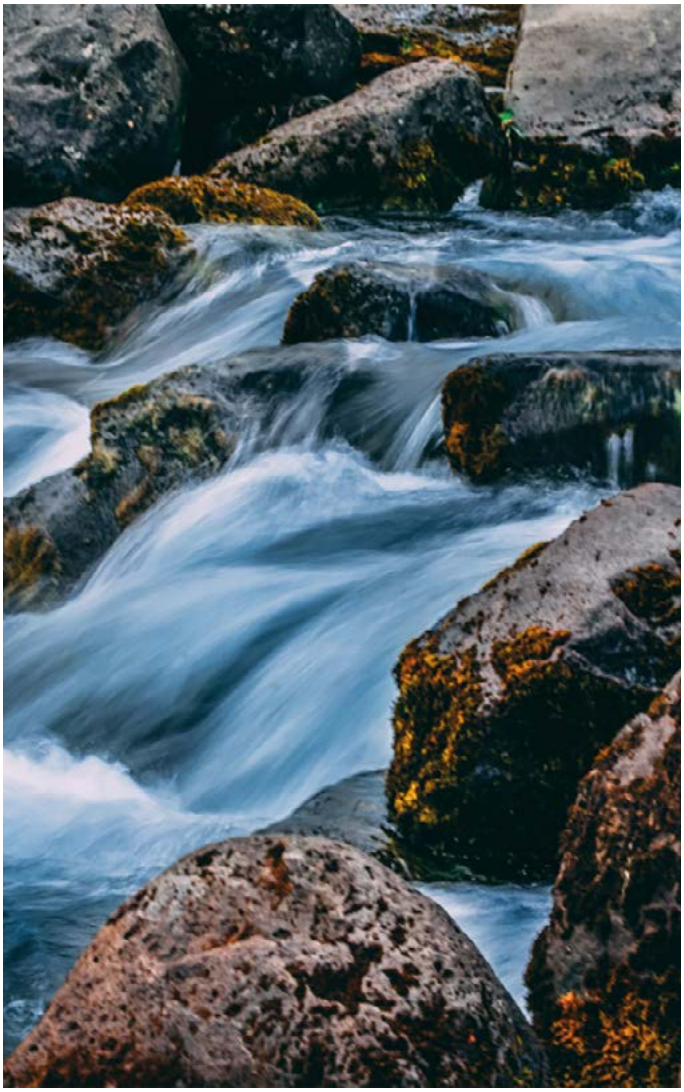
This success story offers a template for action:

~ Invest in Indigenous leadership and rights. Many of the world's remaining free-flowing rivers are protected because they flow through Indigenous territories. Supporting Indigenous sovereignty and stewardship is one of the most effective ways to safeguard rivers.

~ Stop financing new dams. Development banks and climate funds must reject hydropower as a green energy source and instead support decentralized, low-impact renewable energy systems that empower local communities without sacrificing rivers.

~ Recognize dam removal as climate adaptation. Removing outdated, dangerous, or unnecessary dams restores natural resilience. Governments and funders should include dam removal and river restoration in their national adaptation plans.

~ Include rivers in climate negotiations. Rivers are still largely absent from the UNFCCC process. We must demand their inclusion—not as carbon offsets, but as ecosystems vital to life, culture, and climate stability.



A Global UnDam Movement

Momentum is building. From the Balkans to the Amazon, from the Mekong to the Andes, river defenders are rising to challenge the hydropower industry's claims. The UnDam campaign, which we proudly support, is connecting grassroots efforts and raising international visibility around the urgent need to protect and restore rivers.

We urge decision-makers, NGOs, and activists to reject hydropower as a climate solution and commit to a truly sustainable path. That path must be grounded in ecological integrity, Indigenous knowledge, and the sacred understanding that rivers are more than water—they are the arteries of life.

Let the Klamath flow be a call to action: it's time to let rivers run free.

Find the UnDam the UN Campaign at
www.undam.org and sign the petition!

No Future in Flooding: Rethinking Hydropower and Our Energy System

By Lisa Kadel, CounterCurrent

Twenty-five years after the World Commission on Dams published its groundbreaking report, the world finds itself once again at a crossroads. Despite decades of evidence about the social and ecological costs of large dams - displacement of communities, destruction of ecosystems, violation of Indigenous rights, unreliable energy production and high cost overruns - many governments and institutions are still doubling down on hydropower as a "green" solution to the climate crisis.

But the truth is: hydropower, especially in the form of large dams, is not a sustainable path forward. If we are serious about addressing the climate crisis while also advancing justice, we must resist false solutions and instead push for energy systems that are socially just, ecologically sound, and genuinely sustainable.

Beyond Dams: What Real Climate Solutions Look Like

Climate solutions must be more than carbon calculations. They must uphold human rights, preserve ecosystems, and prioritize the needs and knowledge of local communities. That means moving away from mega-dams and other centralized, top-down energy projects that concentrate power, both politically and literally, in the hands of corporations or distant authorities.

Instead, we need energy systems that are:

~ **Rights-based:** Respecting the rights of Indigenous peoples and other marginalized communities, including the right to free, prior, and informed consent.

~ **Nature-compatible:** Protecting and restoring river ecosystems, not drowning them under reservoirs.

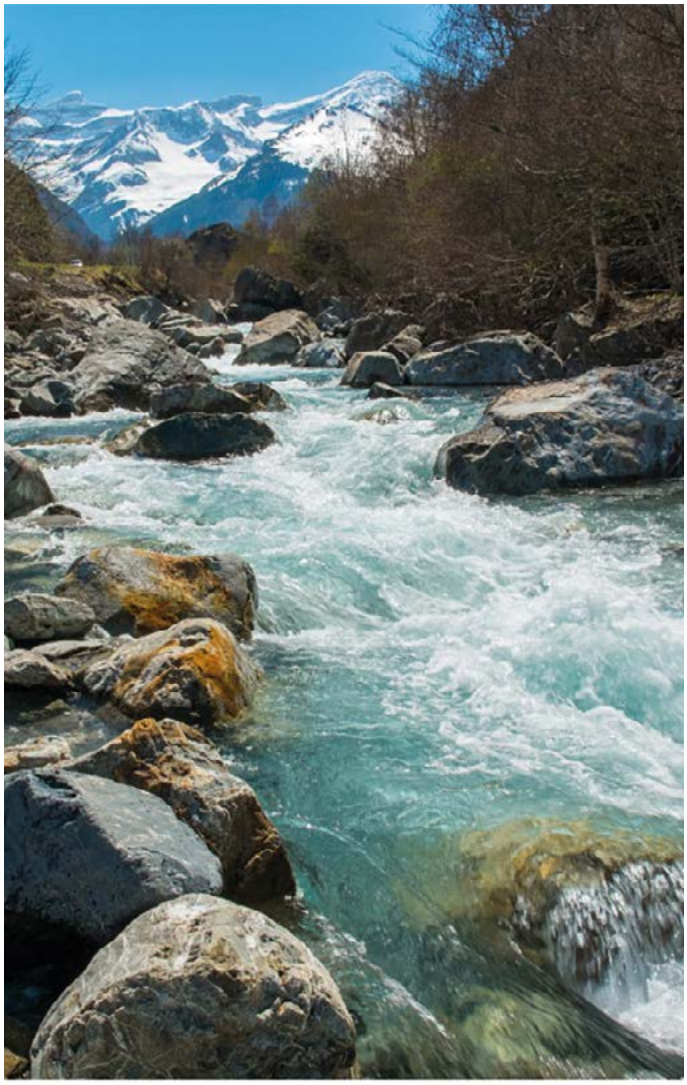
~ **Reliable and resilient:** Community-based, decentralized renewable energy can often outperform large-scale hydropower in terms of affordability, flexibility, and reliability.

~ **Democratically controlled:** Energy production should serve people, not profits.

First: Change the Way We Approach Hydropower

In the short term, we must challenge the current framing of hydropower in climate and development policies. This includes:

~ **Prioritizing river health over profit:** Our rivers are lifelines for biodiversity, local livelihoods, and cultural heritage. Instead of building new mega-dams, we should invest in river restoration. This can include dam removals where appropriate.



~ **Supporting community-owned energy:** Decentralized, renewable energy solutions like micro-hydro, solar, and wind systems managed by local communities can deliver reliable electricity without the environmental and social costs of mega-projects.

~ **Stopping harmful climate finance:** Right now, climate finance mechanisms still allow large hydropower projects to qualify for carbon credits and other forms of funding. This must end. Public and private climate funds should not bankroll dams that destroy ecosystems and violate rights.

The UN and other international bodies as well as national governments and financial institutions must play their part by setting stricter safeguards and stopping finance for unsustainable hydropower.

Second: Rethink the System That Fuels Unsustainable Energy

Beyond hydropower, we need to confront the structural problems driving energy injustice. This means fundamentally rethinking not just how we produce energy, but also how we consume and distribute it-and who benefits.

Several key shifts are needed:

~ **Efficiency and sufficiency, not just more renewables:** While scaling up renewable energy is important, we must also reduce overall energy consumption, especially in high-consumption countries. Energy efficiency and sufficiency policies can drastically reduce demand, making it easier to meet needs with low-impact renewables.

~ **Technology transfer:** Too often, clean energy technologies are locked behind patents or priced out of reach for countries in the Global South. Governments and multilateral institutions must support open access and meaningful technology transfer so that all countries can build sustainable energy systems.

~ **Benefit-sharing models:** When renewable energy projects are built, local communities must have a share in the benefits. This includes not only jobs and services, but also ownership, revenues and decision-making power. Benefit-sharing can help ensure that clean energy doesn't come at the cost of social justice.

~ **Corporate accountability:** Companies involved in energy production must be held accountable for environmental damage and human rights abuses they have caused or contributed to throughout their supply chains. Transparency, regulation, and legal mechanisms are all necessary tools.

~ **Wealth redistribution:** A just transition requires resources. We need to tax the ultra-wealthy, cut unjust debts owed by Global South countries, and re-invest that wealth in public goods, sustainable infrastructure, and community-led initiatives. This is not just about climate—it's about justice.

A Watershed Moment

The 25-year anniversary of the World Commission on Dams offers a moment to reflect - but also to act. The Commission's legacy reminds us that development can be done differently, and that people's voices must be at the center of energy decisions.

Today, we face an even more urgent climate crisis. But we also have the tools and the knowledge to build something better. Let's stop flooding our future with false solutions and instead invest in real alternatives that honor rivers, respect communities, and help us all thrive within planetary boundaries.

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Rivers
Rights
Resistance

Hydropower and the Legacy of the World Commission on Dams

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www.gegenstroemung.org
c/o
Institut für Ökologie und Aktions-Ethnologie e.V. (INFOE)
Melchiorstr. 3
D-50670 Köln
www.infoe.de

International Rivers
344 20th Street
Oakland, 94612 USA
www.internationalrivers.org

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