Free-Flowing Rivers

The Soul of South Asia

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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.

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Cover photo: Gyatso Lepcha - A little girl floats in the free-flowing Rongyoung River in Sikkim. The river is sacred to, and protected by, the local community.
Back photo: International Rivers - The confluence of the Pho Chhu and the Mo Chhu, Punakha, Bhutan forming the Punatsang Chhu.
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INTRODUCTION

South Asia is a fascinating and important region for the world in numerous respects. Although the eight countries of South Asia form just 3.5 percent of the world's surface area, the region is home to 1.89 billion people, i.e. 24 percent of the world's population, making it one of the most densely populated areas in the world.

Many iconic mountain ranges are located in South Asia, from where arise some of the largest rivers of the world. The region houses spectacular biodiversity and shares a remarkable diversity, as well as confluence, of religions and cultures. However, it also shares massive challenges at a hydrological level in the form of drying rivers, pollution, encroachments, and a falling groundwater table.

Some of the major river basins in the subcontinent include the Indus, Ganga, Brahmaputra, Godavari, Krishna and Cauvery, as well as the rivers of Sri Lanka. The region contains hundreds of bigger and smaller transboundary rivers, and some of the largest, tallest and biggest dams in the world.[1] It is also one of the fastest growing dam building regions in the world.

South Asia has witnessed ongoing difficulties as a result of large dams, such as displacement, submergence of forests and villages, degraded riverine ecosystems, collapsed riverine fisheries, salinity ingression, increasing water conflicts and people's protests. At this juncture, South Asia stands on the precipice of the Interlinking of Rivers project in India, which will affect numerous rivers in India, Nepal, Bhutan and Bangladesh. Other issues include the hydropower boom in Nepal and Bhutan, the Indus Water Treaty conflicts between India and Pakistan and growing tensions between India and China about hydropower dams in the Brahmaputra basin, in addition to the extreme weather events brought about by climate change.

Initiatives which protect free-flowing rivers in South Asia are subtly different from such initiatives in the global north. As Gyatso Lepcha from the tiny state of Sikkim, India puts it: "The Lepcha community's identity is linked to flowing rivers. If there are no flowing rivers, there will be no Lepcha." The struggle to save and protect free-flowing rivers is entwined with a struggle to save livelihoods, homelands and cultural identity.

In this context, river protection measures which are spontaneously arising from the initiative of far-flung communities in South Asia are a remarkable phenomenon. From Sikkim in North East India to Sindh in Pakistan, from the Karnali in Nepal to the Drangme Chhu in Bhutan, from Kerala in the Western Ghats of India to Bangladesh, in the arms of the Ganga Delta – local communities, supported by experts and civil society organisations, are developing inspiring and innovative initiatives to protect their free-flowing rivers or river stretches.

These initiatives from South Asia are markedly different from those in the global north. As Gyatso Lepcha from the tiny state of Sikkim, India puts it: "The Lepcha community's identity is linked to flowing rivers. If there are no flowing rivers, there will be no Lepcha. The free-flowing Rongyoung River is the soul of Lepcha-land." The struggle to save and protect free-flowing rivers is entwined with a struggle to save livelihoods, homelands and cultural identity.

At the same time, South Asian initiatives add to the ongoing conceptualisation of free-flowing rivers,

1. https://www.internationalrivers.org/programs/south-asia

and push us to look for a more nuanced definition. Micro hydel projects across a river, which have been built sustainably and with community participation, and are imperative to fulfil a remote community's need, cannot be compared to large dams and hydroelectric projects, and do not "exploit" a river or damage it irreversibly. Similarly, small earthen bunds built across streams in parched places like Rajasthan in India not only provide water to remote villages but also maintain groundwater levels and river flows in the thirsty land.

What follows is an overview of some free-flowing rivers in the region, the immense services they provide and a brief introduction to the riverkeepers who are fighting to protect and nurture free-flowing rivers across South Asia.

Free-flowing Karnali River, Nepal. Photo: https://udnepal.com/gallery/image

FREE-FLOWING RIVERS AND STRETCHES IN SOUTH ASIA

The section which follows provides a brief overview of the South Asian river landscape, with its unique character and challenges. It also documents some examples of community initiatives and rare government interventions to protect free-flowing rivers in six countries.

AFGHANISTAN

This conflict-torn mountain state is home to unique river systems with a low concentration of dams. Major basins include the Helmand, HariRud, Kabul, Amu Darya and smaller, discrete northern basins. All river basins in Afghanistan, except the Kabul, are endorheic, where water eventually flows into inland seas, wetlands, deserts or inland basins like the Seistan Basin. 57 percent of the total river flow in Afghanistan originates from the Amu Darya River Basin. The Kabul and Helmand River Basins contribute, respectively, 26 percent and 11 percent of the total water flow. The HariRud-Murghab and Northern River Basins make small contributions of two percent and four percent respectively.[2]

The Panj River in Khandud, Afghanistan. The Panj is one of the tributaries of the Amu Darya or Oxus River Photo: https://allthecities.com/cities/khandud

2. Golam Monowar Kamal, 2004, *River Basins and Watersheds of Afghanistan*: Afghanistan Information Management System

Significant undammed rivers in the country include the Panj and its tributaries like the Kokcha, whose valley produces some of the finest Lapis Lazuli gemstones in the world. Others include the Farah and Khash, which drain into the Seistan Inland Basin, bordering Iran.[3]

The extremely harsh climate of South-western Afghanistan makes survival difficult, and most of the population of Seistan Province depends entirely on the rivers that flow into this region from a great distance for their water source and livelihoods in the form of reeds, livestock, fuel, fisheries, etc.[4]

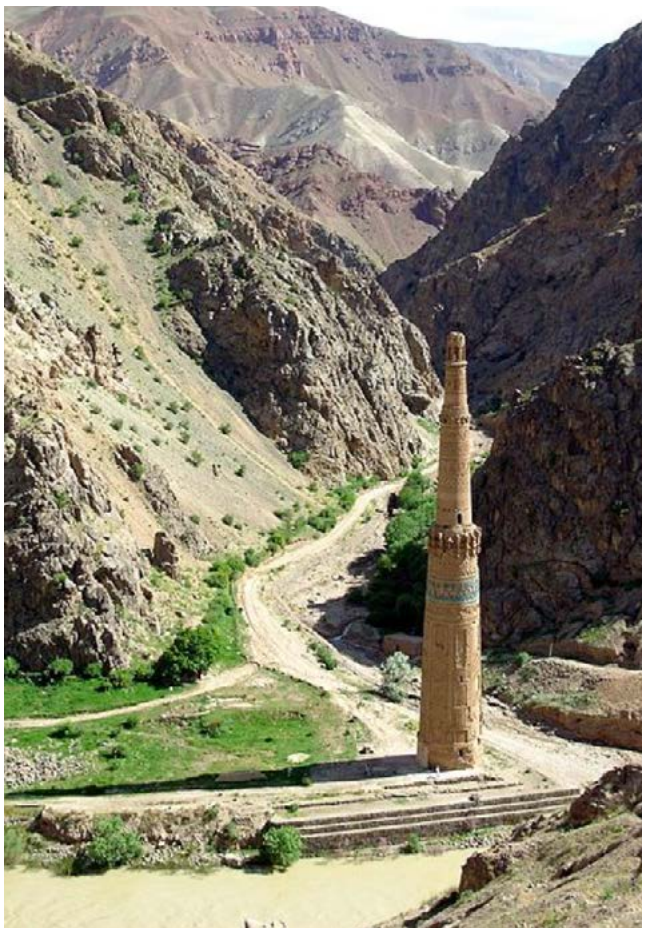
River basins of Afghanistan Source: International Law Project

The Helmand flows for more than 1,000 kilometres, draining 43 percent of the country, eventually into the Seistan Basin. This is one of the driest regions of the world, and the rivers which reach here are its critical lifeline. According to the United Nations Environment Programme (UNEP), "the region's main environmental challenge is that these rivers often fail to bring water, the most necessary life

3. Shroder et al, 2016, *Transboundary Water Resources in Afghanistan*: Elsevier
4. https://postconflict.unep.ch/publications/sistan.pdf

sustaining resource."[5] The major upstream damming and diversion of rivers flowing into Seistan Province would be a death knell for this region.

Water sharing conflicts in the region are not just a matter of bureaucracy, and in some cases can result in armed conflict. For example, there has been significant tension between Afghanistan and Iran surrounding the dams which Afghanistan is constructing on rivers flowing into Iran. Afghan media reports suggest that Iran has been supporting separatist groups in Afghanistan in order to sabotage the country's dam projects.[6]



The Minaret of Jam, at the confluence of the Jam and HariRud Rivers, Afghanistan. The area is a UNESCO World Heritage Site and the confluence of rivers acts as a symbol for the confluence of cultures, societies and religions. Photo: Wikimedia Commons

5. https://postconflict.unep.ch/publications/sistan.pdf
6. https://www.reuters.com/article/us-afghanistan-iran-water/in-parched-afghanistan-drought-sharpens-water-dispute-with-iran-idUSKBN1K702H, https://reliefweb.int/report/afghanistan/iran-faces-renewed-afghan-dam-sabotage-claims, https://www.mei.edu/publications/afghans-see-irans-hand-talibans-latest-gains-western-afghanistan

Transboundary agreements between Afghanistan and its neighbours like Iran, Pakistan and Turkmenistan could play a critical role in ensuring healthy rivers and communities, but most of the agreements are old and thus need to be amended and updated. Climate change and factors such as increased exploitation and increased upstream use of water have resulted in reduced water availability and river flows in Afghanistan. The ongoing conflicts in the country have meant that hydrological data collection has been suspended for decades. Data collection at various strategic dams like Kajakai has been suspended due to ongoing Taliban siege. Water wisdom and expertise has been tragically eroded. The governments which signed the original water-sharing treaties with neighbours are long gone. New agreements need to be negotiated, but instability in the region has not allowed this to happen.[7] Current water agreements stand on precarious grounds and are problematic. More research and work is needed in this region to understand, protect and utilise its unique river ecosystems.

INDIA

India, which derives its name from the Indus River and is home to some of the most iconic rivers, is the third-largest dam builder in the world. Dams held an important place in the political ethos and history of development of the country: the first Prime Minister of India, Jawaharlal Nehru, called dams the "Temples of Modern India". As a result free-flowing rivers are few and far between in the country.

As time went by, it became clear that pulsating growth in the agricultural sector, then called the Green Revolution, had more to do with exploiting groundwater and pumping from rivers, than dams and canals.[8] In the meantime, thousands of large dams were built on almost all of the major rivers of the country. Major rivers like the Krishna and Godavari do not flow into the sea for several consecutive years.[9] One of India's oldest rivers, the Narmada, has been so brutally exploited by dams

7. Shroder et al, 2016, *Transboundary Water Resources in Afghanistan*: Elsevier
8. https://sandrp.files.wordpress.com/2018/03/failure_of_big_irrigation_projects_and_rainfed_agriculture_0510.pdf
9. https://www.internationalrivers.org/sites/default/files/attached-files/eflows_primer_062012.pdf

Women farming on the banks of the free-flowing Shastri River in Maharashtra Photo: Parineeta Dandekar

that saline water ingression is becoming a major issue in its delta.[10] Even in the mighty Ganga River Basin, barrages and diversions are resulting in dry stretches and increasing salinity of the Sundarbans mangroves, the world's biggest contiguous mangrove forest. The Brahmaputra River currently flows freely, but faces an imminent hydropower threat, with hundreds of hydropower projects planned on its tributaries.

However, there are several changemakers and initiatives across the country protecting healthy, flowing rivers and riverine stretches. There are several hidden gems which have been protected by communities over millennia. Today, these rivers are the last remaining bastions of ecological health and community linkages, and are as much a part of India's rich legacy as the Taj Mahal.

Formal legal protection and community initiatives in India

Rivers rarely receive formal protection in India. Whatever protection they receive occurs when they flow through National Parks or Sanctuaries. Even then, rivers are still open to water withdrawals and flow fluctuations from upstream or downstream dams and diversions.

The few riverine protected areas, such as the Ken Ghariyal Sanctuary, face the threat of drying up due to upstream dams.[11] With the exception of 100 kilometres of the Bhagirathi River which has been declared an eco-sensitive zone under the Environment (Protection) Act, 1986,[12] there are no explicitly protected free-flowing rivers in India and all the protection is incidental. Riverine protected areas include the National Chambal Sanctuary, Ken Ghariyal Sanctuary, Son Ghariyal Sanctuary, Kanger Ghati National Park, Melghat Tiger Reserve, Silent Valley National Park, Bhitarkanika National Park, Dibru Saikhowa National Park, etc. Most other protected areas associated with rivers are backwaters of dams.

In such a context, several unorthodox conservation initiatives exist, that protect ecologically important river stretches, combining approaches involving

10. http://www.indiawaterportal.org/news/narmada-water-be-released-riverbed-check-salinity-ingress

11. https://sandrp.files.wordpress.com/2018/03/endangered_riverine_biodiversity_india_nov2012.pdf
12. http://www.moef.gov.in/sites/default/files/Notification%20S.O.%202930%20dated%2018.12.2012%20on%20Bhagirathi%20Eco-senstive%20Zone.pdf

traditional wisdom, sacred spaces and cutting-edge science.

In the state of Maharashtra, which has the highest number of dams in the country, a few free-flowing rivers exist, and provide immense services to the people. In Vidarbha, a part of the state which is water scarce, a free-flowing river called the Kathani is protected by tribal fisherfolk groups. The tribal fishing communities of Dhivars and Gonds have developed intricate mechanisms to protect the deep river pools which are reservoirs of local fish. The river is home to a presiding deity, which protects the river and local fisherfolk. The Kathani River is an inspiring example of a traditional community conservation initiative.[13]

In the biodiversity hotspot of Western Ghats, the Shastri River flows for over a hundred kilometres in Ratnagiri District. Roughly 10,000 people depend on the river for drinking water, as well as for agriculture and fisheries. The region supports rich fisheries and emerald riparian farms.[14]

The states of Odisha and Chhattisgarh share a beautiful free-flowing river called the Udanti, which arises in the dense forests of Chhattisgarh and flows into Odisha, to meet the Tel River, an important tributary of the Mahanadi. A beautiful mythological love story is associated with the Udanti, and it is a bastion of wildlife. It flows through two protected areas: the Udanti-Sitanadi Wildlife Sanctuary in Chhattisgarh and the Sunabeda Tiger Reserve in Odisha.

The Koel-Karo River Struggle was as much a struggle of tribal livelihoods as it was about protecting rivers. Community struggles to protect rivers demonstrate over and over again that local livelihoods and healthy rivers are inextricably interlinked.

13. http://nopr.niscair.res.in/bitstream/123456789/14953/1/IJTK%2011%284%29%20727-732.pdf
http://www.indiawaterportal.org/news/community-brings-kathani-river-central-india-back-life-article-dna
14. https://sandrp.files.wordpress.com/2018/03/how_to_ruin_living_rivers-the_fall_of_river_shastri.pdf

Soma Munda of the KKJS, an integral part of the Koel-Karo struggle for decades Photo: India Rivers Week

The state of Chhattisgarh is home to two iconic free-flowing rivers which have been protected through long-lasting tribal struggle. The Koel-Karo struggle is as much a struggle to protect tribal livelihoods as it is about protecting rivers. Community struggles to protect rivers demonstrate over and over again that local livelihoods and healthy rivers are inextricably interlinked.

In February 2001, eight people died in a police firing, protecting their river from the dam. The hydroelectric project remains cancelled as a result of the struggle. The Koel Karo Jan Sangathan has demonstrated the use of many innovative methods of struggle, including people's curfew and people's checkpoints. The Sangathan successfully mobilised support from villagers, academics and political parties to ensure that their rivers still flow free and pristinely. Tribal women of the river basin have played a key role in the Sangathan's work.

The Koel Karo Jan Sangathan (KKJS) has, through community mobilisation, made efforts to conserve tribal sacred sites and to look at alternative development paths instead of the proposed Koel-Karo hydroelectric dam. The Sangathan, a tribal collective, carried on a long and heroic struggle in the face of enormous pressure from vested interests, battling tremendous odds to forge one of India's foremost resistance movements to save rivers,

riverine communities and their culture. The Sangathan has demonstrated the use of many innovative methods of struggle, including people's curfew and people's checkpoints. The Koel Karo Jan Sangathan received the Bhagirath Prayas Samman in 2014, an award recognising the group's work to protect their rivers.[15]

Community and Conservation Reserves in India

An amendment to The Indian Wildlife (Protection) Act, 1972 has enabled river champions to protect important river stretches as Community or Conservation Reserves. Conservation Reserves (International Union for Conservation of Nature (IUCN) Category VI) are community co-managed biodiversity rich areas, which are particularly close to existing Protected Areas (PA), and serve as a buffer and/or corridor to establish a continuous PA network. Conservation Reserves can be declared only on government owned lands.[16]

Community Reserves (IUCN Category V), on the other hand, can be set up on biodiversity abundant lands that are privately or community owned and are managed by the individual/communities in possession of the area. Both these reserves allow for the extraction of natural resources to a particular level, which is governed by a multi-stakeholder Reserve Management Committee.[17] By protecting land on both banks of the river, the river itself is protected.

A Conservation Reserve Management Committee consists of representatives from the local village Panchayat (elected councils), nongovernmental organisations (NGOs), and the Department of Agriculture and Animal Husbandry. Similarly, a Community Reserve Management Committee consists of five representatives nominated by the local village Panchayat or the Gram Sabha (both forms of community council), and one representative each from the State Department of Forest and Wildlife. A chairperson is elected by the committee, who also serves as a Wildlife Warden of the Reserve.[18]

North India

Uttarakhand

In the remote, steep and cold valley of Nubra in the state of Jammu and Kashmir, the Shyok and Zanskar Rivers still flow undammed. In the Himalayan state of Uttarakhand which has seen a harsh onslaught of hydropower dams, some tributaries of the Ganga flow free, including the Balganga and Pindar. There are plans to dam both of these rivers for hydropower, especially the Pindar.[19] However, local opposition to dams on the Pindar is stiff.[20] The river also holds huge ecological and cultural significance - this tributary of the Ganga is believed to free the souls of the departed. It is a place where the last rites, or pind-daan, are performed, hence the name Pindar. "Our lives and death depend upon the free-flowing river"[21] says Bimla Devi, the widow of a war hero, who refused to accept any gifts in the memory of her late husband from a hydropower company planning to dam the Pindar.

Himachal Pradesh

In Himachal Pradesh, groups like Himdhara[22] are working with local communities to help save the free-flowing Spiti River from damming. Almost all human settlements in the Spiti Valley are located on the banks of the Spiti River, such as Tabo, Dhankar, Kaza and Rangrik. Most of these places have existed for at least a thousand years. The famed monasteries of the region also stand overlooking the rivers, gaining spiritual energy from the flow. Lahaul-Spiti District, in Himachal Pradesh where the Spiti River flows, is an entirely tribal district where the majority of the population is Buddhist,

15. https://sandrp.in/2014/11/24/celebrating-the-story-of-koel-karo-resistance-kkjs-gets-bhigirath-prayas-samman-at-first-india-rivers-week/
https://www.indiatoday.in/magazine/special-report/story/20160620-water-conservation-drought-crisis-829045-2016-06-09
16. https://www.researchgate.net/profile/Rajeev_Raghavan/publication/270719944_Community_and_conservation_reserves_in_southern_India_status_challenges_and_opportunities/links/55dfe9eb08aede0b572ba66b/Community-and-conservation-reserves-in-southern-India-status-challenges-and-opportunities.pdf
17. Ibid.
18. http://threatenedtaxa.org/index.php/JoTT/article/view/1016/1824
19. http://www.freeflowingriver.com/stories/168-uttarakhand
20. https://sandrp.in/2017/04/05/uttarakhand-rivers-profile/
21. https://www.downtoearth.org.in/coverage/pindars-last-gush-33663
22. http://www.himdhara.org

The free-flowing Spiti River in Himachal Pradesh Photo: Himdhara

and yet it is home to a unique cultural mix of both old tribal traditions and Buddhism. The remote district has the highest irrigation intensity amongst the areas under cultivation in the state. This means that the entire area under cultivation is irrigated, without which no agriculture would be possible in such harsh, dry, cold and desert climatic conditions. The village settlements are supported by the community-owned and operated kuhls (irrigation channels). The district has the highest per capita income among all the districts in the state,[23] and the region is flourishing and self-reliant without a dam. As a result, people from the Spiti Valley are extremely determined to protect their free-flowing rivers.

An iconic river which flows freely in Himachal Pradesh is the Tirthan. The river is a sanctuary for trout fish, and supports thriving tourism initiatives, which have led to local prosperity. The work of the local community to protect the Tirthan from dams has been an inspiring example of how various stakeholders can come together to protect a river.

Local panchayats, community members, and fishing lodge owners, with the support and vision of local Member of Legislative Assembly Mr. Dilaram Shabab, as well as eventual backing from the State's Fisheries and Forest Departments, and Great Himalayan National Park officials, launched a five year court battle against small hydropower development in this watershed. After three years of arguments and rulings in the Kullu District Court, and more than one year in the High Court in Shimla, the High Court ruled in favour of the arguments set forth concerning the negative effects on the environment, fisheries, and affected communities of the planned small hydropower projects in the watershed. The court declared the Tirthan off limits to all hydropower projects[24] and cancelled the nine previously approved small hydropower projects (Civil Writ Petition 1038 of 2006). This is the only example in Himachal Pradesh of a watershed being declared permanently off-limits to hydro development.[25]

An iconic river which flows freely in Himachal Pradesh is the Tirthan. The river is a sanctuary for trout fish, and supports thriving tourism initiatives, which have led to local prosperity. The work of the local community to protect the Tirthan from dams has been an inspiring example of how various stakeholders can come together to protect a river.

Today, the Tirthan Valley is a popular destination for angling holidays and eco tourism.[26] The free-flowing Tirthan River and the communities who protected the river are an inspiration to those who live across the mountain region.

People protesting against any hydropower projects on the free-flowing Tirthan River, Himachal Pradesh Photo: HillPost

23. http://www.himdhara.org/2017/03/08/lahaul-people-write-to-environment-committee-not-to-clear-reoli-dugli-hydro-project/
24. https://sandrp.in/2014/06/08/the-socio-ecological-effects-of-small-hydropower-development-in-himachal-pradesh/
25. https://sandrp.in/2014/06/08/the-socio-ecological-effects-of-small-hydropower-development-in-himachal-pradesh/
26. http://www.tirthanvalley.com/tirthan-blog.php

Punjab

In August 2017 the state of Punjab protected 185 kilometres of the Beas River between the Pong Dam and Harike Wetlands Headworks, designating it the Beas Conservation Reserve.[27] The immediate impact of this declaration has been the protection of the extremely rare and endangered Indus River Dolphins. Only a dozen Indus Dolphins are left in India, and the Beas Conservation Reserve is home to all of them.[28]

Fishermen at the Beas Conservation Reserve, Punjab, India
Photo: Arati Kumar Rao

South India

Kerala

In the far south of India, in the green state of Kerala known as 'God's Own Country', the free-flowing Kunthipuzha River is a shining example of a sustained struggle which protected the right of the river to flow.

The struggle to save the Kunthipuzha River and its catchment forests, known as Silent Valley, started in 1971. Several writers, academics, singers, actors, researchers and students joined in the protest. A range of tactics were used, including letters to editors, poems, songs, articles, marches to protect the valley and finally petitions in court. Academics like Sathish Chandran Nair, government officials like V S Vijayan, and student activists like Latha Anantha took rigorous research to the people and made sure that Silent Valley became a national issue.[29]

The Silent Valley struggle to save a vast forest valley from a hydropower project eventually saw the involvement of thousands of people who did not even live in the vicinity of the area that was to be destroyed.

In 1986 Silent Valley was finally declared a National Park and the Kunthipuzha River flows free, a striking testimony to the power of peoples' action.

The struggle forged a lasting relationship between people and the river, valley and environment. It inspired leaders like Latha Anantha who fought for flowing rivers all their lives, starting with the Silent Valley struggle.

Such is the power of a flowing, healthy river.

Today, the Kunthipuzha flows freely due to this monumental struggle.

Other rivers in the state that flow free include the Karapara, a tributary of the Chalakudy, and Kadalundi. The Kadalundi is an entirely free-flowing river which supports astounding avian biodiversity. The Kadalundi Estuary, the first Community Conservation Reserve in India, was declared in 2007, and spreads across 1.5 square kilometres.[30] This modest mangrove-surrounded estuary of a free-flowing river is a wintering ground for more than 100 species of birds including critically endangered species like the Spoon-billed Sandpiper, Lesser Sand Plover and the Crab Plover. The estuary faced several threats from sand mining, dumping of wastes, coir retting, defoliation, and collection of oysters and mussels, as well as infrastructure development.

27. http://pbforests.gov.in/Pdfs/wildlife/Present%20Protected%20Areas%20of%20Punjab.pdf
28. https://sandrp.in/2018/07/30/beas-dolphins-a-flash-of-fin-a-glimmer-of-hope/
https://www.wwfindia.org/?17361/Indus-River-Dolphin-Survey
29. http://www.conservationindia.org/case-studies/silent-valley-a-peoples-movement-that-saved-a-forest
30. https://timesofindia.indiatimes.com/city/kozhikode/Kadalundi-reserve-all-set-to-lure-nature-lovers/articleshow/9877635.cms
https://indiabiodiversity.org/biodiv/content/projects/project-2e665e52-4cb9-4909-a37f-f60af08a47a8/40.pdf

The Kunthipuzha River flows freely in the Silent Valley National Park, Kerala Photo: Shekhar Dattari, Conservation India

The Kadalundi-Vallikkunnu Community Reserve (KCR) was set up not only to reduce these threats, but also to promote the location as a birding destination, and improve local livelihoods through tourism.[31] While tourism is encouraged, the main livelihood of the region is fishing and a healthy estuary has meant sustained fish availability for the locals.

Locally run mangrove tourism in the estuary of the free-flowing Kadalundi River, Kerala Photo: Tripadvisor

One of the strongest champions of free-flowing rivers in India was Dr. Latha Anantha, who passed away in 2017 (above right). It was due to the efforts of Dr. Anantha and her team that an iconic waterfall in Kerala, the Athirapilly, retains its splendour and its forests. Photo: Unnikrishnan

31. https://threatenedtaxa.org/index.php/JoTT/article/view/1016/1824

The estuary is under the stewardship of Kadalundi and Vallikkunnu panchayats. Currently, in vacation season, more than 500 tourists a day visit this healthy estuary[32] of a free-flowing river, which provides local employment and acts as an ambassador of the bounties of a flowing river.

Karnataka

The Western Ghats of India is a global biodiversity hotspot where some free-flowing rivers still flow. One such river, from the state of Karnataka, is the Aghanashini. This 121 kilometre river rises from the Western Ghats and flows towards the west into the Arabian Sea.

The Aghanashini River is a gem of biodiversity and abundant livelihoods and is home to about 56 known fish species and 22 unknown species, while a dammed counterpart named the Sharavathi, which flows next to Aghanashini, hosts only a recorded 26 known species and 17 unknown species.[33] In a first of its kind study, the Indian Institute of Science compared the biodiversity and benefits derived by the local community depending on the Aghanashini to the heavily dammed and diverted Sharavathi, both of which share a similar eco-region and characteristics.

In a sample study, researchers found more than 2,000 households in the free-flowing estuary depending on fisheries, with a combined annual income of 435 million rupees per year. When this was compared with the dammed Sharavathi, whose dams provide electricity to far away metropolitan cities, it was found that the dammed estuary contained remarkably less fish diversity and abundance, and supported only 435 households depending on fisheries with an annual income of barely 12.8 million rupees.[34]

In addition, bivalve and mussel collection is a profitable activity in the free-flowing Aghanashini, which provides an income of about 57.8 million rupees for more than 2,347 people annually.[35]

32. https://www.thehindu.com/todays-paper/tp-national/tp-kerala/kadalundi-gets-a-new-boat-jetty/article22527661.ece
33. http://wgbis.ces.iisc.ernet.in/energy/water/paper/lake2012_fisheries/conclusion.htm
34. http://wgbis.ces.iisc.ernet.in/energy/water/paper/lake2012_fisheries/method.htm
35. http://wgbis.ces.iisc.ernet.in/energy/water/paper/ETR30/index.htm

The Aghanashini Estuary produces about 22,000 tonnes of bivalves and mussels annually, providing protein and mineral rich nutrition to about 198,000 people.[36]

The Aghanashini Estuary holds ancient saltpans and has been producing salt for the past 300 years. This salt is a rich brown colour, and locals believe that the colour is due to the high nutrients in Aghanashini's water. The region of Sanikatta produces 10,000-12,000 tonnes of salt per year, providing employment to several villages and households.[37]

A still from a film on the Aghanashini River, Karnataka Source: https://www.youtube.com/watch?v=oCPLOlrBVBk

This special river has inspired poets, writers, filmmakers, activists and researchers to delve deeply into the nature of a flowing river. In 2017 a documentary film, which traces the story of the river from its origin all along its journey until it meets the sea, was released and has since been screened at various film festivals around the world.[38]

The protection of the Aghanashini is no accident. Local communities have been extremely active over several years, protecting this special river from an onslaught of thermal power plants, dams, diversions and a recent port development at the river's fragile estuary, which imperils hundreds of hectares of mangroves, farmland and rice paddies.

Every time, the local population, with the help of researchers and scientists, has fought to save the

36. Ibid.
37. http://www.newindianexpress.com/states/karnataka/2017/jul/30/this-village-is-worth-its-salt-1635677.html
38. http://www.landscape-wizards.com/home/cultural-landscapes/aghanashini

Women collecting bivalves from the Aghanashini Estuary, Karnataka Photo: Indian Institute of Science

free-flowing Aghanashini from such developments. But it is time for the river to receive special and permanent protection. Aghanashini is indeed a living, flowing legacy of the Western Ghats.

Like the Aghanashini, the Bedthi or the Gangavalli River is one more free-flowing river in Karnataka. The river flows for 161 kilometres in the Western Ghats of Uttara Kannada district of Karnataka. In 1979 the Karnataka Government planned to build a hydroelectric project on the Bedthi River. However, the move was opposed by experts and locals alike. A unique environmental economic study showed that a flowing, healthy Bedthi was much more profitable than a dammed river. Due to the strong rallying and resistance, the plan was dropped. It was resurrected again in 1997, but fizzled out due to growing community pressure.[39] Currently the river has one irrigation project.

One of the Bedthi's tributaries is the free-flowing Shalmala. Residents along the Shalmala's path have been taking action to protect their river for more than ten years. The Shalmala River, as the name suggests, evokes lyrical beauty and magic. It is one of the few protected rivers in India. Following untiring research and advocacy by Balachandra Hegde and local communities, and with the support of Forest Department Officials and the erstwhile Chairperson of the Western Ghats Task Force Ananth Hegde Ashisara, the river has been protected through the constitution of the Shalmala River Riparian Conservation Reserve.

The Shalmala Conservation Reserve was declared in June 2012 through a government gazette

39. http://expressindia.indianexpress.com/fe/daily/19970504/12455193.html

notification. It encompasses more than 15.9 kilometres of the Shalmala River, with 100 metres riparian buffer on each bank. One important argument in favour of the Conservation Reserve was the unique cultural value of the Shalmala River. At Sahasralinga, a pilgrimage spot within the river, one is awestruck to see hundreds of Shivalingas (symbols of the Hindu God Shiva) carved on the bedrock of the river. The river itself functions as a temple, with various religious carvings of Shivalingas, Nandi (Basaveshwara), Garuda and inscriptions. A huge pilgrimage takes place to this location on the occasion of Shivratri (a Hindu festival).[40]

The Shalmala riverbed, Karnataka Photo: Parineeta Dandekar

The Shalmala River, as the name suggests, evokes lyrical beauty and magic. This small river is a tributary of the west-flowing river Bedthi of the Western Ghats, in Uttar Kannada District of Karnataka. It is one of the few protected rivers in India. Following untiring research and advocacy by Balachandra Hegde and local communities, and with the support of Forest Department Officials and the erstwhile Chairperson of the Western Ghats Task Force Ananth Hegde Ashisara, the river has been protected through the constitution of the Shalmala River Riparian Conservation Reserve.

Even as the Conservation Reserve was declared in June 2012, Karnataka Renewable Energy Development Limited (KREDL) allotted a 24 MW hydropower project right inside the Conservation Reserve, across the Shalmala. This Ganeshpal hydropower project by Kare Power Resources Private Limited envisaged a trench weir, as well as a dam, to store and divert water away from the river. The proposed location of the weir was just upstream of Ganeshpal Island. The project envisaged a 4.4 kilometre-long Head Race Tunnel to divert water from the river to the powerhouse. The powerhouse would be at the foot of the waterfall. Through this tunnel diversion, which would necessitate blasting in the river bed and riparian zone, nearly 5 kilometres of the river, as well as the Ganesh Falls, would be rendered dry. However, extremely strong local opposition and people's protest over the years, in addition to the designation as a Community Reserve, resulted in the scrapping of this dam project, and thus the Shalmala still flows free.

A Shalmala Protection Rally to safeguard the free-flowing river Photo: Parineeta Dandekar

Conservation Reserves along rivers in Karnataka

In the state of Karnataka, novel approaches to protecting biodiversity rich rivers are emerging. Although drafting a legal tool like the Wild and Scenic Rivers Act (1968)[41] of the USA or enacting Personhood Rights for Rivers would be ideal, in the absence of such legal protection mechanisms, researchers and communities are using the existing environmental legal framework effectively to advocate for protection of precious rivers.

Dr Balachandra Hegde, who was born and brought up in a remote village in the Aghanashini Valley, has operationalised the idea of Conservation

40. https://sandrp.in/tag/shalmala-river-protection-rally/

41. https://www.ferc.gov/legal/fed-sta/wsr-act.pdf

Reserves for riverine stretches very effectively. His untiring efforts led to a landmark decision, resulting in the declaration of three riverine Conservation Reserves in Uttar Kannada district of Karnataka. Dr Hedge suggested identifying bio -diversity hotspots rich with high conservation value within the landscape, and proposed protecting these hotspots using legal options like Conservation Reserves. A detailed survey was conducted for this purpose, with support from the Western Ghats Task Force and the Karnataka Forest Department. The presence of endangered and endemic species, critical corridors connecting the larger Western Ghats landscape, and potential threats to the region were considered in order to identify conservation priority areas.

Three Conservation Reserves covering these priority areas were proposed, primarily areas along the Bedthi, Aghanashini and Kali River Valleys. These Reserves set out to protect Lion Tailed Macaque habitats, the rare and endangered Myristica swamps of the Western Ghats and also Hornbill habitats. These are the Aghanashini Lion Tailed Macaque Conservation Reserve spanning 299.5 square kilometres, the Bedthi Conservation Reserve spanning 57.3 square kilometres and the Hornbill Conservation Reserve of 52.5 square kilometres. The reserves were announced in May 2011 by Karnataka Government's Forest, Ecology and Environment Department.[42] While the focus is primarily on conserving each of these iconic species, the end result of protecting the river ecosystem will lead to conservation of a number of other endemic and endangered species, as well as the free-flowing rivers.

Dr Balachandra Hegde, with his daughter, at the Aghanashini Conservation Reserve, Karnataka, India. Photo: Conservation International/ Jack Tordo

42. http://aranya.gov.in/new/Static%20Pages/ConservationReserves.aspx

Table: Conservation Reserves along rivers in Karnataka

Name	Area in square kilometres	Conservation Priority Species	Priority locations
Aghanashini-LTM Conservation Reserve	299.52	LTM, Myristica swamps	Unchalli Falls Katlekan Mukti hole
Bedthi Conservation Reserve	57.07	Hombills Coscinium fenestratum	Magod Falls Jenukallugudda Bilihalla Valley Konki kote
Hombill Conservation Reserve	52.5	Hombills	Kali river

Source: ATREE

Women collecting mussels from the Aghanashini Estuary, Karnataka Photo: Aubrey Wade, Namati.org

Otter Conservation Reserve on the Tungabhadra River

Karnataka is also home to the country's first otter reserve, acknowledging the importance of this species of wildlife and taking necessary action to protect them before it is too late. The Tungabhadra Otter Reserve Sanctuary, a 34 kilometre stretch of habitat along the Tungabhadra River from Mudlapura village to Kampli in Ballari District, was notified in 2016. The stretch also includes the World Heritage site Hampi, and covers both Koppal and Ballari Districts. This stretch is home

primarily to the smooth-coated and small-clawed otter (Aonyxcinerea), both considered "vulnerable" under the IUCN Red List.[43]

The Tungabhadra River, Karnataka, at the World Heritage Site of Hampi, now also a part of an Otter Conservation Reserve Photo: http://withmanish.com/portfolio-item/hampi

North East India

North eastern India is still a comparatively protected landscape, home to several free-flowing rivers which are tributaries of the Brahmaputra.

Arunachal Pradesh

Important free-flowing rivers in Arunachal Pradesh include the Dibang, Siang and Lohit. Projects to dam these rivers have been sanctioned several times over in multiple places; however none of the work has started yet. Most of these projects face massive local opposition.

The Lohit River at Parshuram Kund, Arunachal Pradesh. This spectacular free-flowing river is threatened by a series of hydropower projects. Photo: Parineeta Dandekar

43. https://india.mongabay.com/2018/01/25/karnatakas-otter-reserve-an-initiative-that-needs-more-work/

Two specific examples of free-flowing rivers are the Nyamjang Chhu and the Tawang Chhu. Of its total 125 kilometre length, the Nyamjang Chhu flows for 40 kilometres in India, with the rest flowing through China. If the Nyamjang Chhu hydroelectric project is constructed, the river would be inside a tunnel in India for 23.5 kilometres, affecting 35 kilometres of its length.[44] Adding the reservoir formed to this length, this would mean that almost the entire river would be profoundly changed and destroyed. The Zemithang Valley, where the project would be sited, is remarkably rich in biodiversity, providing habitat to endangered trees, herbs and orchids. It is one of the last strongholds of the elusive Red Panda and one of the last wintering sites of the Black-necked Crane, besides other Schedule-I protected species (under the Wildlife Protection Act) like Snow Leopards. It is also an Important Bird Area.[45]

The region has a strong tradition of community conservation, which is religiously followed by Buddhist Monpas. Two Community Reserves have been set up in the Zemithang Valley to conserve the endangered Black-necked Cranes. Fish in the river are revered by the local Monpa tribes and are not killed, nor are trees felled. Near the barrage site stands an 800 year old Gorsam Stupa, which has rich religious and cultural significance. The Monpas are united in their strong opposition to this project, which they believe will cause irreversible damage to their river and region. The local Monpa community, which has conserved and nurtured this river and its ecosystems since time immemorial, is now fighting with all its might to save it.

Monpa monks fighting for the right of their sacred rivers to flow free Photo: Urmi Bhattacharjee

44. https://sandrp.files.wordpress.com/2018/03/nyamjungchu_stage_i_hep_nov_2013.pdf
45. https://timesofindia.indiatimes.com/city/guwahati/With-anti-dam-mantra-on-lips-Tawang-monks-hit-the-streets/articleshow/18842465.cms

Similarly, the Tawang Chhu is protected by the extremely active and vigilant involvement of local monks, and multiple hydropower projects planned on the river have not secured all the necessary environmental permissions to start work.

Sikkim

The tiny state of Sikkim deserves a special mention. Sikkim is a land of several tribal communities and is the most biodiverse state in the country. It is also the smallest state in India, based on population. The state has astounding mountain ranges, from which emerge some of the most spectacular rivers in the country, including the Teesta. Sikkim also faces a huge hydropower onslaught, with most of the tributaries and the main stem of Teesta River in various stages of damming.

The sacred and free-flowing Rongyoung River of Sikkim Photo: Gyatso Lepcha

For the traditional societies of Sikkim, rivers are not only the lifeblood of the landscape, but also sacred spaces with numerous stories intertwined in their channels. For tribes like the Bhutias and Lepchas, the struggle to save rivers from damming is a quest to preserve their very identity. Hence, although Sikkim faces one of the starkest onslaughts of hydropower, the state also showcases some of the most inspiring initiatives to save rivers.

In the words of Gyatso Lepcha, a young Lepcha leader protecting Sikkim's rivers:

> "The Rongyoung River is one of the most sacred rivers to the indigenous Lepcha community. Lepchas are river worshippers. We do not have a concept of heaven and hell after life. Our belief is that there are sacred caves of each clan beneath Mount Kanchendzonga, where our ancestors' souls are resting. Our sacred Rongyoung River emerges from this very place. When a Lepcha dies, s/he maybe in another part in the world, but the shaman will call the soul and guide it up the sacred River Rongyoung to the foot of Mount Kanchendzonga, to rest with the ancestors.
>
> How then, can we allow this river to be dammed? It is not just flowing water, it is our philosophy.
>
> The 300 MW Panan hydroelectric project planned on this river would completely destroy the rich riverine ecology of the region, and most importantly the culture and practices of the ancient Lepcha community.
>
> When the Rongyoung is dammed and diverted through tunnels, the Lepchas will not only lose their river, we will lose our soul."

So far, the Lepchas have been successful in keeping the Rongyoung dam free.

Hishey Lachungpa Photo: International Rivers

Similarly, the Lachen and Lachung Rivers, which join to form the Teesta River, are entirely dam-free due to the extraordinary efforts of the Bhutia villages which line the river banks. The villagers have democratically decided not to have a single hydropower project on their rivers. Collectively, they have succeeded in protecting the source of the Teesta River, although the river is severely dammed and abused further downstream.

A Bhutia river protector, Hishey Lachungpa describes the scenario thus:

"Citizen groups, NGOs and activists from Sikkim are taking inspiration from the people of Lachung and Lachen in their call for free-flowing rivers. The people of Lachung have agreed to support them."

Hishey Lachungpa, who is spearheading a campaign to protect the free-flowing headwaters of the Teesta River.

"In around 2003 the people of Lachung Dzumsa (Province) in North Sikkim became aware that three hydropower projects were planned on the Lachung River – the 99 MW Bop hydropower project, the 99 MW Bimkyong hydropower project and the 99 MW Lachung hydropower project. In 2007 one of the two Pipans (chosen people's representatives) of Lachung Dzumsa wrote to the Government stating that the people of Lachung Dzumsa had agreed to the three hydropower projects. He even stated that public hearings had been conducted. Based on the Pipan's submission, the Government of Sikkim issued Letters of Intent and full details of the execution of construction of the projects. The Pipan did not inform the people what he had done.

A Pipan is the representative of the people of the Dzumsa. The people of the Dzumsa meet once a year to discuss and decide who will be the two Pipans. A Pipan holds the post for a year, and can hold it for at most two years, if the people decide to let them continue beyond the first year.

I learnt of the Government's plans and met the then Secretary, Department of Power. The Secretary informed me of the Pipan's submission, and showed me the Letters of Intent. On learning this, I rushed back to Lachung, informed the second Pipan and asked for a meeting to be called. But it had to wait.

I was not convinced about waiting. Each moment was precious for us. I met with 40-45 youth and we decided to act. The local school had a sound system. I installed this on a utility vehicle belonging to a friend, and at 4 am went around the Dzumsa announcing that people need to protect their homes, that their homes and lands are under threat. This surprised and alarmed people and it ensured that the meeting had a huge attendance. At the meeting I informed the people of what was happening.

After much discussion and debate, in 2010 the people decided not to permit any hydropower project in Lachung Dzumsa. To show their resolve, each and every one of them went to their local Gompa (Buddhist Monastery) and vowed in the presence of the Rimpoche (Buddhist spiritual leader) not to permit any hydropower project. The people do not even discuss any hydropower project. The Pipan was socially boycotted, but he asked for forgiveness and was assimilated again.

Similarly, the people of Lachen Dzumsa, North Sikkim have also decided not to permit hydropower projects on the Lachen River. Four hydropower projects are proposed – a 480 MW Teesta-II hydropower project, 210 MW Lachen hydropower project, 300 MW Teesta-I hydropower project with a second dam on the Lhonnak Chhu (a tributary of the Lachen River) and a 75 MW Talem hydropower project.

However citizen groups, NGOs and activists from Sikkim are taking inspiration from the people of Lachung and Lachen in their call for free-flowing rivers. The people of Lachung have agreed to support them."

River saviours of Sikkim, India Photo: Gyatso Lepcha

The Lachung and Lachen Rivers are the headwaters of the Teesta River, which join at Chungthang to form the Teesta. A report by India's Ministry of Environment, Forests and Climate Change recommended that no hydropower projects be permitted north of Chungthang. This report was buried, and until a few years ago Ministry officials still spoke of projects on the Lachen. The Ministry and the Government of Sikkim are yet to officially scrap these projects through a gazette notification.

Meghalaya

The state of Meghalaya receives the highest recorded rainfall in the world, around 12,000 millimetres per year. It is also home to some spectacular free-flowing rivers, which eventually flow into Bangladesh to join the Ganga-Brahmaputra-Meghna Delta.

One such river is the Simsang, which becomes the Someshwari in Bangladesh. The Simsang emerges from the densely forested hill ranges of Meghalaya, known as the Garo Hills, from the Nokrek National Park. The river is home to remarkable fisheries, more than 64 fish species, including several endangered and endemic species. Many villages along the river follow tribal community fishing practices, and practice recreational angling. The unique feature of the Simsang is the presence of numerous community-conserved fish sanctuaries, which are protected pools of the Simsang River. These pools host threatened fish like the Tor, which multiply and migrate throughout the river. Local communities successfully fought off a dam proposal on the Simsang, to safeguard their river and fisheries. The Simsang thus still flows freely in the Garo Hills, teeming with life and supporting livelihoods and recreation.

A keeper of a community-conserved fish sanctuary on the free-flowing River Simsang Photo: Parineeta Dandekar

NEPAL

Eight of the ten highest mountain peaks in the world are located in Nepal, a small Himalayan country with a mainly rural population of 26 million. The country's three biggest river systems - the Kosi, Gandaki and Karnali - originate in high-mountain glaciers and eventually flow into the Ganga River system.

The abundant water resources and the rivers' fast flows make Nepal a popular location for hydropower development. Already, 90 percent of the nation's power comes from dams. But hydropower development has a contentious history in the country. The variability of water flow, lack of experience with consultation processes, as well as corruption in large infrastructure projects, makes building dams an environmentally, economically and socially risky endeavour in Nepal.[46]

With almost all rivers in Nepal facing a dam onslaught, several groups are also working to secure the future of one of the last free-flowing rivers in the country, the Karnali. According to Nepal River Conservation Trust and the Waterkeeper Alliance: "the environmental and social consequences of even one main stem dam has the potential to alter the area irreversibly."

About 76.3 percent of the population in Nepal receives household electricity, although the figure is much lower in rural areas.[47] At the same time, Nepal is damming all of its major and minor river systems in a bid to trade electricity with energy hungry neighbours like India. Most of the impact assessment studies for these dams do not account for loss of local livelihoods, forests submerged and the impacts of climate change caused by damming

46. https://www.internationalrivers.org/campaigns/nepal
47. https://reliefweb.int/report/nepal/nepal-annual-household-survey-201516

in the fragile Himalayas. The April 2015 earthquake underlined the fragility of the region, and the looming threats which increasing infrastructure like dams could cause.[48]

However, one of the biggest rivers in Nepal has a free-flowing main stem, at least for now. The Karnali River rises from Mount Kailash on the Tibetan Plateau, and flows 1,080 kilometres to its confluence with the Ganga River in India. It is the only river, of the five iconic rivers emerging near Mount Kailash, which remains free of dams. The river provides water for millions of people, supports fish and wildlife resources, and has a high value for ecotourism, especially in the form of whitewater rafting and as an approach corridor to the sacred Mount Kailash. These ecological services sustain livelihoods throughout the Karnali River Basin. An ancient river, the Karnali already existed when the Himalayan Mountains were thrust up by the collision of the Eurasian and Indian tectonic plates. As the mountains rose, the river downcut into the landscape, the sinuous channel already in place. Fed by glacial meltwaters and strong monsoon rains, this powerfully erosive river brings water, nutrients and sediments to the lands along its path, providing fertile agricultural plains.

Three hydropower dams are planned on the main stem of the Karnali River, with another 40 proposed on tributary streams throughout the watershed. The construction of hydropower projects at this scale would irreversibly affect aquatic species' habitats, migrations and ultimately their very survival. The majority of the power provided by these dams would be exported to neighbouring nations, while Nepal would bear the social and environmental costs.[49]

Novel ways to protect free-flowing rivers

WaterKeepers Nepal and other groups are working to protect the unique free-flowing nature of the Karnali River. In addition to advocacy efforts, groups are collaborating to support a scientific expedition which will highlight the remarkable and outstanding value of the river and watershed. The expedition team will visit communities along the Karnali River and work with them to produce a "Sacred River Corridor Management Framework". This framework could protect aquatic species, support sustainable hydropower development, and create economic opportunities to enhance livelihoods throughout the Karnali River corridor.

The 'Save the Karnali' website describes the scientific expedition and its aims thus:

> "A team of interdisciplinary scientists from Nepal, the United States, India and China will jeep, hike, and raft the length of the Karnali River, from the headwaters near the Tibetan Plateau to the Ganges River confluence in India. The expedition team will assess and describe the ecological and social values of the only remaining free-flowing major river system in Nepal. This project will highlight key ecological drivers; collect information about aquatic resources, stream system functions, and riverine health; and describe the socio-environmental values that characterise the Karnali River Basin."[50]

Rafting is one way to protect the free-flowing Karnali River, Nepal
Photo: ThirdPole.net

The free-flowing Karnali, Nepal Photo: Republica

48. https://sandrp.in/2015/05/05/nepals-everest-sinking-7-9-earthquake-april-25-2015-himalayan-warning/
49. http://www.karnaliriver.org/a-homepage-section/
50. http://www.karnaliriver.org/the-spring-2018-expedition/

BHUTAN

The tiny country of Bhutan shares many Himalayan rivers with India, most of which are under damming pressures. Bhutan is developing hydropower projects at an alarming pace. Most are being built by India, and the electricity is earmarked to be exported to India too.[51] However, there is a growing concern within Bhutan that India has reached self-sufficiency in electricity generation. Moreover this rampant development is negatively affecting almost all the river basins in the country, and for a nation that values its Gross National Happiness perhaps more than its Gross Domestic Product, this is an uneasy proposition.

The country is making some efforts to protect the last remaining free-flowing rivers like the Drangme Chhu, which later becomes the Manas River when it enters India. The local rafting group, the River Guides of Panbang, takes adventurers along the river. Noting their initiative, His Royal Highness, the King of Bhutan, also visited the rafting camp and personally encouraged and helped the group.

"The organisation is made up of a handful of villagers from the area who see a future within their community. While they have all had some education, they do not see the need to migrate to urban areas seeking jobs like other educated village youth. They have become role models for youth in Panbang. Most importantly, they are also demonstrating, in a small way, that there are other ways Bhutanese can benefit from our rivers. They are making a case to keep some of Bhutan's rivers wild and free. They are teaching us all that rural livelihoods and sustainable tourism can be built on free-flowing rivers. River Guides of Panbang is a sustainable enterprise project supported by the Bhutan Foundation."

Tshewang Wangchuk, National Geographic (https://blog.nationalgeographic.org/2017/04/16/the-value-of-bhutans-rivers/)

51. https://www.internationalrivers.org/resources/9059
https://www.internationalrivers.org/blogs/328-5

Some groups in Bhutan have been lobbying to secure at least some rivers in their free-flowing state. Bhutan's first hydropower master plan of 1990 recommended leaving at least one river without dams and in a free-flowing state. This recommendation has not been adhered to.[52] A petition was also made, which read: "This petition is to request the Royal Government of Bhutan to allow the country's only river that has not yet been dammed – the Chamkhar Chhu – to flow freely till the end of eternity. And, that such a commitment be made to honour the country's IVth King Jigme Singye Wangchuck – the environmental champion without parallel – whose conservation stewardship has ensured that the country's forest cover remain in excess of 70 percent."[53]

Many government officials and organisations strongly supported this idea, and it was anticipated that, on the occasion of the fourth king's birthday, an announcement about protecting a river in its free-flowing state till perpetuity would be made. Sadly, this did not materialise.[54]

The Punakha Dzong, at the confluence of the Pho Chhu and the Mo Chhu (Father River and Mother River), Bhutan Photo: Parineeta Dandekar

A free-flowing Bhutanese river with rich riparian banks Photo: Parineeta Dandekar

52. https://www.thethirdpole.net/ur/2013/03/15/dam-building-spoils-bhutans-green-image-2/
53. https://www.change.org/p/the-elected-members-of-the-parliament-and-the-royal-government-of-bhutan-keep-chamkhar-chhu-river-free-flowing
54. https://www.theguardian.com/sustainable-business/2015/may/20/will-mega-dams-turn-bhutans-happiness-sour

However, in November 2018 several news reports appeared in The Bhutanese, a widely read newspaper in Bhutan.[55] They state that the recent "Hydropower Development Strategy Report" of the Hydropower Committee, constituted in May 2017, recommends leaving the Chamkhar Chhu and Amo Chhu to flow freely.[56] This report has been submitted to the Royal Government of Bhutan. The government, which has led by example in many aspects, could in the future pioneer free-flowing river protection in South Asia.

PAKISTAN

It is not an exaggeration to state that the Indus River and its tributaries have literally moulded the cultural, social and ecological ethos of Pakistan. Today, the Indus is dammed many times over and barely reaches the sea. The Indus Water Treaty gave India utilisation rights over three of the Indus's major tributaries: the Beas, Sutlej and Ravi, and these rivers are now utilised to such an extent in India that today they almost do not flow into Pakistan. In Pakistan these rivers have become a memory and cities and farms have been established in the channels of these rivers.

The Indus too is utilised in so many ways by Pakistan before it reaches its delta that the delta is desiccating, dying and drying.[57] Recent studies estimate that the delta has shrunk 92 percent in the past 200 years.[58] The impact of this drying has been felt intensely by the Indus Delta fisherfolk, who have lost their livelihoods as they have lost their river. Salinity ingress has degraded mangroves and tamarisk forests, changed species composition, affected farming and even drinking water supplies.[59]

The Pakistan Fisherfolk Forum (PFF) has been exemplary in its work to protect the rights of the river and its people. The PFF has advocated consistently for more flows from upstream dams into the Indus Delta, and is now campaigning for legislation to recognise the rights of the Indus River.[60]

According to the PFF, the Indus River should possess the following fundamental rights:

- The right to flow
- The right to perform essential functions within its ecosystem
- The right to be free from pollution
- The right to feed and be fed by sustainable aquifers
- The right to native biodiversity
- The right to restoration.

Muhammad Ali Shah, the Chairperson of PFF, describes the organisation's position and roadmap to protect the Indus:

> "The PFF believes that by building dams and barrages, the government has diverted the natural flow of the Indus River, destroyed the rivers' ecology, displaced the helpless people whose livelihood depended on the river, and destroyed the bio-diversity of the Indus Delta in the name of national interest and sustainable development. The PFF strongly feels that there is a dire need for the Indus River to be restored so that the river flows from start to tail end following the natural consistent flow, and that the biodiversity and ecology of the river, the people and their livelihood is restored.
>
> What is the solution? Pakistani fisherfolk believe that unless we grant fundamental human rights to the delta, the way we have granted to citizens, the delta may not be restored. We must accord it fundamental rights to live, to survive and to "smile".
>
> Our demand is not vague or a fantasy. It is based on global precedents. New Zealand has granted the Wanganui River, and the Indian state Uttarakhand has given the Ganga and its tributary the Yamuna, the same legal rights as a human being.

55. https://thebhutanese.bt/hydro-committee-calls-for-better-standards-and-more-bhutanese-participation/
56. https://thebhutanese.bt/hydro-committee-recommends-leaving-chamkarchu-and-amochu-basins-hydro-free/
57. https://www.downtoearth.org.in/coverage/death-of-the-indus-delta-29827
58. https://tribune.com.pk/story/1649523/1-indus-delta-shrunk-92-since-1833/
https://tribune.com.pk/story/917830/indus-river-delta-dying-a-slow-death/
59. https://www.downtoearth.org.in/coverage/death-of-the-indus-delta-29827
60. http://pff.org.pk/keep-rivers-free/

Keeping the above international, regional and national situation in mind with regards to the gross violation of the rights of nature, the PPF has decided to start a campaign and movement on "Free Flowing the Indus River". The movement will also strive for the "Personhood Rights of River Indus". In this regard, mobilisation meetings, seminars, conferences, peoples' tribunals, and petitions in the High Court and Supreme Court will be organised. Apart from this, the Pakistan Fisherfolk Forum will increase public awareness to highlight the issues around the Free-Flowing Indus River and Personhood Rights of the River Indus, acute water scarcity, degradation and illegal occupation of lakes, destruction of the Indus Delta, and diversion of rivers through dam building."[61]

The Pakistan Fisherfolk Forum celebrating International Day of Action for Rivers by offering rose petals to the Indus River Photo: PFF

BANGLADESH

Bangladesh is a densely populated, low-lying, mainly riverine country in South Asia, with a coastline of 580 kilometres on the northern littoral of the Bay of Bengal. The delta plain of the Ganga (Padma), the Brahmaputra (Jamuna) and the Meghna Rivers and their tributaries occupy 79 percent of the country. As a riverine country, rivers mould the history, culture and economy of Bangladesh like no other natural resource.

Most of the rivers in Bangladesh are distributaries of the Ganga, Jamuna or Meghna systems. Upstream changes and projects in India like the Farakka Barrage affect the country tremendously.[62]

61. Personal communication, Muhammad Ali Shah, 5 August 2018.
62. https://sandrp.in/2014/11/25/lessons-from-farakka-as-we-plan-more-barrages-on-ganga/

In addition pollution, oil spills, encroachments and siltation have degraded many of Bangladesh's rivers. Given this context, it is encouraging to note that some sustained community initiatives have succeeded in decommissioning unscientific barrages on rivers like the Boral.

A local man smeared his children with mud from the drying Boral River as a sign of protest Photo: The Daily Star

Chalanbeel, which means slow-moving wetland (similar to the Bayous of North America) was once a huge wetland of 500 square kilometres which was formed by the confluence of 46 smaller rivers. The wetland also regulates the water levels in the Ganga-Brahmaputra Basins. Apart from several encroachments, roads and rail tracks, sluice gates were also installed in the wetland. The construction of these sluice gates, in the name of ensuring food security, and a number of cross dams to connect newly established villages, further aggravated the situation and killed the rivers inside Chalanbeel. As a result, gradually the groundwater table depleted, and traditional irrigation systems as well as fisheries started to show a steep decline. Several studies outline the loss of livelihoods and fisheries due to sluice gates.[63]

Among the rivers inside Chalanbeel, the Boral River is the most important water body connecting the Padma and Jamuna Rivers. However four cross dams and three sluice gates killed the entire river system, along with small rivers like the Chiknai, Gumani, Hurasagor, Nandakuja etc which depended on the flow from upstream.

63. https://www.researchgate.net/publication/255966359_IMPACT_ASSESSMENT_OF_SLUICE_GATE_ON_FISHING_ACTIVITY_FISHERIES_DIVERSITY_RIVERINE_HABITABILITY_AND_LIVELIHOOD_STABILITY_OF_THE_FISHERMEN_IN_THE_NORTH-WESTERN_BANGLADESH
64. Ibid.

The 220 kilometre-long Boral River[64] is the main branch of the Padma River, which passes through Chalanbeel before falling into the Jamuna River at Sirajganj. The Boral was the lifeline of Chalanbeel, as it connected the Padma (Ganga at the upstream) and Jamuna (Brahmaputra and Teesta at the upstream) directly.

The Boral is on the brink of death, as it has lost its flow and width due to the degradation to the Ganga-Padma River system and the establishment of several unplanned embankments along its length. Several portions of the river, which provides livelihood to around five million people, have been encroached upon by local influential groups. The river has historically played an essential role in irrigation for the agricultural sector of its region in and around the Chalanbeel. However, sluice gates and earthen cross dams constructed by government agencies have turned the river into a series of water-logged bodies.

The Save Boral Movement was initiated in 2008 by Bangladesh Poribesh Andolon (BAPA). A convening committee was established for the continuity of the movement. After many public gatherings and multiple rallies, meetings, human chains, and press conferences in 14 Upazilas (Districts) in 2008 and 2009, the construction of another dam near Chatmohar Pilot School was stopped.

A human chain to save the Boral River, Bangladesh Photo: Daily Star

A signed appeal to protect the Boral River was made by 100,000 riverbank people and civil society. In 2009, the Parliamentary Standing Committee for the Ministry of Land decided to cancel the lease of the Boral and recommended the removal of sluice gates and cross-dams on the river. Instructions also came from the Prime Minister's office to release the Boral River.

In March 2013, a 180 kilometre human chain was organised along the Boral River to advocate for the free flow of the river.[65] Thousands of people took part in this human chain. A report was submitted on behalf of the Save Boral Movement to the national task force for the rivers of Bangladesh in the same year, which included six demands in favour of a free Boral river. The Bangladesh Environmental Lawyers Association filed a case, which led the High Court to order the removal of all the barriers in the Boral River.

In 2015, the Shipping Minister and the State Minister for Water Resources visited the Boral River and held a meeting with the officials of the Rajshahi Divisional Commissioner's office, to announce that all barriers in the Boral River would be removed.

In April 2017, in the presence of the Chairman of the National River Conservation Commission, the decision to free the Boral River from all establishments was again announced. At present, the Dahpara dam, the New Market dam of Chatmohar, and the Bodh dam have been removed. Bridges are under construction at those points. The Ramnagar dam is being removed as well.

Dr. Mohd Abdul Matin, General Secretary, BAPA says: "It is crucial at this stage to accelerate the activities of the Save Boral Movement for decommissioning of the sluice gates and demolishing of the illegal structures across the Boral River. To materialise the ultimate objective of a free-flowing Boral, it is important to engage people and local administration in the catchment area by updating them about the development and reiterating the needs, including reviewing the movement strategy."

Chalanbeel, Bangladesh Photo: Wikimedia Commons

65. https://www.thedailystar.net/news/save-boral-to-save-chalan-beel

IN CONCLUSION

Across South Asia, free-flowing rivers are rare and precious. The area is one of the fastest growing dam building regions in the world, with limited socio-ecological checks and balances and minimal legal provisions which can help to protect its last free-flowing rivers.

Despite this lack of vigilant environmental governance on the part of governments, and of legal instruments to protect flows, communities across South Asia have nevertheless devised unique ways to protect their rivers from an onslaught of dams.

Almost all free-flowing rivers in this part of the world have the heavy threat of dams and diversions looming over them. But the same region also shows astounding diversity, tenacity and commitment in addressing these challenges. Free-flowing rivers of South Asia are protected by communities for a myriad reasons, including because they: are sacred and provide inspiration, are home to invaluable fisheries, provide local security through drinking water and irrigation supplies, can support their local area to be not only self-sufficient but a state leader in per capita income, attract tourists and open up new avenues of employment, provide nutritional security etc. Free-flowing rivers are deeply linked to the wellbeing of the communities who live alongside them. It is thus only natural that the strongest voices which have argued for river protection, and ultimately succeeded in saving these rivers, are the local voices, the voices from communities who know and fight for the value and survival of their rivers.

There is an urgent need to strengthen these groups through supporting them with information, analysis, and resources. It is necessary to build on local experiences and energies to help communities in their fight against intensifying pressures.

There is also a need to work towards a legal f ramework which protects the Right of Personhood of Rivers, following the example of the ongoing global river rights movement.[66] The religious and cultural significance of rivers in South Asia, and the prevailing ethos that sees rivers as divine entities and an indelible part of cultural identity could potentially act as a strong stepping stone to work towards a Rights of Personhood of Rivers movement in South Asia.

It is also crucial that democratic, transparent and participatory environmental governance is advocated for in South Asia, so that countries across the region can respond accountably to legitimate concerns about dams, diversions and mega infrastructure projects affecting rivers.

As we have seen, across the region rivers are hugely valued by the communities who live alongside them. Communities in India, Pakistan, Nepal, Bhutan and Bangladesh have fought strong and committed battles to protect their rivers from interference and secure their right to flow freely, often running innovative campaigns and developing new mechanisms for river preservation, working hand in hand with experts and civil society organisations.

Many South Asian rivers share their basins with neighbouring countries. Along with a syncretic culture and shared ecosystems, the countries thus also share environmental challenges and opportunities. Some common aspects of river protection in South Asia regarding free-flowing rivers can be seen across the region.

Some lessons learned so far, which can help inform riverkeepers into the future, include the following:

66. https://www.internationalrivers.org/the-movement-for-rivers-and-rights

1. **Local communities and livelihoods are at the heart of protecting free-flowing rivers in South Asia**. The cultural importance of rivers in South Asia and the direct dependence of communities on them are two remarkable characteristics that drive the campaign to protect free-flowing rivers. Livelihoods are entwined with healthy rivers across the region, and protecting free-flowing rivers provides a unique opportunity to support communities as well as ecosystems in a very direct way in South Asia. This also means that all strategies towards river protection should engage with and be based on local concerns and build upon local strengths.
   Examples: Pakistan Fisherfolk Forum, Nepal River Conservation Society, Koel-Karo Struggle, River protection in Sikkim.

2. **Protecting and securing free-flowing rivers requires consistence, action and vigilance**. In heavily-dammed South Asia, several rivers or river stretches still flow freely and are fiercely protected. But ensuring this outcome has not been a one-off initiative nor a time-bound project. Securing rivers and livelihoods has been a lifelong mission for several individuals and communities across the region. Challenges keep springing up in various forms, projects change specifications, projects which have been cancelled after massive and ardent protests can get revived, or change form from irrigation dam to hydropower or vice versa. Adaptability and vigilance is imperative when protecting free-flowing rivers, and again this can truly occur only when local communities are an integral part of the struggle.
   Example: Aghanashini River, India.

3. **Evidence gathering about the myriad benefits of free-flowing rivers is an essential task** that should be carried out continuously. This requires liaising with scientists, researchers and research organisations, and sometimes also urging and convincing these bodies to conduct research on the unique values of free-flowing rivers.
   Example: Karnali River - Nepal River Conservation Trust, Aghanashini River - Indian Institute of Science Bangalore.

4. Even if there is no law to protect free-flowing rivers in a country or province, the **existing legal structure can be used in innovative ways** to secure river stretches and provide protection to important cultural and ecological areas.
   Example: Community Reserves and Conservation Reserves on Indian rivers.

5. **Protecting river stretches can be the first step** towards entire river protection, and thus should not be sidelined or deemed less important.

6. **Cultural values are powerful unifying elements** which can bring together communities to protect their river.
   Example: Rongyoung River protection in Sikkim, Nyamjang Chhu in Arunachal Pradesh.

7. **Local livelihoods supported by free-flowing rivers are an important unifying value** and reason to protect these rivers. These livelihood contributions of rivers should be documented meticulously.
   Example: Karnali River by Nepal River Conservation Trust, Aghanashini River by Indian Institute of Science, Indus River by Pakistan Fisherfolk Forum, River rafting initiatives in Bhutan.

8. **The concept of personhood for rivers** has been a part of the region's cultural ethos for millennia, and thus the idea of legal personhood for rivers is a concept which intuitively resonates with, and is important for, South Asia. This can be strengthened and made operational in a practical and nuanced way to support the protection of rights of rivers.
   Example: Pakistan Fisherfolk Forum.

Free-flowing rivers are the soul of South Asia. They deserve to be protected and treasured into the future, as they have been since time immemorial, by the people who live alongside them.

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