

# C-PACT WATER BULLETIN

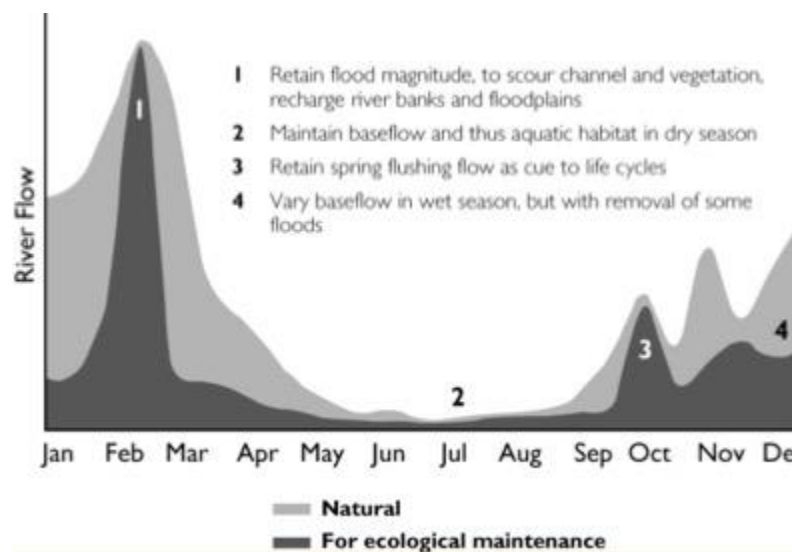
CPACT & WSP (Water Science Program) presents a news bulletin of latest news from India and abroad on debates, concerns, and events related to water.

## E-flows for a Paradigm Shift in Water Management in India: A Commentary

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The Brisbane Declaration (2007) defines environmental flows (e-flows) as “the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems” (Arthington et al, 2018). The concept arises from the acknowledgment that anthropocentric activities have degraded rivers and have reduced or stopped their flow to a point where they cannot exhibit their original ecosystem functions. While e-flows do provide a metric that takes into consideration many ecological and social variables, it should only be used as one of many methods to reverse the dominant paradigm of water management in the country, especially with regard to surface water. This commentary is an outcome of a class discussion as part of the fifth module of the Water Science and Policy M.Sc. program<sup>1</sup>.



*Hydrograph depicting e-flows in comparison to natural flows*

*Source: FRC Environmental, 2017*

<sup>1</sup> I thank my teachers, Rajeswari Raina and P. S. Vijayshankar for the class discussion and editing this commentary.

The fundamental ideology behind the study of e-flows is that it is an anthropocentric *choice*. How much water we want flowing in a river is finally a *choice* that we humans make. Let us take the example of the Ganga River Basin Management Plan (GRBMP) and assume that the consortium of Indian Institute of Technology (IIT) have consulted with all the stakeholders along the Ganges (although this itself should be questioned), accounted for their ecological and social needs and have arrived at a regime that is about 50% of the peak flow<sup>2</sup>. Where is this 50% going to be implemented? The Ganges river is about 2500 km in length, does an e-flow regime necessarily imply that the flow will be captured throughout the length of the river? Especially in the case of the Ganges, where the report (GRB EMP, 2011) explicitly mentions that one of the main drivers for restoring flows in the river is for its spiritual integrity, it is doubtful that policy makers will be serious about an e-flow except in sites of spiritual significance. Secondly, all the knowledge disciplines used to inform e-flow policy are constantly evolving. Methods to identify new species, determine habitats, assess demographic changes and river morphology will continuously evolve. Since e-flow policies will in most cases demand a paradigm shift in government policies on water, one can imagine the bureaucratic hurdles to be overcome to get a flow percentage approved. Policy makers might get the impression that this is a static percentage, however, it should be noted that e-flows in themselves have to keep evolving with other disciplines. Thirdly, the e-flow concept allows you to determine what species *you* deem to be important for the region. Of course, if the report mentions that Gangetic dolphins will be protected with a 50% flow, it does not mean that all other species will not be protected. Certainly, species that can adapt to this flow will continue to live. However, we can grossly underestimate our evaluation of the importance of some species as many of the disciplines used for these evaluations are continuously evolving. We have to understand that all life is interconnected and choosing to protect one (or many) species will have cascading impacts on the ecological web, leading to the disappearance or appearance of several other species.

Finally, we have to really understand where we place e-flows within our prevalent paradigm of water resource management in India. The concept is definitely refreshing and is juxtaposed against the dominant paradigm of heavy extraction of natural resources. To that end, e-flows definitely attempts to reverse some of these thought patterns. But it is still speaking the language of policy makers. It serves knowledge, a scientific estimate of 50 percent of peak flow as one truth, to policy makers. It denies the river its natural dynamism and relationships with ecosystems all along its length and depth, flows and undercurrents.

However, we must *know* our place as a species that shares an ecosystem with other living beings that have a right to river water. For a fairly large portion of our time as a species on this planet, we had lived *with* rivers, intimately *knowing* its trajectory and pulse, *behaving* as the river nudged us. Rivers had their own agency to perform their ecosystem functions, only one of which was to be a carrier of

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<sup>2</sup> The actual goal of the IIT's is to almost completely mimic the natural flow regime of the river.

water. We are clearly in a different phase of our existence today, and it is imperative that our knowledge and our policies point towards a direction that restores the river's full natural agency.



*Ganges River Dolphin*

*Source: Down to Earth, 2019*

This commentary is meant to applaud the inclusion of e-flows in our water knowledge-policy regime. But it is also to remind us that e-flows should be used as one of the many tools to steer policy towards a larger Dharma<sup>3</sup> perspective. A Dharma perspective fully acknowledges our place as humans as just one species that (i) shares fairly and equitably in the resources that a river provides to all life in an ecosystem and (ii) lives within the agency that the river has, as it performs its ecosystem functions and roles in the larger global water cycle.

## References:

Arthington, A. H. (2018). Environmental flows: Ecological limits of Hydrologic alteration (eloha). *The Wetland Book*, 1843-1847. doi:10.1007/978-90-481-9659-3\_348

*Environmental Flows: State of the Art with special reference to Rivers in the Ganga River Basin* (Rep. No. 022\_GBP\_IIT\_EFL\_SOA\_01\_Ver1\_Dec 2011). (2011). Indian Institute Technology.

Iyer, R.R. 2015 "Water Policy and Science: Disciplines, Perspectives, Values," in Raina, R. S. (Ed.) *Science Technology and Development in India: Encountering Values*, Orient BlackSwan: Hyderabad. pp. 87-103.

Example of an environmental flow recommendation. Light grey shows the natural (pre-disturbance) flow pattern, and the dark grey shows the allocated environmental flow to sustain key ecosystem processes at different times of the year. [Digital image]. (2017, May 23). Retrieved February 18, 2021, from <https://frcenv.com.au/4110-2/>

Sinha, R. K. (2019). A Ganges River Dolphin [Digital image]. Retrieved February 18, 2021, from <https://www.downtoearth.org.in/news/wildlife-biodiversity/thriving-gangetic-dolphin-presence-in-bihar-reveals-census-63285>

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<sup>3</sup> Responsibility towards the poor and underprivileged, other humans that share resources with us irrespective of state/national boundaries, other species and Planet Earth itself (Iyer, 2015).

## Latest News

### SC takes suo moto cognizance of pollution in Yamuna



The Supreme Court on Wednesday took suo moto cognizance of pollution in the Yamuna river and also issued a notice to the Haryana government on a plea by Delhi Jal Board (DJB). [Read More:](#)

### MoU Signed Between IITG, Brahmaputra Board & CWC to understand the fury of Brahmaputra River



On December 9, 2020, the Brahmaputra Board, CWC and IIT-Guwahati signed the MoU (Memorandum of Understanding). IIT-Guwahati has been roped in for the mission to analyse the quality of water, sand and sediment of the river to seek solution to erosion. [Read More:](#)

### Stop "crime of pollution", NGT tells UP govt over discharge of sewage in rivers joining Ganga



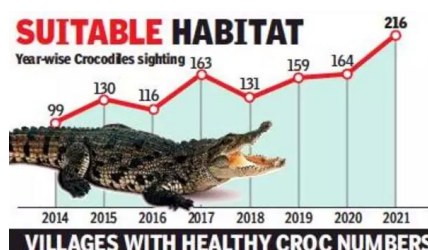
The National Green Tribunal has come down heavily on the Uttar Pradesh government over discharge of untreated sewage in rivers joining the Ganga and said there was no indication how "crime of pollution" is to be prevented by the State. [Read More:](#)

### Study finds metal pollution in aquaculture farms



A study of aquaculture farms across 10 States, which account for the bulk of India's production, has found "hazardous" levels of metals such as lead and cadmium in all of them. [Read More:](#)

### Crocodiles flourish in Gujarat's Charotar wetlands



VADODARA/ ANAND: If the prospect of spotting the large, ponderous, lizard-like amphibious reptile with carnivorous habits stirs the inner Steven Irwin in you, then head to the wetland [Read More:](#)

### Jal Shakti Ministry reviews water-resources projects across nation



The Union Minister of State for Jal Shakti, Rattan Lal Kataria, took a review meeting of the Central Soil and Material Research Station (CSMRS) on Monday and urged its functionaries to further step up efforts towards making India self-reliant. [Read More:](#)

## Academic news: scholarships

### Fully Funded PhD Scholarships 2021-2023 on Clean Water Technologies



We're offering a competitive tax-free PhD stipend of \$27,500 per year for three years. Funding also covers tuition fees, research project consumable costs and related research funding for conferences/workshops. You can also earn additional income for teaching assistance opportunities. [Read More:](#)

### Rotary Scholarship for Water and Sanitation Professionals



The strategic partnership between The Rotary Foundation (TRF) and IHE Delft Institute for Water Education aims to tackle the world's water and sanitation crisis by increasing the number of trained professionals to devise, plan, and implement solutions in developing and emerging countries. [Read More:](#)



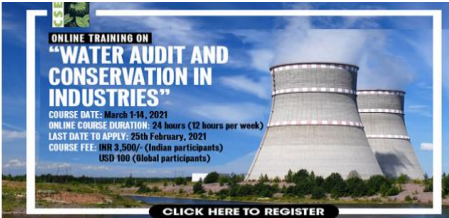
### Joint Japan World Bank Graduate Scholarship Programme (JJ/WBGSP)



The Joint Japan/World Bank Graduate Scholarship Program  
Fully Funded Master Degree in Japan

The Joint Japan/World Bank Graduate Scholarship Program is open to women and men from developing countries with relevant professional experience and a history of supporting their countries' development efforts. JJWBGSP is envisaging opening the 2021 application period late March 2021 with a deadline for applying around mid-May 2021. [Read More:](#)



Conference/ Course/ Training Seminar Workshop/Contest:		
<p>Webinar: Transboundary Water Agreements - 19 January 2021</p>  <p>This is the first of six webinars in 2021 that are linked to the Massive Open Online Course (MOOC) on "Governance for Transboundary Freshwater Security." The webinar series is called the "transboundary freshwater security governance train" and is carried out January-June 2021. <a href="#">Read More:</a></p> <p><b>Student Highlight</b></p>	<p>Rainwater Harvesting for Home Landscapes Online Workshop</p>  <p>Kat Sawyer will teach you how to capture rainwater for reuse in your landscape, and sink it into the soil instead of sending it down the drain. Join us for this online workshop that explores rainwater harvesting and water reclamation strategies. <a href="#">Read more:</a></p>	<p>Online Training on Water Audit and Conservation in Industries</p>  <p>The online course is self-paced wherein recorded sessions from experts, presentations and other reading material will be uploaded on the training platform on daily basis. Additionally, 2-3 live online sessions will be organized with all the experts for taking up queries over weekend. <a href="#">Read More:</a></p>

WSP M.Sc. (batch of 2019-21) field training at Samaj Pragati Sahayog in Dewas, Madhya Pradesh.







**For any comments or queries please contact:**

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