

The other side of the Story

Free-flowing rivers around the World

With around 5100 large dams, India ranks third in the world with regards to the number of large dams. The ongoing debate over the economic, social and environmental costs of large dams has indicated many times that these costs are not commensurate with their benefits. Although we have dammed all our major rivers, (except Brahmaputra and plans to dam its major tributaries are on way, some like Ranganadi have already been dammed), profoundly changing their hydrological, ecological, social and cultural systems, **we are yet to form a policy which states that environmental flows in rivers are a necessity**. It is more than clear now that environmental flows relate to well being of not only 'birds and fishes', but also of the entire human societyⁱ. Take an example of fisheries, lack of flows in rivers and contractor-owned reservoir fishing has affected the livelihood of hundreds of thousands of small fishermenⁱⁱ. Environmental flows also dilute pollution load, so let us not hide behind the fact that pollution is wiping out our riverine fish, not the absence of flows. It is also clear that environmental flows do NOT mean a decommissioning of all the present dams, nor do they mean any random figure like 60% or 10% of MARⁱⁱⁱ. Eflows require reaching a wise compromise through science and local negotiations, for each river.

While many countries have put in place policies and laws for maintaining environmental flows in their rivers, there is also a rarer category: **Rivers which have not been dammed yet, rivers which retain their connection from the source to the sea, nurturing myriad ecosystems and communities in their wake!** These are known by many names like Free flowing rivers, Wild Rivers, Pristine/ Virgin rivers, Heritage Rivers, etc., each indicating their rare character and value. In ecological and cultural terms, the value of these rivers is immense and as more and more rivers are being dammed the world over, this value is increasing steeply. Unfortunately, in today's economic terms, these rivers are still waiting to get their due recognition, but as human systems evolve, they will surely be seen as 'invaluable' service providers with phenomenal use and non use values.

Such free flowing rivers are, as is evident, dwindling fast throughout. Of the 177 large rivers of the world only one third are free flowing and a mere 21 rivers, more than 1000 kilometers long retain a direct connection to the sea.

Ecologically, free flowing rivers have a huge significance. All natural flow levels have a specific ecological function, including drought level flows, which help in purging exotic species, as well in concentrating game at a smaller place, for the benefit of predators and flood flows, which help in numerous ways like groundwater recharge, nutrient balancing, fish spawning, sediment flushing, etc. Owing to the habitats they provide, the few free flowing/ least modified rivers in India are last refuges of endangered fish species like Giant Catfish, Gangetic Dolphin, Snow Trout, Mahaseer, etc. Free flowing stretches of river Chalakudy in Kerala, where water levels are not strongly affected by dams, support more than 50 fish species, while the National Chambal Gharial Sanctuary, Ken and Son

National Parks support thriving populations of Gharials, Mugar and the Ganges River Dolphin. Despite being a Sanctuary, Chambal Gharial Sanctuary had to face turbulent times when a string of four hydropower projects were planned by Rajasthan in its course, affecting its unique biodiversity.

At the same time, free flowing rivers and stretches also provide innumerable community services like fisheries, tourism, water supply, to name a few. For example, one of the small free flowing rivers in the Western Ghats, Shastri, provides drinking quality water to its inhabitants throughout the year, without any dams. Estuary of River Anghanashini in Karnataka, provides income to more than 9600 household through bivalve collection alone. There is a very urgent need to assess the ecological goods and services provided by these rivers in order to have a fair cost-benefit analysis of dammed and undammed rivers.

Unfortunately, India does not have any legislation to protect the free flowing status of any of its rivers. In a recent attempt, following Dr. G.D. Agarwal's fast unto death, a small stretch of Bhagirathi (Himanshu/ Vijay: Was it a small stretch or the entire Bhagirathi?) had been declared to be free of dams . But, works on Loharinag Pala are again being considered and at the age of 79, Dr. Agarwal is on a fast-unto-death to save a small stretch of India's so-called National River, again). Considering the very special cultural value of rivers like Ganga and Narmada in the hearts of all Indians, these steps are totally superficial.

Amidst this scenario, there are many countries which are actively trying to protect these last sentinels from the onslaught of dams and have been devising some ingenious legislative tools to co manage ecology, economy and societal well being,

So let us, for a change, look at the other side of the story, where policies and voluntary efforts are being made to enable rivers to run free.

There are a number of lessons to be learnt from these cases. Firstly: these policies and laws were not easily constituted. Many Individuals, Civil Society Organisations, Cultural Groups, Nature Groups, Indigenous People's groups, etc., lobbied for them hard and long, and are still doing it. Secondly, these policies are not a mere compromise to keep some groups happy, so that the process of damming other rivers can go on without 'disturbance'. Most of the countries have set criteria for identifying their own Wild and Scenic/ Heritage/Wild or National Rivers and have meticulously classified activities that can take place in various stretches of these rivers. Community participation and special attention to indigenous community and traditional water rights are also highlights of these cases.

Let us take a brief look at some of these efforts:

1. Wild and Scenic Rivers Act (1968) : United States.^{iv}

“It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

The Act specifically “[d]eclares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States **needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.**”(emphasis added)

The essence of the Act, is protection of **free-flowing character of the river**. Free-flowing is defined in the Act as *“existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway”*. Note that, like it is contested in India that run –of-the- river schemes do not affect a river, according to this Act, a free flowing river does not include modification in the waterway or straightening. To qualify, a river or river segment must be in a free-flowing condition and must be deemed to have one or more “outstandingly remarkable” scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values.

. Each river is administered by either a federal or state agency. The Wild and scenic Rivers and /or their stretches and tributaries are managed by various Federal and State Agencies like the Bureau of Land Management, US Fish and Wildlife Service, US Forest Service, National Park Service, etc,. In 1995, a Wild and Scenic Rivers Council has been formed with the coordination of the above mentioned agencies as well as any other agencies that have interest in protecting/ managing the river.

Jurisdiction of the States over their waters remains unaffected, so long as it does not interfere with the functioning of this law. It also states that the water rights of the affected individuals will be compensated.

Based on their characters, Rivers are classified as Wild, Scenic and Recreational, with varying management in each of the categories. This mechanism allows development of varying degree of palces on and along the river.

The Act prohibits federal support for actions such as the construction of dams or other in stream activities that would harm the river's free-flowing condition, water quality, or outstanding resource values.



Salmon River, one of the longest Wild and Scenic Rivers in Idaho, running 425 miles

As of 2008, the 40th anniversary of the Act, the National System protects more than **11,000 miles of 166 rivers in 38 states** and the Commonwealth of Puerto Rico; this is a little more than one-quarter of one percent of the nation's rivers. **By comparison, more than 75,000 large dams across the country have modified at least 600,000 miles, or about 17%, of American rivers.**

On the March 30, 2010, the congress added **1,100 miles of rivers to this Act.** Currently, the number of rivers protected

under the **Wild and Scenic Rivers scheme to a total of 252** (American Rivers 2009).

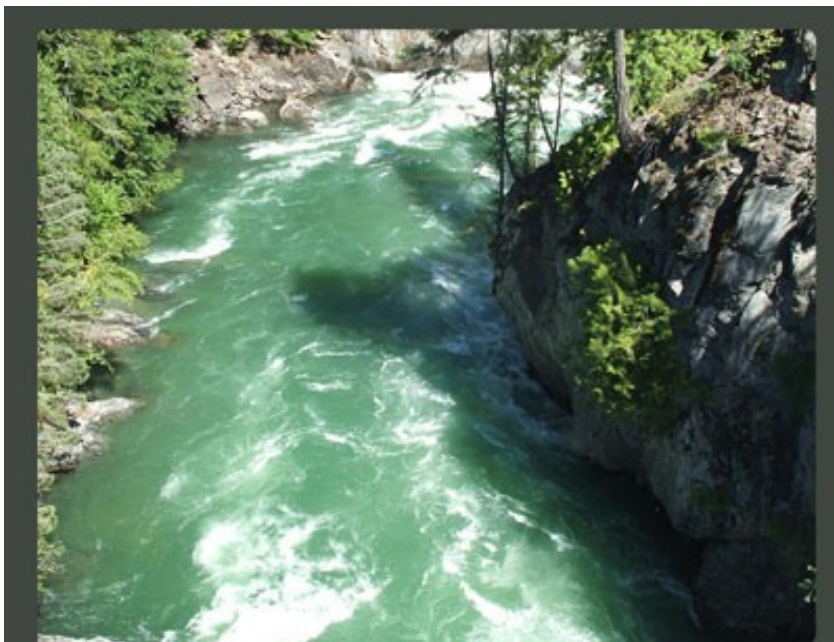
2. Canadian Heritage Rivers System (CHRS) 1984

“Canada’s outstanding rivers will be nationally recognized and managed through the support and stewardship of local people and provincial, territorial and federal governments to ensure the long-term conservation of the rivers’ natural, cultural and recreational values and integrity.”

-Vision of Canadian Heritage River System Charter, 1997

The Canadian Heritage Rivers System (CHRS) is Canada's national river conservation program. The CHRS was established in 1984 by the federal, provincial and territorial governments to conserve and protect the best examples of Canada’s river heritage to give them national recognition, and to encourage the public to enjoy and appreciate them (http://www.chrs.ca/About_e.htm). It is a cooperative program of the governments of Canada, all 10 provinces, and the three territories. CHRS is a Public Trust and participation in the CHRS is purely **voluntary**.

The system is governed by a Heritage Rivers Board which has members from the government as



Fraser Canyon, Fraser River

well as citizens. For a river to be included in the Heritage system, it needs to be nominated and designated.. To be considered, the river must have outstanding natural, cultural and/or recreational values, a high level of public support, and the application

should demonstrate that sufficient measures will be put in place to ensure that those values will be maintained. One of the important (though not the deciding) criteria related to 'Natural Integrity' is '*absence of human made impoundments in the river course*'.

The river becomes designated as a Heritage River when a **management plan, or heritage strategy**, that ensures the river will be managed to conserve its outstanding natural, cultural and/or recreational values, is lodged with the Board by the government(s) that made the nomination. This plan charts out important activities to be undertaken to protect the river like restoration, environment education, pollution treatment, etc, **Production of a management plan or heritage strategy is based on public consultation and consensus.**

The Heritage Rivers Board has published important works relating to "Cultural Framework for Canadian Heritage Rivers" which enumerates the elements of Canada's cultural river heritage and a "Framework for the Natural Values of Canadian Heritage Rivers", which can be used to assess the representation of these elements by rivers in the CHRS, or candidate CHRS rivers.

In a recent happening, MP of North Alberta voiced strong opposition to an oilsands project, which was about to draw freshwater from the untouched Clearwater River, using the support from his constituents through Clearwater's CHRS status. This is far cry from our country where rivers which are untouched and of great ecological and cultural importance are looked upon as untapped resources, as if we are deriving no service from them currently.

Interesting part is that CHRS does not only work with free flowing rivers, but also on highly developed rivers like Grand and Ottawa, to conserve their heritage characters. **Currently, 38 rivers are designated as Heritage Rivers, while six are nominated.** These rivers represent Canada's diverse social, cultural and ecosystems.

3. Wild Rivers Act, Australia,

According to the Act, a Wild River is defined as "*a channel, channel network, or a connected network of waterbodies, of natural origin and exhibiting overland flow (which can be perennial, intermittent or episodic) in which:*

- *the biological, hydrological and geomorphological processes associated with river flow; and*
- *the biological, hydrological and geomorphological processes in those parts of the catchment with which the river is intimately linked,*

have not been significantly altered since European settlement.

Like India, many of Australia's river systems received a ravaging during the process of colonisation and the development of modern Australia. Most of its river systems today are severely degraded due to over-extraction, pollution, catchment modification and river regulation (Dunn 2000, Arthington and Pussey 2003, Kingsford et al 2005).

Background:

The seeds of the Wild Rivers Campaign and the subsequent Act were sown during the Franklin River



Gordon River, Tasmania

campaign, led by The Tasmanian Wilderness Society in 1970s. With intense and tireless efforts, a huge hydropower dam on the unique Franklin River in Tasmania was stopped. Through the Wilderness Society, efforts for protecting the remaining untouched rivers went on.

In 1992, *the Wild Rivers Act* was passed, The main responsibility of managing Wild Rivers lay with the Australian Heritage Commission, Overseeing the project

was the *Wild Rivers Committee*, which included representatives from the Commonwealth, State and Territory governments, local government, landowners (including the National Farmers Federation), conservation groups, Indigenous people and the scientific community.

The Australian Heritage Commission completed the *Wild Rivers Project* in 1998, which culminated in the reports *The Identification of Wild Rivers* and *Conservation Guidelines for the Management of Wild River Values* (Department of the Environment and Heritage, Australia. 1998a and 1998b). These reports later formed the basis for the Queensland *Wild Rivers Act 2005*.

Wild River Criteria:

Wild Rivers is defined as a stream that has all, or almost all, of its natural values intact. This does not necessarily mean that the river is in pristine condition, but rather that **it remains largely unaffected by development in its catchment area**. The Department of Environment and Resource Management has identified the following elements that are necessary to constitute a wild river:

- Hydrology - the rivers are **free flowing** and well connected to their floodplains and shallow aquifers.
- Geomorphology - the bed and bank are stable with a natural movement of sediment along the river to estuaries and floodplains.
- Water quality - sufficient to meet human and ecological needs.
- Riparian vegetation - sufficient trees, shrubs and sedges to protect banks and provide food for fauna.
- Wildlife corridors - natural habitat along rivers to allow native animals to migrate within their natural ranges.

Like in India, water is a State subject in Australia and each state has the right to manage its Wild Rivers in whichever way it deems fit.

In some Australian states like Queensland, when the state government sought to reform water management by passing the *Water Act 2000*, **conservation groups strongly advocated for parallel discrete legislation to protect the conservation values of rivers, including free flowing rivers. This was in recognition that the Water Act focused on water allocation and use but did not specifically address environmental protection issues, nor provide a sensible and effective regulatory framework to protect Queensland's remaining free flowing rivers.**

How the Legislation works:

In order to give more definition for this assessment process, a declared Wild River Area (defined by a river basin) is spatially mapped into different management areas, which have varying rules to guide development activities in the *Wild Rivers Code*.

The management areas include:

- **High Preservation Area:** the buffer zone around the main watercourses and wetlands (the orange areas on the above map) where ecologically destructive development like dams, irrigated agriculture and strip mining is prohibited. Lower-impact activities, such as grazing, infrastructure such as houses, and fishing are allowed.
- **Preservation Area:** the remainder of the basin, where most development activity can occur as long as it meets requirements that minimise the impacts on the river system.
- **Floodplain Management Area:** important floodplain areas in the basin (shown in cross-hatch above), where the construction of levees and other flow-impeding development is regulated to protect the connectivity between this area and the main river channels.
- **Subartesian Management Area:** areas where there is an underlying aquifer that is strongly connected to the river system. Water extraction from this area needs to be considered in the overall water allocation for the basin.
- **Designated Urban Area:** areas where there is a town or village, so certain types of development are exempt from the *Wild Rivers Code* (shown in pink in the above map).
- **Nominated Waterways:** secondary tributaries or streams in the Preservation Area where certain development set-backs apply.

In practice this means that **destructive developments like large dams, intensive irrigation, and mining cannot occur in sensitive riverine and wetland environments** (in the High Preservation Area), while a range of other developments have to meet sensible requirements outlined by the *Wild Rivers Code*.

A Wild River declaration cannot occur without extensive community consultation, including a public submission phase. The formal consultation process is triggered when the Government releases

a draft declaration proposal (termed a “nomination”). This includes releasing a draft map showing proposed management areas, and is followed by months of face-to-face meetings between the Government and communities, sectoral groups, and industry organisations, as well as a chance for people to lodge submissions with the Government.

4. National Rivers, Sweden:

According to the Swedish Ecologist Christer Nilsson, one of the pioneering champions of free flowing rivers, environmental movement to protect the country’s last four major rivers from dams began in the late sixties, following the damming of Sweden’s majority of rivers. This was the first major environmental battle in Sweden. In April 1970 the government decided to prohibit the planned development on one of the four rivers.



River Torne, One of the National Rivers of Sweden

Through an environmental movement which discussed the importance of free flowing rivers scientifically for the first time, the Swedish Government protected these four rivers as National Rivers and a few smaller ones through various measures like National Parks, Protected areas, etc,. Presently the major rivers Kalix, Torne and two other rivers are national rivers, protected from any planned development.

Conclusion:

Looking at the immense use and non use values of free flowing rivers, the need to protect these (few) rivers is very real and urgent. Without getting entangled in trying to exactly define a free flowing river (as most of the rivers, if not the feeder streams, have been impounded through small scale structures, which impound a miniscule quantity of water, compared to large dams), we can assume that rivers whose water flow and sediment flow is not strongly affected by dams, which have not been embanked or channelized, which have good riparian health and water quality and which support important biodiversity and community services should be protected for the benefit of current and future generations. These rivers will provide an engaging outdoor laboratory for young minds of tomorrow, who may not see a natural river at all. Like river Gundia in Western Ghats, which is now threatened with hydropower dams, these rivers will provide the last haven for dwindling aquatic, riparian and avian biodiversity and may nurture a thriving forest ecosystem.

Looking at the ecological assessment of rivers in India, we can safely conclude that ecological goods and services of most of the rivers are not yet quantified, and it will be indeed be an irreparable loss to lose these services through short sighted management decisions.

At the same time, even in the case of dammed rivers, there are stretches which are of unique ecological/ social/ cultural value, which should be protected. For example, stretches of rivers like Chalakudy, Jia Bhoroli, Ramganga, Kabini, etc. which support immensely rich fisheries as well as avian biodiversity, Stretches of rivers like Narmada, Ganga, Krishna, Godavari which are of high cultural/ spiritual importance . These stretches should receive special protection through measures like Ecological Sensitive Areas, National Parks, Conservation areas, etc.

At the very least, rivers representing each ecological class like Himalayan, desert rivers, peninsular rivers from eastern and Western Ghats, etc., need to be conserved and ecologically/socially important stretches in all the large rivers should be identified and protected.

All in all, looking at the dismal performance of Pollution Control Boards, Fisheries Departments, Action Plans like Ganga and Yamuna Action Plans which result in NO change in the status of river, it is high time that we learn our lesson:

Conservation is better than restoration.

References:

ⁱDyson, M., Bergkamp, G., Scanlon, J. (eds). *Flow. The Essentials of Environmental Flows*. IUCN, Gland, Switzerland and Cambridge, UK. xiv + 118 pp.

ⁱⁱ Personal communication with Chairman of National Association of Fishermen,

- Sandhu, J. S. & Toor, H. S. 1984. *Effects of Dams and Fishways on Fish Fauna with Special Reference to Punjab*, in *Status of Wildlife in Punjab*. Indian Ecological Society, Ludhiana, India. pp 117-124
- D. Jackson et al, *The Influence of Dams on River Fisheries*, Submission to the World Commission on Dams

ⁱⁱⁱ Smakhtin, V.; Anputhas, M. 2006. An assessment of environmental flow requirements of Indian river basins. Colombo, Sri Lanka: International Water Management Institute. 42p. (IWMI Research Report 107)

iv

Bibliography:

1. *An introduction to Wild and Scenic Rivers*, 1998, Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council
2. *Free-flowing rivers: Economic luxury or ecological necessity?* 2006, World Wide Fund for Nature
3. Jhunjhunwala, 2010, *Economics of River Flows , Lessons from Dam Removals in America*, Kalpaz Books
4. Canadian Heritage River Systems Charter, 1997, www.chrs.ca/PDF/CHEng.pdf
5. A Cultural Framework for Canadian Heritage Rivers, 1997, Minister of Public Works and Government Services Canada http://www.chrs.ca/PDF/Cultural_Framework_e.pdf
6. A Framework of the Natural Values of Canadian Heritage Rivers, 1997, Minister of Public Works and Government Services Canada http://www.chrs.ca/PDF/Natural_Values_e.pdf
7. Canadian Heritage River System, Strategic Plan , 2008-2018, (2007) Canadian Heritage River Systems <http://www.chrs.ca/PDF/CHRS-Strategic-Plan-2008-2018-eng.pdf>
8. Stein et al, 2001, *Wild Rivers in Australia, International Journal of Wilderness* ,VOLUME 7, NUMBER 1 www.wilderness.net/library/documents/stein1.pdf
9. Helen Dunn, 2000, *Identifying and Protecting Rivers of High Ecological Value'* , LWRRDC Occasional Paper 01/
10. Glenn Walker ,2010, *Wilderness Society's Wild River Campaign* <http://www.wildrivers.org.au/info> Quentine Duthie, 2009, *Rivers Wild and Free*, FMC Bulletin, New Zealand
11. Postel, Richter, 2003 *Rivers for Life: Managing Water for People and Nature*, Island Press
12. Millennium Ecosystem Assessment Synthesis Report, 2005