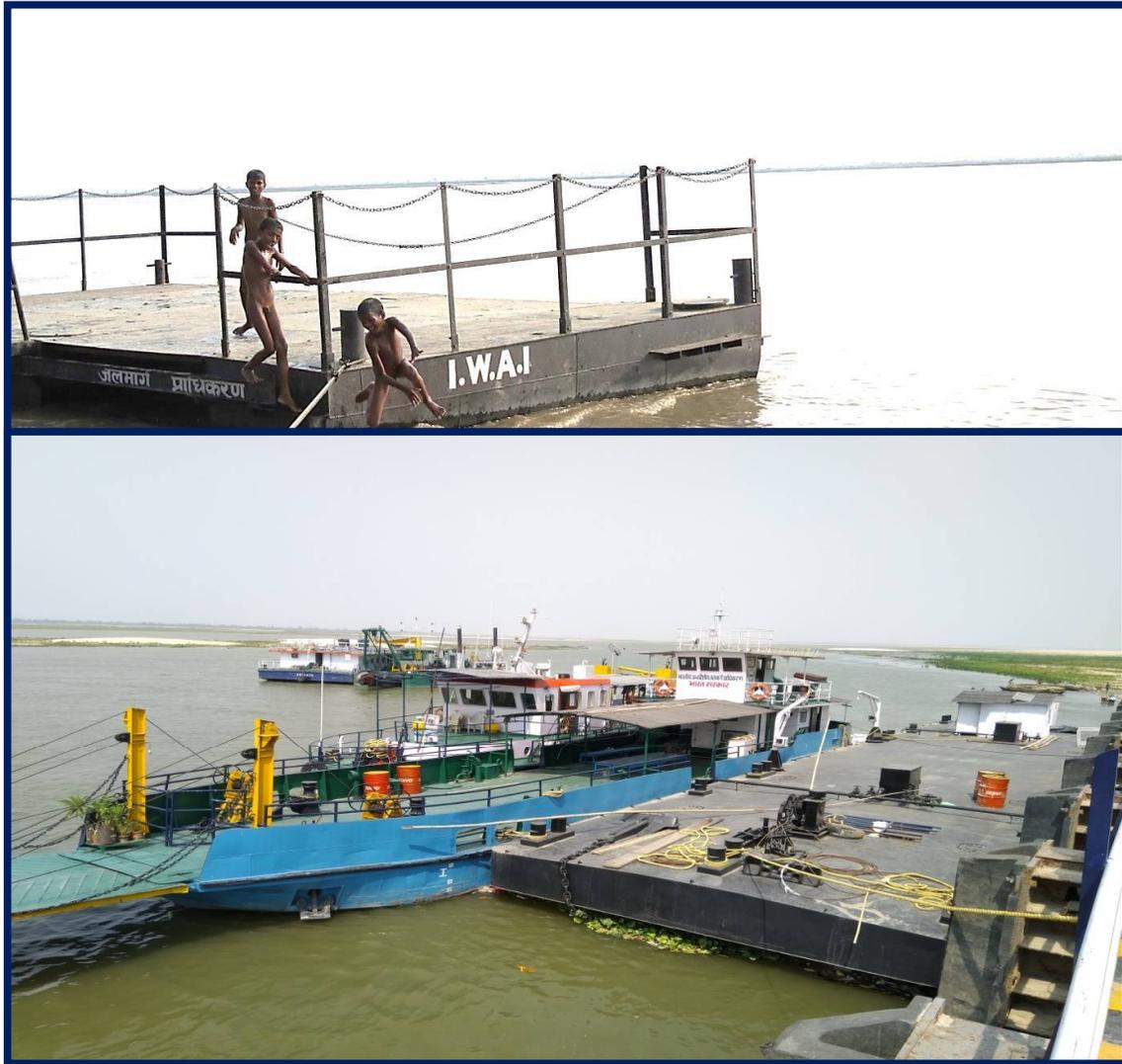


National Inland Waterways in Bihar

A Profile



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Bihar is blessed with bounty of rivers that flow through the state. With the implementation of National Waterways Act, 2016 seven rivers of Bihar have been declared as National Inland Waterways¹. This means that the creation, maintenance and regulation of waterways on these rivers for motorised vessels will be under the control of the central government, acting through the Inland Waterways Authority of India (IWAI).

These rivers include Ganga, Kosi, Gandak, Ghaghra, Punpun, Sone, and Karmnasa. Figure 1 shows the waterways on a map, while Table 1 gives details of these national waterways. Some declared National Waterways in Bihar are part of larger waterways which pass through other states. These include waterways proposed on Ganga, Gandak, Ghaghra, and Karmnasa rivers. Other waterways like those proposed on Kosi, Sone and Punpun pass through the state of Bihar only.

These waterways are being developed as a part of the larger National Inland Waterways program, where 111 rivers are being converted to national waterways. The plan is to create large scale, commercial shipping and navigation systems in these rivers, where large barges and other vessels will ply, carrying cargo, passengers and other traffic.



Figure 1: Map showing national inland waterways in Bihar with related details. Two more terminals proposed on the Gandak waterway, namely at Kalyanpur and Vaishali are not shown in the map since the exact locations of these are not given in the DPR.

¹ National Waterways Act, 2016

Table 1: National Inland Waterways in Bihar

River	National Waterway(NW)	Length of the Waterway (km)	States Through Which It Passes	Limits of the Waterway
Ganga	NW-1	1620	UP, Bihar, Jharkhand, West Bengal	Allahabad-Haldia Stretch of the Ganga—Bhagirathi-Hooghly Rivers
Kosi	NW-58	236	Bihar	Kosi Barrage at Hanuman Nagar Lat 26°31'40"N, Lon 86°55'29"E to Confluence of Kosi with Ganga river at Kursela Lat 25°24'40"N, Lon 87°15'14"E.
Gandak	NW-37	300	Bihar & UP	Bhaisalotan Barrage near Triveni Ghat at Lat 27°26'22"N, Lon 83°54'24"E to Gandak and Ganga rivers confluence at Hajipur Lat 25 39°18'N, Lon 85°10'28"E.
Ghaghra	NW-40	340	Bihar & UP	Faizabad at Lat 26°47'51"N, Lon 82°06'46"E to Ghaghra and Ganga river confluence at Manjhi Ghat Lat 25°44'13"N, Lon 84°42'03"E
Sone	NW-94	160	Bihar	Sone Barrage near Dehri at Lat 24°50'14" N, Lon 84°08'03"E to confluence of Sone and Ganga rivers at Lat 25°42'15"N, Lon 84°52'02"E.
Punpun	NW-81	35	Bihar	Bridge on National Highway-83 near Pakri village Lat 25°29'50"N, Lon 85°06'19"E to confluence with river Ganga at Fatuha Lat 25°30'50"N, Lon 85°18'17"E.
Karamnasa	NW-54	86	Bihar & UP	Bridge at Kakarait Lat 25°18'11"N, Lon 83°31'38"E to confluence of Karamnasa and Ganga rivers at Kutubpur Lat 25°31'06"N, Lon 83°52'47"E.

Source: (Source: National Waterways Act, 2016; PIB release on National Waterways Project dated 21st July 2016)

The development of these waterways is being planned in a phased manner. According to a FAQ list released by Inland Waterways Authority of India, the development of Waterway No. 1 (Ganga-Bhagirathi-Hooghly rivers), WW No. 58 (Kosi), WW No. 37 (Gandak), and WW 40 (Ghaghra) in Bihar

is to be completed by 2019. However, National waterway-40 on Ghaghra has been declared as economically non-viable² after the techno-feasibility study done by IWAI. Hence, it is not proposed to be considered for development of waterways. Waterways on Sone, Punpun and Karamnasa will be taken up for development at a later stage.

Huge Interventions in Rivers

Developing these waterways to allow large barges to transport cargo requires creating channels in these rivers with a minimum depth and width to allow these vessels to move. Since rivers in Bihar and elsewhere often don't have such depths³, it will be created by dredging – cutting and excavating the riverbed – and by building barrages. In addition, the channels will need river straightening and training works, bank protection works and removal or adjustment of obstacles like low bridges etc. The waterways will also need construction of related infrastructure like terminals, jetties, warehouses etc. All this represent massive interventions in the rivers with large impacts.



Figure 2: A dredger in action. (Photo: IWAI, Dredger in Brahmaputra Waterway)

Rationale

The reason for these waterways is that they provide a “as fuel efficient, cost effective and environment friendly mode” of transport⁴. However, these claimed advantages of waterways are neither unqualified, nor automatic. They will manifest only when certain conditions are met, and only under certain circumstances. Thus, not all waterways will be beneficial, and the viability of each waterway needs to be established in a case by case basis based on detailed studies. At the same time, waterways have many serious social and environmental impacts, which are often not studied. Particularly vulnerable are the livelihoods of local communities like fisherpeople. A detailed analysis the many social and environmental impacts and of the factors that determine whether a waterway

² RTI Reply to the authors by IWAI, dated 07.04.2017

³ The depths of these rivers are less due to heavy silt load, formation of shoals and flat terrain

⁴ National Waterways Bill, 2015, tabled in Parliament

will be viable, is given in Manthan's report⁵ "**National Inland Waterways in India - A Strategic Status Report**".

Here, we draw attention to some of the specific issues related to waterways in Bihar.

Key Issues

Local Communities Not Consulted: In spite of the likely large impacts on local communities, they have not been consulted or even informed about the plans to create waterways and its related infrastructure like terminals etc. We found this first hand in our visits to the Kosi and Gandak waterway areas. There is little discussion of the waterways program in the public discourse.

Bihar Government not consulted: Not just the people, the Government of Bihar has also been insistent that no consultation has been done with it before declaring these rivers as 'National Waterways.' Further, the Government of Bihar has not been kept informed or involved in the various actions being carried out by the IWAI in Bihar. Last but not the least, the concerns raised by the Bihar Government with the Centre are not being addressed.

Silt is a huge problem: Several of the rivers where waterways are planned in Bihar have a massive silt load. These include the Kosi, Gandak and the Ganga. The continuous inflow and deposition of huge quantities of silt makes creating the waterway and maintaining it very difficult and very costly. The Chief Minister of Bihar, Shri Nitish Kumar, at the recent East India Climate Change Conclave held at Patna on 23 June 2018 has stated that the waterways project is not going to succeed unless the problem of silt is addressed⁶. Earlier in 2017, in a letter addressed to the Prime Minister, Shri Nitish Kumar had stated that,

"...Presently the problem of silt is so gigantic that any silt taken out from a section of waterway will come down and deposit in the same section soon thereafter in the flood season and this will continue as a cycle. Therefore, without addressing the above issue, no waterway can be successful."

The Government of Bihar has also raised concerns that current means of addressing silt problems are not effective. It's clear that unless the silt problem is addressed properly, waterways may not be viable.

Channel Shifting and Course Changing: The large quantities of silt in the rivers lead to the shifting of the river channel and over the long term, even the shifting of the entire river course itself. This will be a major problem for the waterway as the navigation channel will keep shifting. For one, it will mean frequent re-development of the channel. For another, it may render facilities like terminals useless as the channel moves away from them.

Impact of Dredging: The dredging that is done to create and maintain channel depth has serious impacts on the river's ecology, and the livelihoods of local communities like fisherpeople as dredging impacts the fish adversely.

⁵ Available at <http://www.manthan-india.org/wp-content/uploads/2018/04/Strategic-Status-Report-on-Inland-Waterways-V5-26-Apr-17-FINAL.pdf> (English) and http://www.manthan-india.org/wp-content/uploads/2018/04/Report-on-National-Waterways_Hindi.pdf (Hindi)

⁶ <https://www.youtube.com/watch?v=XK4Pnia2OTU>

The “**Patna Declaration**” adopted at the Aviral Ganga International Conference on 25th – 26th February 2017 organised by the Government of Bihar has mentioned that,

“Dredging for National Waterways – 1 is increasing erosion in Bihar. The project should be put on hold until a scientific study of impact of dredging on erosion is done.”

Transport of Polluting or Hazardous Goods: Some of the goods planned to be transported on the Bihar waterways in large quantities include goods that can cause pollution of the rivers as well as at the handling sites. These include goods like coal, fly ash, petroleum, oil, lubricants, and other hazardous goods.

Disruption of Infrastructure: Infrastructure like low bridges etc. will need to be removed or redesigned to allow ships to pass. This can lead to lot of inconvenience for the local people unless alternative arrangements are made. For example, there are several pontoon bridges on the Ganga in Bihar which allow vehicles to cross the river. However, every time a ship has to cross, several pontoons have to be separate out and removed from bridge to allow the ship to pass. This leads to hours of disruption for the traffic. (See Figure 3)



Figure 3: Pontoon bridge near Gandhi Setu in Patna, and ship waiting to cross the pontoon bridge. The Pontoon Bridge provides an important link to cross the Ganga as the main bridge is damaged.

Solutions Lie Outside Bihar: An official with the Government of Bihar emphasized to our team that the many of the solutions to the problems of Bihar’s rivers do not lie totally in Bihar. These include problems of silt load in the river, silt deposition due to barrages downstream of Bihar, the reduction in the flow of the Ganga due to upstream diversions etc. Since rivers are connected through other states of India and Nepal, the solutions exist there and not only in Bihar.

Extension of Waterways into Nepal

The “India-Nepal Statement on New Connectivity through Inland Waterways” issued in April 2018 after the meeting of the Prime Ministers of India and Nepal proposes extending waterways into Nepal to make Nepal accessible to the Sea. National waterways -37 and 58 on Gandak and Kosi river respectively start from the Indo-Nepal border at Gandak Barrage in Valmiki Nagar and Kosi Barrage in Hanumannagar. Both of these, especially Kosi waterway are likely to be developed as international Indo-Nepal waterways, ultimately connecting Nepal to the sea via the Ganga

waterway. Moreover, Kalughat terminal on National Waterway-1, in Parmanandpur village of Sonepur block in Saran District is being proposed as terminal that will serve the traffic to Nepal. However, when we spoke to the different stakeholders, we found that there is no clarity as yet about how these waterways will be extended into Nepal, and their technical and economic viability.

Ecology and Sustainability

In the waterways to be developed in the first phase like National Waterway-1, 37, and 58 (Ganga, Gandak, Kosi), a number of ecologically sensitive areas and protected areas of Bihar are likely to be altered and severely affected. These include the Vikramshila Wildlife Sanctuary with its Gangetic Dolphins in the National Waterway-1 and Valmiki Nagar Tiger reserve on the National Waterway-37. Gangetic Dolphins are also present in the Supaul stretch of the waterway 58. The detailed project reports prepared for the development of waterways on Kosi and Gandak do not even mention these or any other impacts on the ecology and environment.

Many researchers have asserted that dredging will have huge impact on the riverine ecology, especially on the Gangetic dolphins. Nachiket Kelkar, a researcher who has been studying the endangered Ganges River dolphins in the lower Gangetic floodplains states in an article⁷ that,

“Over 90 per cent of the Gangetic dolphin population distribution in India overlaps with the extent of the proposed waterways. This list includes existing waterways on the Ganga (1,620 km.), Brahmaputra (891 km.), the Bengal Delta and Sundarbans (>200 km.), the Barak river and tributaries in Assam and Bengal (>400 km.), and the Ghaghra (340 km.), Gandak (300 km.), Kosi (236 km.), Chambal (402 km.), Beas (191 km.), and Mahananda (81 km). In Bihar, the surviving 1,200-1,500 dolphins are highly vulnerable to dredging and navigation impacts. Vessels of the Inland Waterways Authority of India have been regularly dredging inside the Vikramshila Gangetic Dolphin Sanctuary in Bihar – possibly without environmental or wildlife clearances. ”

Similarly, Subhasis Dey, a researcher working with fishing communities in the Ganga for nearly 20 years, mentions in the same article that along with dolphins, dredging and water traffic will be bad for fisheries too. He stated that,

“Many fisherfolk still depend entirely on river fisheries for subsistence, Dredging could destroy breeding grounds of substrate-dwelling benthic fishes and shrimps, which still support an impoverished fishery.”

The Question of Viability

We have highlighted above that Kosi and Gandak are rivers which are known for high silt loads, for changing course, and for frequent shifting of their channels. The DPRs of National Waterway-37 (Gandak) and 58 (Kosi) do not provide any concrete solution to this problem. The earlier interventions like development of embankment have failed to arrest the changing course and shifting channels of these rivers. Hence, development of waterways will need specialised solutions for these rivers which are not explicitly tackled in the DPRs.

⁷ Nachiket Kelkar 'A River Dolphin's Ear-View Of India's Waterways Development Plans,' first published in February 2017, Available at <http://www.sanctuaryasia.com/magazines/conservation/10561-a-river-dolphins-ear-view-of-indias-waterways-development-plans.html>

Studies and Documents Available in Public Domain

There are no studies available for the Sone, Punpun and Karamnasa waterways. DPRs have been prepared for Kosi, Gandak, Ghaghra and Ganga waterways, but only the first three are available for public while the Ganga waterway DPR has been declared as confidential and not available⁸. There are several studies on environmental and other impacts of the Ganga waterway available. However, there is no study done of the social or environmental impacts of any of the other waterways.

Suggestions for Way Forward

It is clear that massive interventions are being planned in the rivers of Bihar in the name of inland waterways but their social and environmental impacts, particularly on vulnerable communities like fisherpeople, as well as their true benefits are yet to be properly studied. We recommend that the work on these waterways should not proceed till the following are done:

1. Carry out comprehensive studies on the benefits, costs, social and environmental impacts of the waterways.
2. Carry out studies to find proper solutions to the problem of siltation, without which the waterways are not likely to be viable.
3. There should be wide spread discussion and debate on the waterways, both, in public domain in general and with communities likely to be affected in particular. The above studies should also be carried out with the involvement of the people.
4. The Bihar Government has also raised several objections and concerns regarding the waterways. These are very valid concerns and they should be sorted out with a dialogue between the central and state government and the involvement of people, civil society groups etc.
5. Waterways should be undertaken only if a proper consensus based on credible studies can be achieved.
6. If the decision is to go ahead with the waterways, they must obtain the statutory and binding environmental clearance from Ministry of Environment and Forests and must have a proper Environment Impact Assessment (EIA) as a part of this legal process.

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Cover Photos: Proposed terminal at Bagaha on the Gandak waterway (top), and IWAI terminal at Gayghat in Patna

(Text, Photos and Maps by Authors, Manthan Adhyayan Kendra, except where indicated)

⁸ Reply to RTI application by the authors.