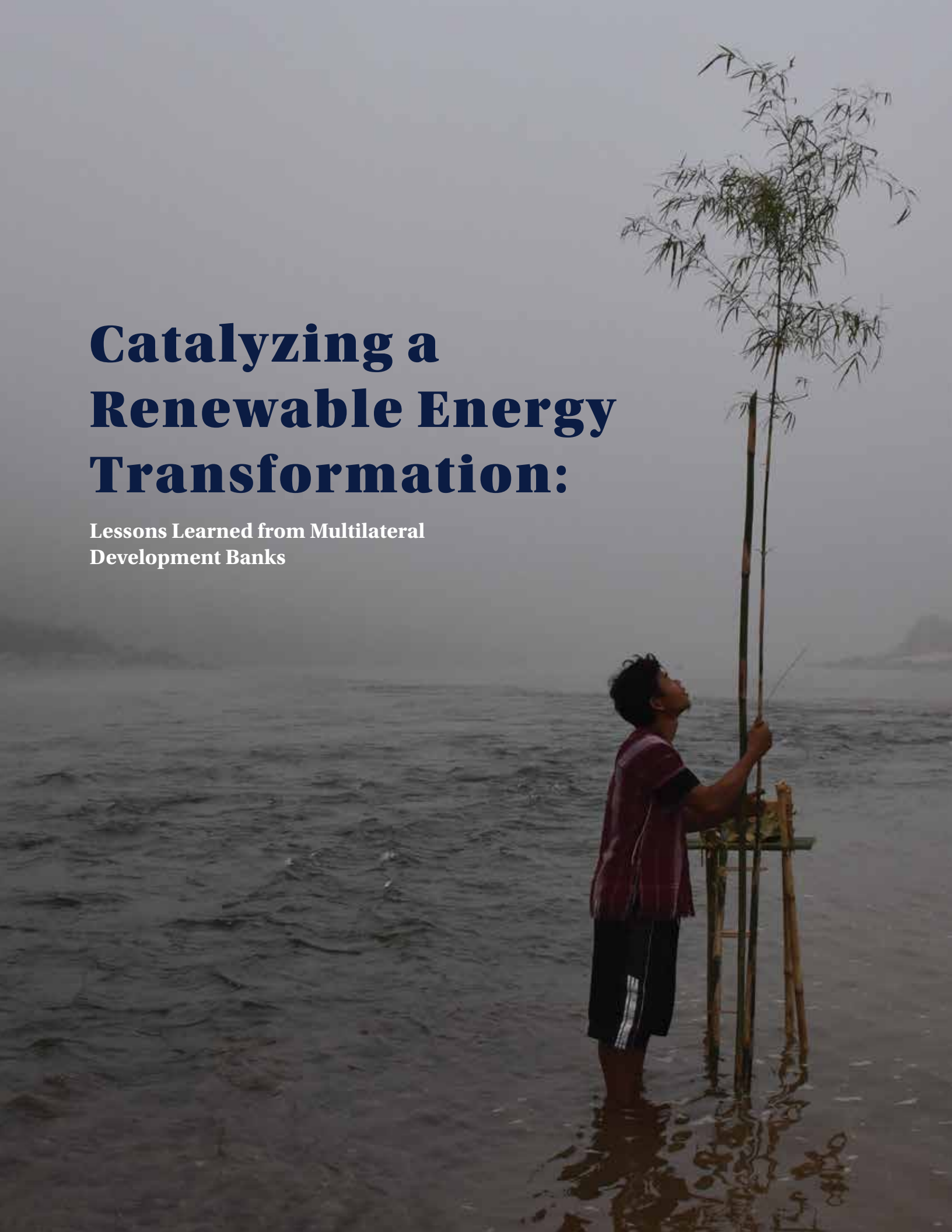


Catalyzing a Renewable Energy Transformation:

Lessons Learned from Multilateral Development Banks

About International Rivers

International Rivers protects rivers and defends the rights of communities that depend on them.

We seek a world where healthy rivers and the rights of local river communities are valued and protected. We envision a world where water and energy needs are met without degrading nature or increasing poverty, and where people have the right to participate in decisions that affect their lives.

We are a global organization with regional offices in Asia, Africa and Latin America. We work with river-dependent and dam-affected communities to ensure their voices are heard and their rights are respected. We help to build well-resourced, active networks of civil society groups to demonstrate our collective power and create the change we seek. We undertake independent, investigative research, generating robust data and evidence to inform policies and campaigns. We remain independent and fearless in campaigning to expose and resist destructive projects, while also engaging with all relevant stakeholders to develop a vision that protects rivers and the communities that depend upon them.

This scoping study/briefing paper was carried out as part of the Transboundary Rivers of South Asia (TROSA) program. TROSA is a regional water governance program supported by the Government of Sweden and managed by Oxfam. International Rivers is a regional partner of the TROSA) program. Views and opinions expressed in this report are those of International Rivers and don't necessarily reflect those of Oxfam, other TROSA partners or the Government of Sweden.

Contributing authors: Joshua Klemm with Kate Horner and Michael Simon
Editor: Melanie Scaife
Design: Cathy Chen

Published June 2018

International Rivers
1330 Broadway, #300
Oakland CA 94812
Phone: +1 510 848 1155

www.internationalrivers.org

INTERNATIONAL RIVERS
people • water • life

OXFAM

TROSA
TRANS-BOUNDARY RIVERS OF SOUTH ASIA

Sweden
Sverige

TABLE OF CONTENTS

INTRODUCTION

A clean energy transformation is urgently needed to mitigate the worst effects of climate change and to deliver power to the millions of people who currently lack it. But how do we go about it, and where does hydropower fit in?

The 2015 global commitment to the Sustainable Development Goals (SDGs) marks out a clear trajectory for achieving equitable and sustainable global development. SDG 7 calls for a substantial increase in the share of renewable energy in our energy mix and to achieve universal access to modern energy. SDG 6 sets an important 2020 target to protect and restore water-related ecosystems, among them wetlands, rivers, aquifers, and lakes. The Paris Climate Agreement, also adopted in 2015, identifies the importance of global finance for mitigation of and adaptation to climate change, and for establishing pathways toward lowering greenhouse gas emissions and ensuring development is climate resilient.

Development finance institutions have an important role to play in delivering this transformation and helping developing countries meet their energy, climate, and poverty alleviation goals. Traditional development banks like the World Bank and Asian Development Bank (ADB) can help fill the gaps but lack the resources on their own. A new suite of actors has recently emerged with the potential to scale up development finance in Asia and beyond. The Asian Infrastructure Investment Bank (AIIB) was established in 2015 to channel needed infrastructure finance into the region; the New Development Bank (NDB) was founded in 2014 as the financing arm of BRICS countries;[1] and the Green Climate Fund (GCF) was created in 2010 as the primary climate finance vehicle of the United Nations. These emerging actors can play a potentially catalytic role in ushering in this energy transformation.

1. BRICS is the acronym for an association of five major emerging national economies: Brazil, Russia, India, China and South Africa.

The year 2012 has been described as the "inflection point" for renewable energy, at which point more renewable energy capacity has been installed each year than from conventional sources. Hydropower accounts for the majority of what is classified as renewable energy capacity currently installed globally, but the installation of new hydropower has declined each year since 2013 and has since been eclipsed by the explosive growth of wind and solar power.[2]

Hydropower is falling out of favor for good reason. Energy planners are aware of the growing body of evidence that hydropower projects routinely cost more than anticipated, making them prohibitively expensive.[3] The well-documented negative impacts of large dams on communities and ecosystems elevate projects' reputational risks, and have been decisive in the cancellation of high-profile projects.[4] Meanwhile, the power output from large hydropower dams is in decline,[5] a trend exacerbated by increased droughts and floods disrupting flow regimes. The situation is likely to deteriorate further as climate change wreaks havoc on river hydrology, further worsening an already bleak financial risk outlook for large hydropower projects.

These are just some of the key factors that have prompted development finance institutions to shift their lending portfolios away from large

2. International Renewable Energy Agency (IRENA), *Renewable capacity statistics*, IRENA, Abu Dhabi, 2018, viewed 30 May 2018, <http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Mar/IRENA_RE_Capacity_Statistics_2018.pdf>.
3. A Ansar et al., 'Should we build more large dams? The actual costs of hydropower megaproject development', Energy Policy, March 2014, pp. 1–14, viewed 30 May 2018, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2406852>.
4. For example, the São Luiz do Tapajós in Brazil, the Inambari Dam in Peru, and HidroAysen in Chile.
5. D Gielen, 'ReMap 2030 – global renewable energy outlook', International Renewable Energy Agency presentation at the World Hydro Congress, Beijing, 20 May 2015, slide 7, viewed 30 May 2018, <https://www.hydropower.org/sites/default/files/publications-docs/Dolf-Gielen-IRENA-2050-by-2050-World-Hydropower-Congress.pdf>.

hydropower and toward new renewables such as wind and solar power.[6] This is significant given the prominent role that development finance institutions have historically played in supporting the construction of large dams around the world. The World Bank was once the world's principal financier of large dams in developing countries, having invested more than $100 billion in large dams.[7] The ADB, a relative newcomer to the sector, invested $1.5 billion in dams in Asia between 1990 and 2006.[8]

If emerging development finance institutions are to succeed in meeting their objectives, they must take stock of the risks, failings, and lessons learned from past approaches. Indeed, the AIIB in its Energy Sector Strategy cites the need to incorporate "lessons learned from other [multilateral development banks] operating in Asia and elsewhere" to inform its approach to the hydropower sector.[9]

Each of the AIIB, NDB and GCF has an explicit mandate to make transformational investments to achieve sustainable development. However, they appear poised to replicate the mistakes of old, missing the opportunity to leapfrog antiquated technologies and risking wasteful, harmful spending. All, to varying degrees, have expressed their intent or willingness to finance large hydropower projects: in 2017, GCF approved its first hydropower investment and NDB invested in a hydropower project in Russia, and—at the time of writing—AIIB is considering its first greenfield hydropower investment.

6. For the purposes of this paper, "new renewable energy" aligns with the World Bank's classification, which includes wind, solar, biomass, and geothermal energy but excludes hydropower with installed generation capacity of 10 MW and above. See <http://siteresources.worldbank.org/INTENERGY2/Resources/WBGDefinitions.pdf>.
7. R Goodland, 'Viewpoint – The World Bank versus the World Commission on Dams', *Water Alternatives*, Vol. 3, Issue 2, Water Alternatives Association, Montpellier, 2010, pp. 384–398, viewed 30 May 2018, <http://www.water-alternatives.org/index.php/volume3/v3issue2/99-a3-2-22/file>.
8. Asian Development Bank (ADB), *Energy policy, ADB policy paper,* ADB, Manila, June 2009, p. 20, viewed 30 May 2018, <https://www.adb.org/sites/default/files/institutional-document/32032/energy-policy-2009.pdf>.
9. Asian Infrastructure Investment Bank (AIIB), *Energy sector strategy: sustainable energy for Asia*, AIIB, Beijing, June 2017, p. 15, viewed 30 May 2018, <https://www.aiib.org/en/policies-strategies/strategies/sustainable-energy-asia/.content/index/_download/aiib-energy-sector-Strategy-2017.pdf>.

These new institutions have emerged at a time when energy systems are undergoing a dramatic shift. As new technologies have become cost competitive, climate change response more pressing, and energy systems smarter, the landscape for financing energy projects in the 21st century is vastly different from that of the last. Changed also is our knowledge of the value of our freshwater systems, and the sensitivity of these systems to over-exploitation and poor governance. While traditional development banks remain behind the curve in assisting the energy transformation, there are some encouraging signs that this is beginning to change.

In the following section we outline the experience of traditional multilateral financiers like the World Bank and ADB in financing hydropower to demonstrate some of the key lessons from their approach. We also explore the positive role that these traditional development financiers are beginning to play in supporting the transition toward new energy options.

As emerging financiers consider opportunities to support energy provision within Asia and globally, it is important that they benefit from the experiences of their peers by internalizing the lessons learned from decades of development bank financing for large dams.

LESSONS LEARNED

Embrace the catalytic role of development finance for new renewable energy

Development financiers can play a catalytic role in spurring increased deployment of new renewables. They can accomplish this by assisting countries to enact regulatory reforms to incentivize investments in new renewables, as well as investing directly in demonstration projects in countries with less mature markets that can catalyze new investments in the sector.

A report commissioned by the United Nations Environment Programme[10] found that investment in large hydro in 2016 declined by 48 percent and has been far exceeded by investment for wind and solar power. In 2016, $226 billion were invested in new wind and solar facilities, compared to just $23 billion for large hydropower.[11]

The World Bank's own lending charts a similar course. Its hydropower investments have dropped precipitously since 2015 as it has reversed its ambitions announced in 2013 to spark a new era of mega-dams. The World Bank has since dropped from consideration several big-ticket dams and canceled $73 million previously approved to develop the Inga 3 Dam in the Democratic Republic of Congo in the face of public criticism and governance concerns. Since 2015, the World Bank has approved only one new hydropower project, though its private sector arm, the International Finance Corporation (IFC), continues to invest in and promote large dams.

At the same time that the World Bank has stepped back from large hydropower, it has stepped up its investments in renewable energy like solar and wind. In 2015, the World Bank's lending for new renewables surpassed its lending for large dams for the first time, including significant investments such as $500 million for rooftop solar in India and a first-of-its-kind concentrated solar plant in Morocco—a demonstration project with strong replicability.

Still, finance for wind and solar remains largely the domain of the private sector. The International Renewable Energy Agency (IRENA) found that private finance accounted for 90 percent of all investment in new renewable energy capacity globally in 2016.[12] The distribution of that investment has been uneven, however. In Southeast Asia, for example, the share of private investment in solar and wind has been modest, with public finance playing a central role. Development banks cannot fulfill the role of the private sector, but they can help incentivize new investments. In Zambia, for example, the World Bank through its "Scaling Solar" program led an auction that yielded among the lowest prices for solar anywhere in the world.

While these shifts are positive, development finance institutions have been slow to proactively identify and support decentralized renewable energy systems. The International Energy Agency indicates that 64 percent of investments toward energy access should be channeled into distributed energy sources such as solar, wind, biomass, and

10. UN Environment, Frankfurt School-UNEP Centre & Bloomberg New Energy Finance, *Global trends in renewable energy investment 2017*, Frankfurt School-UNEP Centre, Frankfurt am Main, 2017, p. 14, viewed 30 May 2018, <http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2017.pdf>.
11. *ibid.*, p. 11.
12. International Renewable Energy Agency (IRENA) and Climate Policy Initiative (CPI), *Global landscape for renewable energy finance 2018*, IRENA and CPI, Abu Dhabi, 2018, viewed 30 May 2018, <https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Jan/IRENA_Global_landscape_RE_finance_2018.pdf>.

micro-hydro.[13] Despite the demonstrated potential for energy access to alleviate poverty, the World Bank and other development banks have largely neglected this critical sector and failed to prioritize energy access in their lending programs.[14]

Development financiers should bring their experience to bear on promoting regulatory reforms that incentivize the greater uptake of new renewables, as well as demonstrate the viability of solar and wind by investing directly in projects in less advanced markets. They should also recalibrate their singular focus on grid-based energy options in favor of distributed renewables that can often make the most lasting positive impact on beneficiaries.

Business-as-usual infrastructure is vulnerable to climate change

Large dams are highly vulnerable to climate change, as river flows are increasingly unpredictable because of changes and extremes in rainfall patterns. On the one hand, more extreme floods bring increased risk of dam failures, while on the other, more frequent droughts are compromising the performance of hydro dams, rendering them economically unviable. The World Bank has noted that "heavy reliance on hydropower creates significant vulnerability to climate change" for many countries, which "may require a policy decision to diversify away from hydropower."[15] Hydro-dependent countries such as Brazil, Zambia, and Ethiopia have already faced severe load shedding—when power is deliberately cut to parts of the country to ensure security of supply—because of persistent drought.

13. International Energy Agency (IEA), *World energy outlook 2011*, Chapter 13, IEA, Paris, 2011, viewed 30 May 2018, <http://www.worldenergyoutlook.org/media/weowebsite/energydevelopment/weo2011_energy_for_all.pdf>.
14. Oil Change International & Sierra Club, S*till failing to solve energy poverty: international public finance for distributed clean energy access gets another "F,"* Oil Change International & Sierra Club, April 2016, viewed 30 May 2018, <https://www.sierraclub.org/sites/www.sierraclub.org/files/uploads-wysiwig/1281%20Energy%20Scorecard_06_web.pdf>.
15. J Ebinger & W Vergara, *Climate impacts on energy systems: key issues for energy sector application*, The International Bank for Reconstruction and Development/The World Bank, Washington D.C., 2011, viewed 30 May 2018, <https://openknowledge.worldbank.org/handle/10986/2271>.

While the World Bank acknowledges these risks, the institution has in many cases deepened countries' over-dependence on hydropower through its lending. The World Bank has, for example, loaned hundreds of millions of dollars for dam construction on the Sanaga River in Cameroon, a country already 90 percent reliant on hydropower. With climate models predicting reduced rainfall in the basin, these projects risk becoming stranded assets.

> **"Heavy reliance on hydropower creates significant vulnerability to climate change."**
>
> — The World Bank, Climate Impacts on Energy Systems

The IFC has led preparation of the Upper Trishuli-1 (UT-1) hydropower project in Nepal, and in 2016 sought $115 million in financing from GCF, justifying the request by citing its climate mitigation potential. The project's cumulative impact assessment notes "increased climate variability, which can affect frequency and intensity of flooding and droughts, could affect Nepal severely in hydroelectric production."[16] Yet despite the already heavy concentration of large hydroelectric power projects on the Trishuli River, the project's environmental flows assessment notes that "potential effects of climate change on flows in the Trishuli River have not been considered in the design of the UT-1 Project."[17] The project's severe vulnerability to climate change poses a significant financial risk to its sponsors and the government, which must guarantee payments regardless of the quantity of power produced.

The IFC ultimately withdrew its request for GCF funding over persistent critiques that the project did not meet the GCF's criteria, including resilience to climate change.

16. *Upper Trishuli-1 (UT-1) cumulative impact assessment*, p. 27, available from the International Finance Corporation's project information portal, <https://disclosures.ifc.org/#/projectDetail/ED/35701>.
17. *Upper Trishuli-1 (UT-1) environmental flows assessment*, p. 9, available from the International Finance Corporation's project information portal, <https://disclosures.ifc.org/#/projectDetail/ED/35701>.

Free-flowing rivers offer mitigation and adaptation benefits

Freshwater ecosystems are among the most biodiverse on the planet. They directly support the livelihoods and nutritional needs of 158 million people,[18] facilitating irrigated agriculture that accounts for 40 percent of the world's crop production.[19] Free-flowing rivers also provide significant and largely unrecognized climate mitigation and adaptation benefits. For example, they sequester 200 million tons of carbon dioxide per year[20] and act as buffers to increasingly serious floods and droughts.

However, the pressures of climate change have reduced freshwater systems' capacities to provide these ecosystem services and climate change benefits. A study assessing changes in flow regimes due to climate change found that "nearly one billion people live in areas likely to require action and approximately 365 million people live in basins almost certain to require action."[21]

Rivers are under further pressure as a result of human development, including the engineering of freshwater environments and their associated transition from natural habitats to industrial waterways. Despite well-documented dangers, more than 3,700 hydropower projects are planned or under construction on the world's rivers. If built, they could block free-flowing rivers by more than 20 percent.[22]

18. P McIntyre, C A Reidy Liermann & C Revenga, 'Linking freshwater fishery management to global food security and biodiversity conservation', *Proceedings of the National Academy of Sciences of the United States of America* (PNAS), US National Academy of Sciences, 8 November 2016, Vol. 113, No. 45, viewed 30 May 2018, <http://www.pnas.org/content/pnas/113/45/12880.full.pdf>.
19. World Water Assessment Programme, '*The United Nations world water development report 3: water in a changing world*', UNESCO, Paris, and Earthscan, London, 2009, viewed 30 May 2018, <http://unesdoc.unesco.org/images/0018/001819/181993e.pdf>.
20. V Galy, B Peucker-Ehrenbrink & T Eglinton, 'Global carbon export from the terrestrial biosphere controlled by erosion', *Nature, international journal of science*, 521, 14 May 2015, pp. 204–207, viewed 30 May 2018, <https://www.nature.com/articles/nature14400>.
21. M Palmer et al., 'Climate change and the world's river basins: anticipating management options', *Frontiers in Ecology and the Environment*, 6, Ecological Society of America, Washington D.C., 2008, viewed 30 May 2018, <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/060148>.
22. C Zarff et al., 'A global boom in hydropower dam construction', *Aquatic Sciences*, Vol. 77, Issue 1, Springer International Publishing, 2015, pp. 161–170.

The World Bank routinely cites the pressing need to mitigate climate change as a key reason for scaling up its lending for large hydro. However, dam reservoirs are a significant source of methane, one of the most potent greenhouse gases. A recent study by researchers at Washington State University confirmed that methane emissions released from dam reservoirs are far greater than previously believed, accounting for 1.3 percent of all human-caused climate change—more than all emissions from Canada.[23] Moreover, the World Bank states "methane emissions from reservoirs must be investigated and embedded in project assessments."[24] However, the World Bank financed the Lom Pangar Dam in Cameroon in the absence of any such assessment despite its 540 km2 reservoir submerging portions of a national park. Plans to clear the densely vegetated reservoir were abandoned after being deemed too costly.

River-basin planning and management strategies at the national and international policy levels that seek to protect free-flowing rivers or ensure well-planned environmental flow regimes from dammed rivers can increase the resilience of riverine ecosystems and populations that are especially vulnerable to climate change.

Water infrastructure and its impacts can cause considerable social and geopolitical conflict

The environmental and social risks that large dams pose are considerable and complex, and in many cases impossible to fully mitigate. Even with sizeable staff and budgets dedicated to assessing and mitigating risks, and long-standing safeguard policies and procedures to manage risk, the World Bank and ADB have struggled to prevent irreversible impacts on communities and the environment. These impacts often entail steep

23. E Sorensen, 'Reservoirs are underappreciated source of greenhouse gases', *WSU Insider,* Washington State University, 28 September 2016, viewed 30 May 2018, <https://news.wsu.edu/2016/09/28/reservoirs-play-substantial-role-global-warming/>.
24. The World Bank, 'Directions in hydropower: scaling up for development', *Water Working Notes*, No. 21, The World Bank, Washington D.C., June 2009, p. 9, viewed 30 May 2018, <http://documents.worldbank.org/curated/en/846331468333065380/pdf/490170NWP0Box31directionshydropower.pdf>.

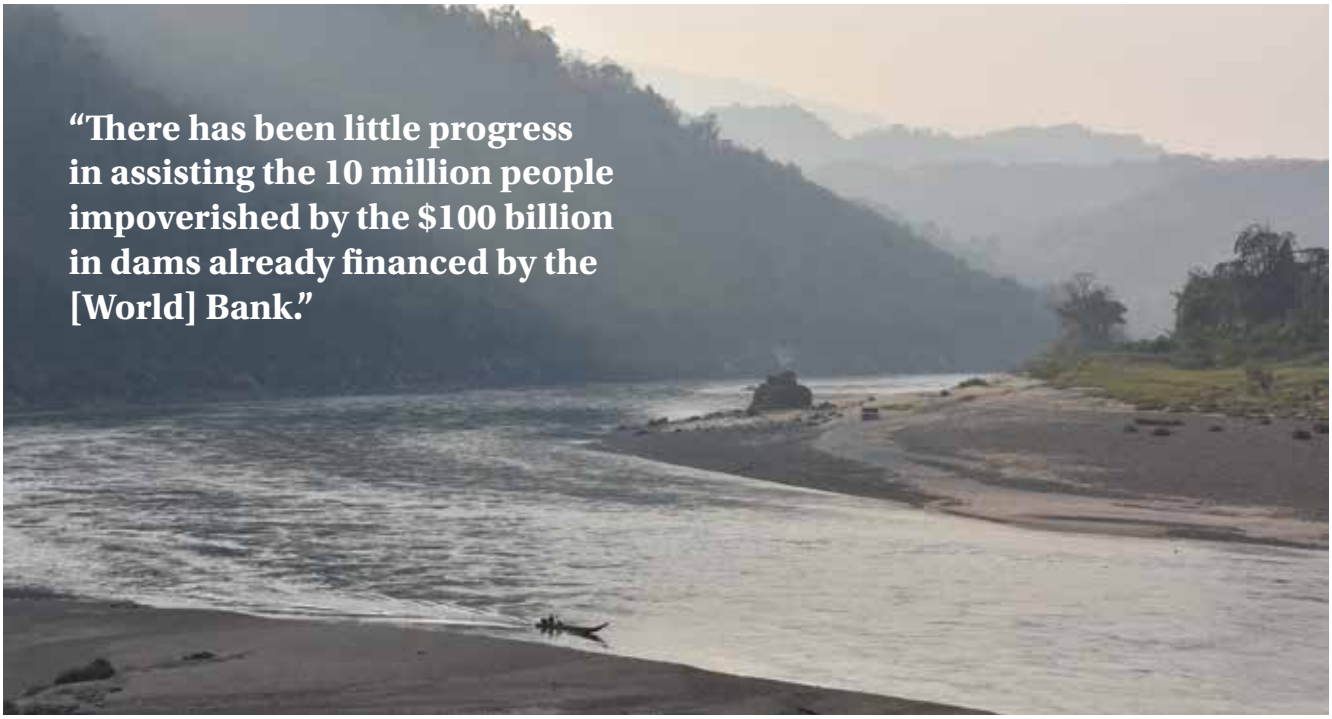
economic losses that are rarely accounted for, and at times must be supplemented through additional loans and grants. They can also have a negative reputational cost for projects' financial backers, and in some instances may prompt financiers to suspend or cancel their projects.

By the turn of the century, large dams had forced between 40 and 80 million people from their lands over the previous six decades, according to the World Commission on Dams.[25] Indigenous, tribal, and peasant communities have been particularly affected. Even where compensation is paid, displaced communities are routinely impoverished all the same, often over generations.[26]

Even though the World Bank was the first among its peers to adopt safeguard requirements governing involuntary resettlement, a former World Bank safeguard specialist wrote in 2010 that "there has been little progress in assisting the 10 million people impoverished by the $100 billion in dams already financed by the [World] Bank."[27] In 1993, the World Bank was forced under considerable public pressure to abandon its investment in the Sardar Sarovar Dam in India, which evicted 350,000 people from their homes and lands. Indeed, the crisis of forced evictions from World Bank-financed dams on the Narmada and elsewhere prompted the World Bank, ADB, and others to withdraw from the sector.

The unfolding case of the Kandadji Dam on the Niger River in West Africa points to the World Bank's continued inability to properly manage the resettlement impacts of its projects. The dam's shallow reservoir is expected to displace as many as 66,000 people, a figure revised upward from a flawed initial estimate of 32,000 people. Civil society campaigning resulted in the World Bank temporarily suspending its loan to the project until the government agreed to conditions that the dam

25. International Institute for Environment and Development (IIED), *Dams and development: a new framework for decision-making — overview of the report by the World Commission on Dams*, Issue Paper 108, IIED, London, December 2001, viewed 30 May 2018, <http://pubs.iied.org/pdfs/9126IIED.pdf>.
26. T Scudder, *The future of large dams: dealing with social, environmental, institutional and political costs*, Earthscan, London, 2005.
27. R Goodland, pp. 384–398.



would be built in increments to make the resettlement process more manageable. Still, the project's viability is undermined by the lack of cultivable land available to resettled populations, who face the prospect of having to eke out a living well away from the fertile banks of the river that have sustained them for centuries. The proposed dam is in a region already beset by migration and conflict issues, which are likely to be exacerbated by large-scale dam-induced displacement.

Estimates suggest that as many as 470 million people living downstream of dams have suffered negative impacts from changes in river flow,[28] from steep declines in fisheries to the erosion of fertile river deltas vital for agriculture. While the World Bank and ADB put great store in their safeguard protections to manage the impacts of dams, in both policy and in practice they fail to address dams' inevitable impacts downstream. This stems in part from weak safeguard policy requirements, which permit dams to be designed and operated without ensuring sufficient flows to sustain riverine ecosystems and fail to require that downstream communities be adequately consulted or fully compensated. It also speaks to the weaknesses, and the prevalence, of planning project by project without the benefit of basin-wide plans or consideration of strategic environmental assessments or cumulative impact assessments.[29]

The downstream impacts of dams have also been at the heart of tensions and often intractable political disputes between countries. Vietnam has been a vocal opponent of dams being built and planned on the Mekong mainstream because of their expected impacts on the Mekong Delta, one of the key agricultural hubs of Asia, and Egypt has strenuously objected to and threatened military action over Ethiopia's Grand Renaissance Dam under construction on the Nile. These tensions can pose significant risks to planned investments: in 2009, the World Bank withdrew its plans to fund the Gibe III Dam in Ethiopia and canceled ongoing studies over persistent concerns regarding the project's impacts downstream on Kenya's Lake Turkana.

28. B Richter et al., 'Lost in development's shadow: the downstream human consequences of dams,' *Water Alternatives,* Vol. 3, No. 2, 2010, pp. 14–42.

29. For guidance on conducting cumulative impact assessments in emerging markets, see the IFC's *Good practice handbook on cumulative impact assessment and management,* available at <https://www.ifc.org/wps/wcm/connect/3aebf50041c11f8383b-a8700caa2aa08/IFC_GoodPracticeHandbook_CumulativeImpactAssessment.pdf?MOD=AJPERES>.

CONCLUSION AND RECOMMENDATIONS

Multilateral development finance for large dams is in a distinct downswing as institutions like the World Bank and ADB reassess the risk appetite of their lending portfolios. Still, their decades of experience in the sector help illustrate some key lessons of benefit to financial institutions considering investing in hydropower.

1. Free-flowing rivers provide extraordinary climate and livelihoods benefits. The multitude of values provided by rivers, from fisheries and agriculture to ecosystem services and climate adaptation, should be assessed and prioritized.
2. Infrastructure and its impacts cause considerable social and environmental harm and can contribute to geopolitical conflict. Development finance institutions have a poor track record in managing these risks on a site by site basis and should move toward project and policy financing that lessens these risks and impacts overall.

To mitigate risks and make progress toward meeting the Sustainable Development Goals, financing institutions can:

3. Require, and fund, cumulative impact assessments and basin planning that facilitate more comprehensive valuation of rivers and healthy watersheds. These should incorporate robust risk assessments that inform how river basins and water resources are managed to deliver multiple values for diverse stakeholder groups.
4. Identify catalytic investments in new renewables, particularly investments that emphasize and enable electricity access for the rural poor who are not connected to the grid.

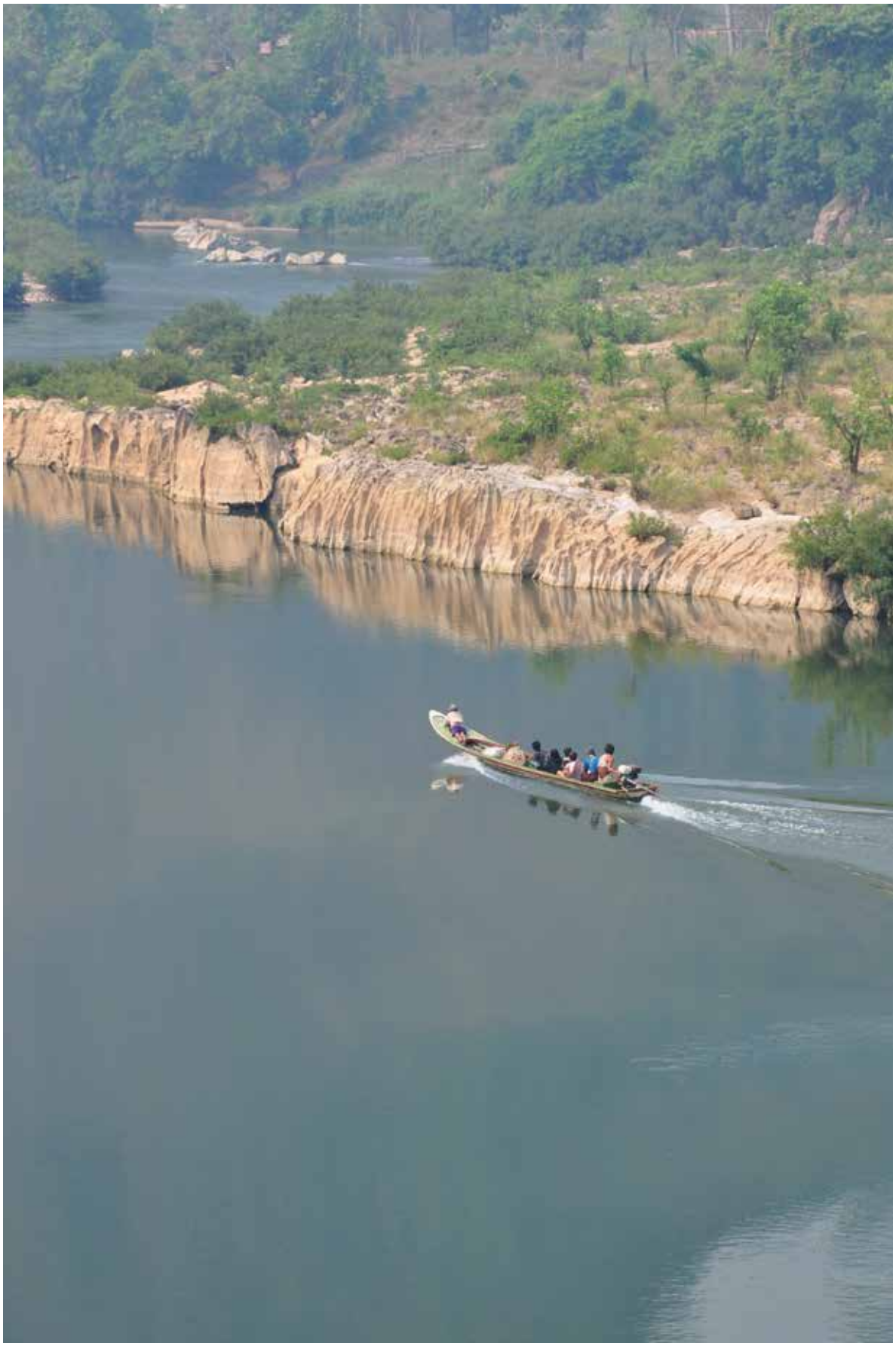


Photo credits

1. Cover and back: The free flowing Salween River.
   Photo by Pai Deetes
2. Page 5: photo by International Rivers
3. Page 9: The free flowing Salween River.
   Photo by Pai Deetes
4. Page 10: The free flowing Salween River.
   Photo by Pai Deetes
5. Page 12: The Moie River, a tributary of the Salween River.
   Photo by Pai Deetes
6. Page 13: photo by International Rivers

notes

notes


INTERNATIONAL
RIVERS
people • water • life