

# **Bihar News Articles**

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## **Bihar and Odisha: Floods wreak havoc as thousands displaced; struggle on for food, drinking water**

<https://www.news18.com/news/india/floods-wreak-havoc-in-bihar-odisha-as-thousands-displaced-struggle-on-for-food-drinking-water-5805055.html>

"Incessant heavy rainfall over several days in August caused major rivers to overflow, leading to flooding in parts of Bihar and Odisha. While some among lakhs of affected people have been evacuated to flood relief camps, many have been left to cope in their flooded communities. Houses, particularly mud houses, have been submerged in the region as a result of severe flooding. There is no way to cook, with all supplies destroyed. There's an acute shortage of clean drinking water as all drinking water sources (including tube wells) are submerged. Toilets are flooded, and women and girls are especially vulnerable due to a lack of sanitation and privacy. People have taken to fishing with whatever clothes and nets they have to feed themselves because there is no food in the house. Communication channels have been completely disrupted near Sohlpur on the Gop and Puri road due to 5 feet of flood water on the road. Flood water has also submerged the road between Sohampur and Ganeshwarpur. People have attempted to block floodwater from entering into some roads by dumping sand on it.

The Mahani floodwaters will be discharged into the sea via sluices along the Daya, Bhagrabi Ratanchira, Luna, and Makra rivers in Puri district. Eleven Puri district blocks are expected to be particularly hard hit. The Meli River basin's Chupuringi, Badput, and Dholpatna areas will be particularly affected. Health care is being delivered to flood victims. Even though the flood situation in Boudh district has improved slightly, more than ten villages remain cut off. The muddy areas and poles of Jagannath Road have 2 to 3 feet of water. As a result, people lack access to health care.

Every day, a team of 7 doctors and the village's Asha Didi use a fire department boat to reach the flooded village and provide health services. "Especially daily use medicine such as diabetes, low BP, etc. medicine is being distributed free of cost along with sanitary pads to help all the young women living in the flood areas," said Dr. Shrevant Swai, head of the medical team. The water level in the Baitarani River was 18.95 metres above the danger level of 17.83 metres at Akhupada in the Keonjhar district. However, the water level in Anandpur was also dropping. The districts of Bhadrak and Jajpur have been notified as well as the Mahanadi River system's flood situation has improved. Meanwhile, authorities in Balasore and Mayurbhanj districts began a massive evacuation drive to move people from vulnerable areas to safer locations, even as floodwaters entered villages and caused havoc."

## **Bihar: Govt to approach Centre over GI tag for Mithila's Rohu fish**

<https://theprint.in/india/bihar-govt-to-approach-centre-over-gi-tag-for-mithilas-rohu-fish/905135/>

The Bihar government has decided to approach the Centre in order to get 'Geographical Indication' (GI) tag for Mithila's famous Rohu fish, an official said on Wednesday.

The state government has engaged two experts to study and prepare a report on Rohu fish of the Mithila region, state fisheries department director Nishat Ahmed told PTI.

"One of the most distinguished species of carp, Rohu fish of the Mithila region, especially in Darbhanga and Madhubani districts, is known for its taste. We have engaged two experts to study and prepare a detailed report on the fish. "Once the report is prepared, we will approach the Union Commerce Ministry for granting GI tag for Mithila's Rohu fish," he said. A GI tag identifies a product as originating from a particular region.

The Mithila region comprises parts of Bihar, Jharkhand and districts of the eastern Terai of Nepal. "We are quite hopeful that Rohu fish of this region will certainly get GI tag. This will benefit those engaged in Rohu farming in the area as they will get a global market and a new identity. This will have a direct impact on their income," Ahmed said."

## **Bihar: Wetlands prove their worth for extensive carp farming operations**

<https://thefishsite.com/articles/wetlands-prove-their-worth-for-extensive-carp-farming-operations-india>

"Kaushal Kishore Thakur comes from a long line of farmers but found the income was barely enough to feed his family. The 65-year-old, who resides in remote Shahjadapur village, concedes that taking up fish farming in 2009 brought a drastic change in his life and has made him financially stable.

"We have been traditional farmers for the past several generations, farming over 10 acres of land. But the high production cost, coupled with climate change, caused severe losses. We were left with hardly enough income to live on," he says. "I now do fish farming on around 6 acres of wetland and am able to produce around of 5 to 6 tonnes of fish, which generates an annual revenue of 120,000 rupees (US \$16,066)."

The farmers provide commercial feed to the fish twice a day, in the morning and evening. They also add fertilisers in the form of cow dung, jaggery (a type of palm sugar), rice bran, minerals and salt to the water every fortnight. They also spray a mixture of lime powder and water once in a month to prevent the water from becoming too acidic and to help maintain suitable oxygen

levels. During the hottest days in summer, they aerate the ponds by rowing across them a day to maintain oxygen levels.

Thakur is not alone, but belongs to a group of 40 farmers involved in community fish farming in around 100 acres of wetlands (locally called chauras) near the village, which is around 100 kilometres northeast of Patna, the state capital of Bihar. Villagers say that the area has around 120 acres of land that remained waterlogged throughout the year, but they never realised its potential to convert it into fish farming until the government officials intervened in 2010.

“Several acres of our land remain waterlogged for several months across the year. The crops get destroyed due to floods that affected our livelihood. But fish farming in the stagnant water has been proving to be a profitable affair for us,” said Sunil Kumar, 53, who farms around 1.5 acres of wetland and earns around 250,000 rupees (\$3,347) annually from it.

“The officials of the fisheries department toured the village and began to guide us in farming the waterlogged area. We slowly started converting the wetland into productive use and began fish farming in 2010. The government also gave us training and we started with 60 acres which have now been expanded to 100 acres and 70 ponds. We have a hatchery here and mostly produce Rohu and mrigal carp.”

The utilisation of wetlands for fish farming has also been attracting young farmers who were searching for fresh livelihood venues due to dwindling farm income. “We were planning to migrate, as farm income has been declining due to rising cost of seeds and fertilisers,” says Sonu Kumar, 30, another fish farmer in the village.

“But then I started fish farming on over 2 acres of land last year and have earned around 300,000 rupees (\$4,015) from it. It is a sustainable business and the buyers pick up the produce from the field and supply it directly to markets. We also sell directly to consumers. We start farming from March and end in November.”

The government is also promoting integrated farming in which farmers are encouraged to keep four cows, 300 ducks and 500 chickens in order to generate organic manure to fertilise the ponds and increase their productivity. “The poultry not only provides nutritious food for the fish but can also be sold. But we have to be careful as poultry can be attacked by dogs, so we need to use double-layered nets for their protection,” points out Laddu Lal Singh, 52, a fish farmer in Surmarmeyari, 1 km from Shahjadapur. Senior government officials believe that fish farming in wetlands will play a major role in making the state self-reliant in fish production...

## **Bihar: First floating solar power plant to bring light to hundreds of backwater villages**

<https://gulfnews.com/world/asia/india/india-bihars-first-floating-solar-power-plant-to-bring-light-to-hundreds-of-backwater-villages-1.85771526>

"The first floating solar power plant in Bihar is now ready to illuminate hundreds of backwater villages, which remained neglected so far, across the state. The plant has been built over a large pond located in Darbhanga, a place in northern Bihar's Mithila region known as the "land of ponds". The most intriguing thing about this soon-to-be-commissioned floating power plant is that it will cater to two needs at a time — generating green energy from solar panels fitted above water and promoting fish farming under water. The idea could prove to be a boon in giving a new life to the abandoned water bodies and utilize them for good purposes. "This is a dream project of chief minister Nitish Kumar. In 2019, the chief minister had a wish to complete the "Niche machhli, upar bijli" (fish farming below and power generation above) project for better management of water bodies. Now, the project has reached fruition," Bihar minister for water resources development Sanjay Kumar Jha said. The minister described it as a wonderful initiative which will impact the life of coming generations.

Officials said the project was part of government's efforts to generate mass awareness about opting for green energy to lessen dependence on traditional sources of energy, such as coal-based thermal power. According to them, 4,004 photovoltaic (PV) panels, each capable of generating 500 watt electricity, have been installed in the pond which will generate around 2 megawatt (MW) of green and clean energy. A power department official said solar panels are required to be installed in some five acres of water body to generate One MW of power. The government was not required to acquire water bodies from private parties since the very pond spread over an area of 10 acres was already available with the state-owned electricity department. Another important benefit of the floating plant, the official explained, is that the accumulated water below will keep cool the fitted solar plates. The state government is just not satisfied with this lone floating power plant. It is now working overtime to complete another such floating solar plant in Supaul, another north Bihar district bordering Darbhanga.

"The works for installing a floating power plant in Darbhanga is complete. Now we are readying another such plant in neighbouring Supaul district which will be ready by March this year," state power secretary Sanjeev Hans told the media. The Bihar government is also working to illuminate the rural roads with solar lights as quickly as possible so as to transform the face of the countryside. Holding a meeting with officials on Thursday, the chief minister ordered them to start working on this project from April 15. "To begin with, we want to see at least one village council in each of 38 districts fully illuminated with solar lights. This will change the look of

villages,” the chief minister announced on Thursday. There are a total of 45,103 villages in Bihar.

### **Bihar, Jharkhand, West Bengal and Odisha: IMD predicts heavy rainfall from today**

<https://www.timesnownews.com/india/article/imd-predicts-heavy-rainfall-for-bihar-jharkhand-west-bengal-and-odisha-from-today-details/848208>

"The India Meteorological Department (IMD) has predicted rainfall and thunderstorms across large swathes of east and central India over the next few days. The weather forecasting agency also predicted that cold wave conditions would prevail in parts of north-western India from today. As per the bulletin released by the IMD on Monday night, dense or very dense fog is likely to be observed in isolated pockets of Punjab, Haryana, Uttar Pradesh and north Rajasthan over the next few days. ""Cold wave conditions in isolated pockets very likely over Punjab, Haryana and Chandigarh during 12th-15th and over north Rajasthan during 11th-13th January 2022,"" the IMD forecast. According to the weather forecast, isolated heavy rainfall is very likely over Odisha on January 11 and January 13. Scattered to fairly widespread light or moderate rainfall is very likely over Vidarbha, Chhattisgarh, Bihar, Jharkhand, West Bengal and Sikkim and Odisha during 10th to 14th January. Isolated to scattered rainfall is very likely to continue over Uttar Pradesh and East Madhya Pradesh during the next two days and decrease thereafter.

Isolated thunderstorms with lightning or hail are very likely over Vidarbha, Chhattisgarh, Marathawada, Jharkhand, Bihar and West Bengal, Sikkim, Telangana and Odisha this week. Scattered rainfall or snowfall is also likely to occur in the northeastern part of India over the next three days - over Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura. ""Under the influence of cyclonic circulation over Southwest Bay of Bengal and neighbourhood at lower and mid-tropospheric levels, isolated light rainfall or thundershower over Tamilnadu, Puducherry and Karaikal and Kerala and Mahe during next 4-5 days,"" the IMD added. With squally weather (wind speed reaching 40-50 kmph gusting to 60 kmph) being expected over central parts of south Bay of Bengal and adjoining Southwest Bay of Bengal, the IMD has advised that fishermen should not venture into this area.

### **Bihar: Dive into fishery helps village net gains**

<https://indianexpress.com/article/india/dive-into-fishery-helps-bihar-village-net-gains-7504826/>

""No one can call us idlers now,"" says Vimal Kishore Thakur as he proudly shows off his pond where he farms fish. In his village of 60 households, discussions usually revolve around fish — be it the new fast-breeding varieties such as the Amur from Bhubaneswar or the favourites like

Rohu and Katla. It was in this village, Shahzadpur in Samastipur district, that the Nitish Kumar government started a pilot project for fisheries back over a decade ago. Now, it has turned into a nursery for prospective fish farmers. Thakur is one of four farmers who initially helped sparked the fishery frenzy in the upper-caste Bhumihar village, also breaking a caste barrier along the way — the profession is associated with Extremely Backward Classes such as the Mallah or Nishad communities. Thakur, along with Sunil Kumar, Kaushal Kishore Thakur and Chandrakant Thakur, dug up 19 ponds in a part of a vast stretch of low-lying flooded land in 2010. Under water for most of the year, the 120-acre area would remain unirrigated, only occasionally yielding paddy. The state government started giving a 30 per cent subsidy (now 50 per cent) for digging one pond. More villagers dug up ponds and Shahzadpur became a pilot project of the state government. For a village once stuck with unproductive land and accused of having “idlers”, the turnaround has been stunning. Residents now cumulatively earn an average yearly profit of Rs 3 crore, said Thakur. At present, 40 residents own 60 ponds spread over the 100 acres. Ten other ponds are coming up. “We did not know this land could give us any return. The minimum profit per acre is Rs 2 lakh. The village farmers cumulatively earn a profit of about Rs 3 crore”, said Thakur.

The Bihar Chief Minister has long spoken about self-reliance in fish breeding. He visited the village in 2012 and spoke about the potential for fisheries in the state. Kumar, another one of the four residents who first took up the profession, said the real boost came when some village residents met Sushil Kumar Modi, the then Deputy Chief Minister and Fisheries Minister. Modi agreed to send four Shahzadpur farmers along with 36 others to Andhra Pradesh for training in fisheries. “The Bihar government had already sent 26 batches of farmers for training in Andhra Pradesh. We were the 27th batch,” said Kumar. He also remembers a jibe from a senior officer in the Bihar fisheries department who said they were simply going to idle about in posh hotels. “This hurt us immensely. We returned to the village with a resolve to do something,” says Kumar as he shows this correspondent around his vast pond, teeming with fish. The farmers get two fish varieties a year— Rohu and Katla. Local fish sellers who used to depend on Andhra Pradesh till a few years ago now only buy from the village. The fish breeders of Shahzadpur are now helping start fish farming other areas as well — 85 acres in Jhanjharpur (Madhubani), 15 acres in Hasanpur, 12 acres in Sarairanjan, 15 acres in Vidyapati Nagar (Samastipur) and 15 acres in Siwan.

**Uttarakhand, Uttar Pradesh, Bihar and West Bengal: Nearly 30 per cent reduction in fish species in Ganga in four years, says study by Centre**

<https://www.newindianexpress.com/nation/2021/sep/08/nearly-30-per-cent-reduction-in-fish-species-in-ganga-in-four-years-says-study-by-centre-2356097.html>

"In a worrying trend, there has been a reduction of nearly 30 per cent in the total fish species in the Ganga river between 2016-2020, owing to changes in the hydrological structure due to dam construction, land modification, pollution, industrial effluents and illegal fishing activities, according to a central government assessment. The Central Inland Fisheries Research Institute (CIFRI), Kolkata, under the Ministry of Agriculture carried out quarterly field sampling from April 2016 to March 2020 to understand the distribution and current status of fish species on the IUCN (International Union for Conservation of Nature) Red List along the entire stretch of the Ganga. The assessment shows that the status of fish being threatened is a major concern nationwide, particularly in the Ganga. From the present study, a total of 104 freshwater fish species were recorded in the river. Earlier, 143 freshwater fish species were reported from the Ganga, among which 29 -- 10 endangered and 19 vulnerable -- were under the Red List. It further said that changes in hydrological structure due to dam construction, land modification, pollution, industrial effluents and illegal fishing activities are the major causes for alteration of fish diversity in the Ganga basin, which affects conservation and management strategies.

"Proper study of the ecosystem should be done prior to implementing any hydro-related projects in the Ganga. Restoration of riverine connectivity with associated water bodies like wetlands which allow fish species migration for feeding, breeding as well as rearing should be managed because the linkage is an opportunity for improvement of species community structure," noted an expert from the CIFRI. The Ganga is divided into three stretches based on its characteristics, viz. upper (Uttarakhand), middle (Uttar Pradesh and Bihar) and lower (West Bengal) stretches. Quarterly field sampling was done along the whole stretch of the river to collect data on fish diversity and their abundance over a period of four years. "Several fish species have been recorded under the IUCN Red List category during a survey. As these are economically prized fish, effective conservation and sustainable management plans should be implemented to restore the germplasm of fish species," the expert added.

### **Bihar: 12 Dead, thousands displaced by floods**

<https://floodlist.com/asia/india-floods-bihar-august-2021-update>

"Flooding has affected wide areas of the state for the last 10 days. As of 11 August, seven rivers in the state were above the danger mark in 15 locations, including the Ganges. Over 250,000 people were affected by floods across 125 villages in 5 districts. Flooding has continued to worsen since then. The Disaster Management Department in Bihar reported on 16 August that flooding has affected 2.7 million people and 2,176 villages across 15 districts in the state. The department said that as many as 12 people have lost their lives. Over 85,000 of those affected have moved from flooded homes to safer areas, many of them with the assistance of boat teams from the State and National Disaster Response Forces (NDRF).

On NDRF team rescued a victim who had taken refuge on the roof of a hut for 2 days. Relief supplies have been distributed and over community kitchens have supplied meals to thousands of the victims. Almost 22,000 people who had moved to relief camps set up by state authorities. The affected districts are: Muzaffarpur, Darbhanga, Khagaria, Saharsa, Patna, Vaishali, Bhojpur, Lakhisarai, Bhagalpur, Saran, Buxar, Begusarai, Katihar, Munger and Samastipur. The Ganges River is at record levels in Bhagalpur, where it reached 34.75 metres on 16 August, beating the previous high of 34.72 metres set in 2016. In Hathidah in Patna District, the Ganges stood at 43.54 metres, beating the previous high of 43.17 metres, also set in 2016. Rivers across the state are above the danger mark in 26 locations.

### **Bihar: Fish feed made from litchi seeds to cut costs for the fish farmer by 25%**

<https://en.gaonconnection.com/fish-feed-litchi-production-bihar-india-fisheries-export-profit-agriculture-innovation/>

"While pisciculture is a lucrative enterprise, the fish farmers have to invest a great deal in fish feed that is expensive. However, scientists from the College of Fisheries at Dholi, Muzaffarpur (that comes under Dr Rajendra Prasad Central Agricultural University, Samastipur, Bihar) have come up with a unique solution — use litchi seeds, which are a waste, to make fish feed. This litchi seeds-based fish feed is also less expensive for the farmers thus cutting down their costs and increasing the profit margin. "Along with litchi cultivation, Bihar is also known for fish cultivation, and we have been working for two years to find cheaper alternatives to fish feed in order to help the farmers and have finally been successful," Shivendra Kumar, associate professor of the College of Fisheries, Muzaffarpur, told Gaon Connection. The fisheries college is based in Muzaffarpur, which is Bihar's litchi belt, and has the country's highest yield of litchis.

"Along with the litchi seeds, we add wheat, maize, soybean, mustard and the husk of paddy," Shivendra Kumar explained. "Ten per cent of the feed is made up of litchi seeds and the rest make up the balance amount. One can also add up to 20 per cent of the waste litchi seeds, " he added. Litchi cultivation in Bihar According to Bengaluru-based Indian Institute of Horticultural Research, India is the second largest grower of litchi in the world, after China. In India, 83,000 hectares of land is under litchi cultivation. Of this nearly 35,000 hectares are in Bihar. Muzaffarpur alone accounts for 11,000 hectares of litchi orchards. The other states where litchi is cultivated widely include Uttar Pradesh, Uttarakhand, Punjab, Himachal Pradesh and West Bengal. Meanwhile, India is also the second largest fish producing country in the world and ranks second in aquaculture production as well as inland fisheries. In 2018-19, the country's fish production was 13.7 million tonnes, with the contribution of 9.5 million tonnes by the inland sector and 4.1 million tonnes contributed by the marine sector. In 2017-18, India exported 1.37 million tonnes of fish, worth over Rs 45,000 crore. "Litchis are plentiful in our state and we were

looking to find ways to use the waste of the fruit, the seed, productively. Under the leadership of RC Srivastav, the vice chancellor of the university, we could find that alternative,” Shivendra Kumar said. For the past four or five years the state has been making litchi juice where the seeds are removed during the processing, which became the main element of the fish feed, the scientist explained.

On an experimental basis, the researchers tried out the litchi-based feed with the fishes in the college pond and the results were satisfactory, he said. Expenses down by 25 per cent According to Shivendra Kumar, if fish farmers in the country used this fish feed with the litchi seeds, it would bring down their expenses by 20-25 per cent. “While the fish in the college pond are doing well with the feed, we have now distributed the feed to several fish farmers,” the associate professor said. “We believe using this fish feed for a year will reduce their expenditure on the regular fish feed by twenty to twenty five per cent and we will ask them after a year to find out if it did indeed ,” he said. The quality of the fish feed is directly proportional to the production of the fish. While fish farmers cultivate good breeds, they do not pay adequate attention to the feed they give the fish, and that defeats the purpose, Shivendra Kumar pointed out.

**Bihar: Floods 2021: 90% flood-affected respondents lack access to safe drinking water, half the toilets broken, shortage of food, finds a survey**

<https://en.gaonconnection.com/bihar-floods-2021-90-flood-affected-respondents-lack-access-to-safe-drinking-water-half-the-toilets-broken-shortage-of-food-finds-a-survey/>

"At least 800,000 people in 15 districts of Bihar are affected by floods and eight people have already lost their lives. Pashchim Champaran, Purvi Champaran and Muzaffarpur districts are the worst hit where hundreds of thousands villagers are displaced and forced to live on elevated roads or embankments to avoid the rising waters of rivers that are in spate in the state for past several days. Since mid-June last month, the state has been facing floods, including flash floods in villages along the India-Nepal border. However, not much is known about the ground situation and official data on flood-hit population are also not being shared by the government authorities. Now a recent rapid assessment survey conducted in inundated villages of the state shows the impact of floods on the local people. With a sample size of 318 households in 27 villages and six hospitals, 10 schools and five relief camps, the survey was conducted in three most affected districts of East Champaran, West Champaran and Muzaffarpur. The survey report, ‘Joint Rapid Needs Assessment: Bihar Flood 2021’, has been jointly released on July 13 by Bihar Inter Agency Group and Sphere India. Key findings of the rapid needs assessment

The survey report found that “non availability of safe drinking water was a major concern in the area, as 90% of the respondents did not have access to safe drinking water.”

Over half the respondents reported that the toilets in their area had been damaged and 33.5 per cent reported limited access to bathing space with privacy. There has been an increase in open defecation in flood-affected areas. The surveyors found over 2,000 toilets in surveyed villages were damaged due to flooding, out of which 1,448 were fully damaged. Out of the total survey respondents, the surveyors found 65 per cent were living on elevated road/embankment in Muzaffarpur and 12 per cent were living in such conditions in East Champaran. Further, in East Champaran houses were either inundated or fully damaged for over half of the respondents. In Muzaffarpur, 70 per cent of the respondents houses were fully flooded or inundated. Meanwhile, in West Champaran 70 per cent houses were fully damaged and in need of rebuilding. Health impact and education woes Out of the total 340 respondents, 22 per cent reported that their family member or they themselves were facing health problems. Almost 76 per cent said they were suffering from communicable disease, while nine per cent said they were COVID-19 positive. Women and adolescent girls were one of the worst-hit in the floods. As per the rapid assessment report, “76% of adult women and adolescent girls reported unavailability of pads or other materials to be used during menstruation and 54% responded that they were hesitant to dispose pads/clothes and they have disposing menstrual waste in open areas”.

Almost half the respondents complained there was no waste collection mechanism in their area and all the waste was generally thrown out on roads or burned. The survey found that majority of the respondents in affected area had a major concern regarding education due to stopping of classes in the COVID-19 pandemic. Almost 22 per cent people reported that schools were not accessible and 27 per cent said that online classes were not happening due to electricity failure. Another 37 per cent respondents also reported infrastructure damages in schools due to floods. Nutrition challenge and livelihood loss According to the data gathered from the joint rapid needs assessment, food availability in flood-hit areas was a big concern. Slightly more than half — 53 per cent — respondents did not have stored food grains and 78 per cent did not have access to vegetables and food items. Almost 85 per cent of the respondents felt not having enough food in the flood was a major concern. The assessment also found around 60.4 per cent of the surveyed households did not have adequate cooking utensils. Over 95 per cent of the respondents shared that food was the most urgent relief need.

The rapid assessment found nearly 90 per cent of households reporting damage to farm lands due to destruction of crops and 26 per cent also reported loss of livestock/cattle. Bihar Floods 2021 Several districts in the state have been hit hard by floods this year. The Bagmati, Gehumi, and Kamla rivers have been in full spate for nearly a fortnight in Darbhanga district. Officials reported 79 villages across six blocks in the district have been affected by floods and a

population of 58,000 has been impacted. Flash floods have repeatedly hit East Champaran district since water levels of the river Gandak have increased due to the very heavy rainfall. In the district, at least 45,061 residents of 52 villages have so far been affected by the floods. This southwest monsoon, Bihar has been pounded by extremely heavy rainfall. Between June 1 and July 10 this year, the state received 'large excess' rainfall of 69 per cent. As of July 15, the state is in the 'excess' rainfall category with rainfall departure of 46 per cent above normal, as reflected in the India Meteorological Department's data.

Further in this monsoon season (June 1-July 15), its Pashchim Champaran district has received 194 per cent more than normal rainfall. Darbhanga, Madhubani, Supaul, Siwan, Saran, Vaishali, Samastipur and Bhahua have also received 'large excess' rainfall of 111 per cent, 78 per cent, 73 per cent, 71 per cent, 77 per cent, 64 per cent, 77 per cent and 70 per cent, respectively. Predictably, several of these districts are facing floods. Report recommendations Based on the survey and detailed interactions with flood-hit people, the rapid assessment report has listed down immediate, mid-term and long-term recommendations. The most immediate measure is providing safe drinking water to flood-affected population. "Immediate water supply through tankers should be mobilized in affected villages... Point-of-use chlorine drops/ tablets should be made available with proper education on its use, in order to increase availability of potable water for the time being," reads the report. It also suggests immediate fixing of broken water supply systems such as hand pumps, tubewells, etc. The report also recommends immediate provision of temporary or mobile toilets and suggests "panchayat should take responsibility of cleaning and maintaining these facilities, along with provision of adequate water and lighting at night." Debris, agriculture waste, animal carcass and other hazardous waste should be cleaned, considering COVID-19 guidelines, it adds. Authors of the report also demand that the functionality of health centres must be maintained as there are chances of outbreak of diseases immediately and in the prevailing pandemic. Access to services like routine immunisation and outpatient consultations must be ensured. Mobile Van Health Facilities should be provided in hard-to-reach areas, recommends the assessment report.

**Bihar, West Bengal, Sikkim, Assam and Meghalaya: Under rain and flood alerts as monsoon remains active**

<https://weather.com/en-IN/india/monsoon/news/2021-07-02-bihar-bengal-sikkim-assam-meghalaya-under-rain-and-flood-alert>

"Most parts of India welcome the monsoons with open arms, anticipating a good crop output and a much-needed relief from the blistering summer heat. However, for east and northeast India, the season brings jitters as the accompanying floods destroy livelihoods, spreads diseases, and displaces lakhs of people every year. Assam, for instance, has witnessed extreme monsoon floods in eight of the last ten years since 2012. As the monsoon season of 2021

completes a month, the parts of east and northeast India have started to witness severe flood situations. Koshi and Brahmaputra are referred to as the sorrow of Bihar and Assam, respectively. Flood situations in these rivers and rivers like Narayani, Bagmati, Kamla, and Gandak are already severe this year. Further, heavy monsoon rains forecast for the next five days will likely worsen the situation across the region. Extremely heavy rains forecast A monsoon trough—an extended low-pressure area—persists from Uttar Pradesh to Assam. As a result, strong moist southwesterly winds from the Bay of Bengal are expected will bring very heavy rains, with isolated extremely heavy falls across east and northeast India for the next few days. As per the TWC met team, rainfall will be especially intense at 150-200 mm range from Friday to Sunday. Local rainfall accumulation could jump up to 300 mm in these three days, followed by several days of 50-80 mm daily rainfall. Total precipitation during this projection period can surpass 400 mm across portions of Assam, Sub-Himalayan West Bengal (SHWB) and adjoining areas, raising the threat of flooding and waterlogging.

The India Meteorological Department (IMD) has forecast widespread rains with isolated heavy to very heavy falls over Bihar, North Bengal, Sikkim and Northeast India for the next five days. Isolated extremely heavy rainfall is forecast over Assam, Meghalaya, Sikkim and northern districts of West Bengal on July 2 and 3. Accordingly, the national forecaster has kept SHWB, Sikkim, Assam and Meghalaya under a red warning for Friday and Saturday, while Bihar remains under an orange alert on Friday.

A red warning urges residents and authorities to ‘take action’ to minimise the impacts of adverse weather conditions, while an orange alert recommends them to ‘be prepared’. Severe flood alerts The water levels have risen sharply across rivers in eastern India mainly due to the incessant heavy rains over the catchment areas in Nepal, Bihar and northeast India. As per the Central Water Commission, severe flood situations have been observed in: 1) Bagmati river in Sitamarhi, Sheohar, Muzaffarpur districts of Bihar 2) Kamala and Adhwara river in Madhubani and Darbhanga districts of Bihar 3) Koshi river in Supaul and Saharsa districts of Bihar In addition, water levels are also expected to rise in East and West Champaran, Samastipur, Khagaria, Bhagalpur, Kushinagar, Gopalganj, Vaishali, Madhepura and Katihar districts of Bihar; Jalpaiguri, Coochbihar, and Alipurduar districts in West Bengal as well as Dhubri and Kokrajhar districts of Assam. As per the Assam Disaster Management Authority, 2,743 people from Dibrugarh and Dibrugarh districts are affected due to the flooding so far this week. Authorities have set up three relief camps so far to shelter the flood victims. No casualties have been reported yet, but 22 houses and 428 hectares of crop area have been damaged in the state. Last year, repeated bouts of monsoon floods and landslides killed nearly 150 and displaced over five lakh people in the state of Assam. Flood do’s and don’ts If a flood is likely to hit your area, you should: 1) Elevate the furnace, water heater, and electric panel 2) Listen to the radio or television to keep yourself updated 3) Be aware that flash flooding can occur.

In this case, move immediately to higher ground. Do not wait for instructions. 4) Be aware of streams, drainage channels, canyons, and other areas known to flood suddenly. Flash floods can occur in these areas with or without such typical warnings as rain clouds or heavy rain. If you must prepare to evacuate, you should: 1) Secure your home. If you have time, bring in outdoor furniture. Move essential items to an upper floor. 2) Turn off utilities at the main switches or valves if instructed to do so. Disconnect electrical appliances. 3) Do not touch electrical equipment if you are wet or standing in water. If you have to leave your home, remember these evacuation tips: 1) Do not walk through moving water. Six inches of moving water can make you fall. 2) If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you. 3) Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely.

### **Bihar: 11 Dead due to lightning; 4 Districts reel under floods**

<https://www.ndtv.com/india-news/11-dead-due-to-lightning-in-bihar-4-districts-reel-under-floods-2475569>

"Eleven people were killed while six were injured in various parts of Bihar upon being struck by lightning on Tuesday, the disaster management department said. According to the department, West Champaran and East Champaran districts accounted for three deaths each followed by Patna (two) and Nalanda, Madhepura and Aurangabad (one each). Besides, four people were seriously injured in East Champaran and another two in Patna districts. According to the department, the state has received 339 mm of rainfall since the onset of monsoons, which is 139 per cent above normal. This has led to floods in at least four districts of north Bihar West Champaran, East Champaran, Gopalganj and Saran where nearly 80,000 people in 65 villages have been affected. No loss of life has been reported from the flood-hit areas so far but 10,916 people have been rescued from marooned places. Four teams of the National Disaster Response Force (NDRF) and three of the State Disaster Response Force (SDRF) have been pressed into service for the rescue operations. Altogether 98 boats have been plied for the purpose.

### **Bihar and Uttar Pradesh: Heavy rainfall pours flood miseries in many districts**

<https://www.indiatoday.in/india/story/heavy-rainfall-pours-flood-miseries-in-many-bihar-up-districts-1818527-2021-06-23>

"Heavy rainfall in Bihar and Uttar Pradesh has triggered floods in various districts of both states. Thirty-one of the total 38 districts in Bihar and 51 of the total 75 districts in Uttar Pradesh have received 'large excess' (60 per cent or more) rainfall in the first three weeks of the southwest monsoon season. As a result, flood alerts have been issued in some districts. In addition, reports

of massive soil erosion and people living in terror are also pouring in. State-wise rainfall data shows the maximum rainfall departure in Bihar, which has reported 171 per cent above normal rainfall between June 1 and June 22 (cumulative rainfall). As against a normal rainfall of 99.3 mm, the state has received 269.3 mm rainfall. Similarly, Uttar Pradesh has received 158 per cent above normal rainfall. As against its normal of 49.5 mm rainfall, the state has received 127.8 mm rainfall. Floods in Bihar Flash floods have hit Bihar's East Champaran district since water levels of the river Gandak have increased due to the rain.

According to East Champaran District Magistrate Shirsat Kapil Ashok, 45,061 residents of 52 villages have so far been affected by the floods and 1,154 residents have been rescued from marooned areas with the help of National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF) teams. Other affected areas include Nalanda, Motihari, Khagaria, Muzaffarpur, Chhapra, Patna, Saharsa and Bettiah. Floods in UP Floodwaters from Nepal have triggered a crisis in UP's Barabanki. About two dozen villages face soil erosion threats as the Saryu River water levels have risen. Reports of disruption have come from UP's Bijnor. Floodwaters have destroyed sugarcane crops in vast swathes of land in the district and there is an acute shortage of feed for cattle heads. Sixteen districts in Uttar Pradesh have been put on high alert for floods in the coming days. The districts include Lakhimpur Kheri, Bahraich, Shravasti, Balrampur, Maharajganj, Deoria, Basti, Kushinagar, Siddhartha Nagar, Gorakhpur, Gonda, Sant Kabir Nagar, Ballia, Barabanki, Sitapur and Mau.

### **Bihar: Thousands affected by Flash Flood in East Champaran district**

<https://www.news18.com/news/india/thousands-affected-by-flash-flood-in-bihars-east-champaran-district-3875066.html>

"Thousands of people have been affected by a flash flood that has hit Bihar's East Champaran district in the wake of torrential rains that lashed catchment areas of Nepal recently causing a rise in water levels of the river Gandak. According to District Magistrate Shirshat Kapil Ashok, altogether 45,061 residents of 52 villages have so far been affected by the flood and 1,154 have been rescued from marooned areas with the help of the National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF) teams. Last week, adjoining areas of Nepal had received more than 200 mm rainfall within 48 hours and all the gates of Valmiki Nagar barrage, situated close to the border between the two countries, had to be opened to prevent a breach.

According to Ashok, the water level in the barrage has since receded by about six metres and stood at 106.83 metres, nearly three metres below the danger mark. The Gandak river was flowing at 63.08 metres, more than a metre above the danger mark though it has dropped from the peak level of 64.20 metres recorded last week. Altogether 19 boats have been pressed into

service for the rescue of residents stranded in submerged areas. There has been no loss of life so far, the DM added. ""We are carrying out the distribution of ration packets among the needy and monitoring of ring dams in coordination with local administration"", said Shalini Mishra, an MLA of the ruling Janata Dal (United) who represents Kesariya, which is among the worst-hit by the calamity. According to a release issued by the water resources department in the state capital, the water level in most of the rivers was stable.

### **Bihar: Govt signs MoU for setting up state's biggest hydroelectric plant**

<https://www.hindustantimes.com/cities/patna-news/bihar-govt-signs-mou-for-setting-up-state-s-biggest-hydroelectric-plant-101623687284745.html>

"Moving ahead in its mission to generate green energy, the Bihar government signed a Memorandum of Understanding (MoU) with the National Hydroelectric Power Corporation Limited (NHPC) for setting up the state's biggest hydroelectric power generation plant, Dagmara multipurpose hydropower project, on Kosi river in Supaul district on Monday. Moving ahead in its mission to generate green energy, the Bihar government signed a Memorandum of Understanding (MoU) with the National Hydroelectric Power Corporation Limited (NHPC) for setting up the state's biggest hydroelectric power generation plant, Dagmara multipurpose hydropower project, on Kosi river in Supaul district on Monday. The MoU was signed between Bihar State Hydroelectric Power Corporation (BSHPC) and NHPC through video-conferencing in the presence of Union Minister of State for Power and New and Renewable Energy RK Singh, state energy minister Bijendra Prasad Yadav, Union Energy Secretary Alok Kumar and chairman and managing director at NHPC AK Singh.

Speaking on the occasion, RK Singh highlighted that the Dagmara project would contribute immensely to India's mission for energy transition for lesser use of fossil fuel. He said, "About ₹2,500 crore investment will create immense opportunities for generating both direct and indirect employment in Bihar." Giving details of the project, Secretary of Bihar's energy department Sanjeev Hans said, "The total generation capacity of the project will be 130.1 MW, which will comprise two powerhouses, while the barrage length would be 753 metres and it would have 36 gates." Hans claimed that the ambitious power generation plant is the state's biggest hydroelectric project that will come up 31 km downstream on Kosi river under Bhaptiyahi block in Supaul district. State energy minister Bijendra Prasad Yadav believes that Kosi—which is known as the sorrow of Bihar—will convert into a river of opportunities after the commencement of the Dagmara project. Yadav attributed the project one-of-its-kind and unique from conventional projects. Meanwhile, Pratyaya Amrit, additional chief secretary of the health department, who played an instrumental role in taking off of the project, pointed that the Dagmara project would help in an uplift of the socio-economic condition through recreational facilities such as fisheries and eco-tourism.

## **Bihar and Jharkhand: Cyclone Yaas becomes 'severe', alert**

<https://www.hindustantimes.com/india-news/cyclone-yaas-becomes-severe-alerts-in-bihar-and-jharkhand-10-points-101621908907579.html>

"The states on India's eastern coast are on alert ahead of the landfall of Cyclone Yaas, which has been brewing in the Bay of Bengal. It comes days after another powerful cyclonic storm Tauktae battered the country's western coast and killed at least 140 people. Cyclone Yaas, which intensified into severe cyclonic storm on Monday night, is expected to make landfall between Paradip and Sagar islands (in West Bengal) close to Balasore in Odisha early on Wednesday morning and could pack sustained winds of up to 165 kilometers per hour, according to India Meteorological Department (IMD). The IMD has predicted a tidal surge of 2-4.5 metres during the landfall of Yaas, according to officials. The massive storm comes as India is battling a second wave of Covid-19, complicating efforts to deal with both. Here are the latest on Cyclone Yaas: 1) The IMD has said that Yaas is likely to intensify into a 'very severe cyclonic storm' before it hits the coast. After crossing the coast on the afternoon of May 26, it will intensify further. The IMD had earlier said that Yaas would make landfall around Wednesday evening, but on Monday, it advanced the time. 2) Disaster relief teams have already been deployed in West Bengal and Odisha, which will face the brunt, and the coastal areas are being evacuated. The air force and navy said they have kept some of helicopters and vessels ready to carry out relief work. 3) In Odisha, the administration evacuated locals from their homes to shelter homes in Jagatsinghpur district. Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts have been identified as high-risk zones along with Mayurbhanj and Keonjhar. 4) In West Bengal, the wind speed in Kolkata, Howrah and Hooghly will reach 70 kmph to 80 kmph gusting to 90 kmph on May 26, according to weather department. Coastal areas of North and South 24 Parganas will experience 90 kmph to 100 kmph wind speed, gusting to 120 kmph. Chief minister Mamata Banerjee said that the state government is targeting to shift at least 10 lakh people to safer places. She added that Yaas' impact is going to be much more than Cyclone Amphan's. 5) Union home minister Amit Shah on Monday reviewed preparations, including evacuation of people in vulnerable coastal areas and safe return of all ships and vessels as well as safety of Covid-19 facilities such as oxygen plants situated in the region. 6) At a video conference held with the chief ministers of Andhra Pradesh, Odisha and West Bengal and the Lieutenant Governor of Andaman and Nicobar Islands, besides officials of concerned ministries, Shah said a 24x7 control room is functioning in the MHA, which can be contacted by them any time for assistance. 7) The storm will lead to intense rain activity in states as far away as Bihar. The Patna Meteorological Centre (PMC) said on Monday that Cyclone Yaas is likely to trigger heavy to extremely heavy rain in the parts of the state in the next two to three days. It has also issued an orange-colour warning for May 27 and 28. 8) Bihar's neighbour Jharkhand has been placed under red alert category by the weather department. The IMD has predicted extreme rainfall in

southern and central parts of the state on Wednesday and Thursday. The teams of the National Disaster Response Force (NDRF) have been deputed in East Singhbhum and Ranchi districts. 9) The cyclone will also impact Bangladesh. The authorities there have asked all fishing boats and trawlers over the north Bay of Bengal and the deep sea to move closer to the coast ahead of Yaas. 10) Scientists say cyclones in India are becoming more frequent and changing climate patterns have caused them to become more intense. Last May, nearly 100 people died in Cyclone Amphan, the most powerful storm to hit eastern India in more than a decade. It flattened villages, destroyed farms and left millions without power in eastern India and Bangladesh.

### **Bihar: Highly vulnerable to climate change, says study, but lacks action plan**

<https://india.mongabay.com/2021/05/bihar-highly-vulnerable-to-climate-change-says-study-but-lacks-action-plan/>

"Fourteen out of 50 districts most vulnerable to climate change in India, are in Bihar, according to a latest study, Climate Vulnerability Assessment for Adaptation Planning in India Using a Common Framework. The study by the Indian Institute of Technology (IIT) Mandi and IIT Guwahati in collaboration with the Indian Institute of Science, Bengaluru identifies the most vulnerable states and districts of India with respect to current climate risks and finds Bihar, Jharkhand and Assam have over 60% districts in the category of highly vulnerable districts. The study recommends prioritisation of adaptation interventions in all these states. Among the vulnerable states, Bihar in fact has recently abandoned a draft climate action plan submitted by the Department of International Development (DFID), a United Kingdom government agency (which, since late 2020, is known as the Foreign, Commonwealth and Development Office). The state is unique in its vulnerability to hydro-meteorological disasters as the northern part of Bihar faces annual floods and the southern part is prone to droughts.

According to a 2014 study in Journal of Natural Sciences Research, 21.1 percent of the total area of Bihar falls in seismic Zone V. While 27 out of 38 districts of the state are fully affected by high-speed winds of 47 m/s density. Climate change is making extreme climate events more frequent in the state and the incidences of landslides, flash floods, and droughts are on the rise. In the last two decades or so, like any other state, Bihar too has seen intensified public discussions on climate change and its impacts. But indeed very little has reflected in policies. The reason for the political apathy perhaps, tends to rise from the sustainable development challenges – growing populations and limited resources. Drivers of climate change vulnerability for Bihar The measures to climate change adaptation planning and investment are only possible when the states have an assessment of vulnerability. According to the IIT study, lack of forest area for the rural population, high yield-variability of food grains, the prevalence of rainfed agriculture, lack of crop insurance, compounding agricultural vulnerability, high sensitivity of the health sector

(disease prevalence) coupled with a low adaptive capacity due to a lack of healthcare workers are the major drivers of vulnerability for Bihar.

The study also recognises a high proportion of Below the Poverty Line (BPL) population, prevalence of marginal and small landholdings, and lack of women's participation in the workforce, low road density, lack of implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) as the other drivers of vulnerability. Fourteen (out of 50 in India) most vulnerable districts to climate change that are in Bihar include Araria, Kishanganj, Purnia, Jamui, Sheohar, Madhepura, Purbi Champaran, Lakhisarai, Siwan, Sitamarhi, Khagaria, Gopalganj, Madhubani and Buxar. Apart from these, about 80% (31 out of 38) of the districts in Bihar are among the top 25% most vulnerable districts in the country. Lack of area under horticulture, low coverage of central crop insurance schemes and prevalence of small and marginal landholders unable to make adequate decisions about when to sow, what to grow, and how-to and lack of inputs along with low adaptive capacity amount to major drivers of vulnerability in these districts. The study mentions an elaborate list of indicators and the rationale behind the selection of that particular indicator. For instance, monthly income is chosen as one of the indicators because people with extremely low incomes are among the most vulnerable because they have little or no financial capital. So, they have the least capacity to adapt to impacts of climate risks. Similarly, livestock to human ratio is considered because agricultural loss due to climate events can be compensated by income capitalised from livestock. Livestock can be sold in times of need hence, contributes to the reduction of vulnerability. Challenges to sustainability On October 2, 2019 the Bihar chief minister Nitish Kumar launched the Jal-Jeevan-Hariyali campaign which was to be implemented at the cost of Rs.24,524 crores (Rs. 245.24 billion).

In his note, he said, "The state government through Jal-Jeevan-Hariyali intends to limit the impacts of climate change, promote ecological balance, and promote water conservation." The CM hailed the campaign at the UN Climate Change Round Table in 2020, and dwelt upon the benefits of Jal-Jeevan-Hariyali started across the state that claims to protect water, life and greenery. Experts argue that Jal-Jeevan-Hariyali is neither a holistic nor a better-implemented program undertaken by the state government. "The major component of this program (Jal-Jeevan-Hariyali) is to deal with water scarcity in major parts of Bihar. There are various elements to this project. However, frankly speaking, the bureautic implementation of the program is not satisfactory," said a senior official of the Science and Technology Department. He agreed that the state lacks a sustained action plan, "Our (state government's) intention is very noble. Officials in theory understand that climate change is a serious issue. Putting theory to practice is where the challenge lies. Just for an example, for years now, experts have been saying that dams in north Bihar are doing more harm than good. But bureaucracy has turned a deaf ear to it. Floods have become a business.

Everyone knows, every year the region would be ravaged by floods, the government would compensate. It has been normalised. This situation could still be averted now. Floods recharge the soil fertility every year. The fertility can be utilised by the government by enabling the farmers. It is one such example. Similarly for South Bihar, restoration of wells and canals is needed. It's not that we didn't have the system or that what I am talking about is something alien. It requires better planning and coordination between various departments." Similar concerns were also shared by an official at the state's Environment, Forest and Climate Change department. "We are witnessing effects on the environment due to climate change in the form of various extreme weather events. For instance, lightning strikes, devastation by floods have only increased, soil erosion is engulfing villages, deaths due to extreme heat waves and many such other climatic events have grown exponentially in the past few years. These are impacting our people socially as well as economically. Thus, the state's growth and development is also halted and offers little opportunities to rebuild economies," he said passionately and expressed his helplessness citing lack of a comprehensive plan to combat the challenges of climate change. "Having said that, we officials too need timely workshops to understand the dynamics of unfolding climate crises so that it enables us to improvise our existing plans as well as devise new plans," he added.

However, Anamika Barua, Professor at IIT Guwahati, one of the researchers part of the IIT study views it differently. "Bihar does not need to do something extraordinary to make their state resilient to climate change. If the state government is basically talking about reducing poverty, enhancing the sources of livelihood, better health facilities, strengthening institutions – all these are going to make your state climate resilient," said Barua. "Bihar basically needs to mainstream the adaptation strategies within the development. One of the factors of vulnerability continues to be the lack of alternative sources of livelihood. A large chunk of people in Bihar are dependent on climate-sensitive livelihood, for example, agriculture, fisheries, livestock, etc. then, of course, larger section of people are vulnerable to climate change. Thus, the state needs to also focus on non-farming sectors, by doing so you build a climate-resilient community," she adds, "Districts in Bihar are vulnerable to socio-economic, biophysical and institutional factors that are drivers of vulnerability for climate change."

**Need for an action plan** IIT's study is not the only one that has highlighted the fact that the state is highly vulnerable to climate change. Annual floods of north Bihar and annual droughts of south Bihar open up the discussions every year on how hazardous are the impacts of climate change for the lives and livelihood of the people of Bihar. But time and again the discussions have found very little mention in the policymaking. In 2015, the state government came up with Bihar State Action Plan on Climate Change that put across sectoral plans to tackle the issue of climate change, however, not much of it was put to use. In the same year, the state government resolved to the centre's mandate on climate change in light of Paris declaration at the United

Nations conference of climate change. The state government teamed up with the Department for International Development (DFID) to prepare an action plan for climate change. The DFID in its draft plan suggested a plethora of smart strategies – strengthening agriculture chains, ensuring minimum support price to farmers, de-siltation measures of Kosi, development of agro-based industries, and others. Some of these strategies also find their mention in the state government’s action plan on climate change in 2015. But reportedly, the draft plan by DFID was not approved by the government and later withdrawn for “unknown reasons”. Dipak Kumar Singh, Principal Secretary of the department of the Forest, Environment and Climate Change department could not be contacted for a quote.

However, an official from his department said, “We will soon have an action plan. Climate crisis is one of the top priorities of the state government.” In 2019, CM Nitish Kumar announced that a separate unit of analysts and researchers would be constituted within the Environment, Forest and Climate Change Department but so far it isn’t in place yet. Reportedly, the recruitment process was hampered due to the outbreak of COVID-19 pandemic. Speaking on the need for an action plan for climate change in Bihar, Anamika Barua said, “Bihar definitely needs an action plan. The inputs of our study could possibly be very helpful in their state action plan for climate change.” Barua also said that after the publication of the study by IIT, many state governments have approached the researchers and shown keen interest in chalking out a plan further. For now, the Bihar government hasn’t approached them.

### **Bihar: Covid impact: Decline in fish consumption & sales in Patna**

<https://timesofindia.indiatimes.com/city/patna/covid-impact-decline-in-fish-consumption-sales/articleshow/82748301.cms>

"Ever since the news of dumping of dead bodies of suspected Covid patients in the Ganga appeared in the media, many people have stopped eating fish for fear of getting infected, thus impacting the sale of river fish in the city markets. “The day I read in the newspaper about the bodies found floating in the Ganga at Chausa in Buxar district, I decided to stop eating fish. Two members of my family have already been infected by the virus. I won’t take any risk,” said schoolteacher Ravi Kant Prasad of Kadamkuan. Sushma Devi, a housewife residing at Kankarbagh Colony, has also not cooked fish during the past five days after the Buxar event. “Now we will resume eating fish only when the disease disappears completely and the situation normalizes,” she said. There are many others who have stopped consuming fish for the time being. Malti Devi, who sells fish at Boring Road crossing, asserted that the imposition of lockdown and the reports of bodies floating in the Ganga, have adversely affected the fish sales. “Normally I used to sell 40 to 50kg of fish per day. This Sunday, I could sell only about 10kg. Fear of getting infected after consuming ‘infected’ fish’ and drastic reduction in shopping hours (8 to 10am) have resulted in the decline of sales,” she added. Niranjan of the Fish Market at

Hanuman Nagar said the lockdown has affected the sales. Fear of infection has nothing to do with his sales as he deals only in pond fish brought from local water bodies.

“However, the overall sales have reduced at least by 50% during the last fortnight,” he added. State fisheries department’s deputy director Dilip Kumar Singh said the disposal of bodies in the river hardly infects fish. “No study has yet been carried out by the experts on this issue so far. Bodies were found floating in the river earlier also, without casting any adverse effect on fish,” he said. Singh also said the disposal of bodies has not created any noticeable impact on the fish sales in the local market till date. “The sales of Gangetic fish have already declined due to large consumption of fish from Andhra Pradesh and also from local ponds and smaller rivers. Since catching fish from the Ganga is a group activity, it has been reduced owing to the lockdown,” he added. Experts have already ruled out Covid transmission through water bodies of suspected Covid patients. Dumping of bodies primarily leads to pollution of rivers, they claim. Patna University’s retired professor of geology N C Ghose, who has done extensive work on the qualitative aspects of the Ganga, said the river water is unique in the sense as it kills most of the bacteria coming in its contact. “This is probably due to the fact that its upper reaches pass through granitic rocks containing radioactive minerals. Hence, the radon content of Ganga water is much higher than those of other rivers,” he said, adding disposal of bodies of suspected Covid patients would hardly affect the quality of river water or its aquatic life. Meanwhile, the Union Jalshakti Ministry has reportedly asked various states, including Uttar Pradesh and Bihar, to take immediate steps to stop dumping of bodies in the river and ensuring their safe disposal with a view to protecting the quality of the river water.

### **Bihar: Farmers, near Bagmati river, pick fertility of land over safety from floods**

<https://india.mongabay.com/2021/04/farmers-near-bagmati-river-in-bihar-pick-fertility-of-land-over-safety-from-floods/>

"The Bihar government has been facing opposition, from locals, to the embankment project on River Bagmati. People of Muzaffarpur and Darbhanga district have been protesting against the project since 2012. As many as 109 villages of the region are affected by the Bagmati river flooding. Now, before the flood season, villagers are reuniting and holding meetings in Gaighat and Benibad areas to make strategies to continue the protest. The project, as per the government, is a preventive measure for floods and land erosion. However, the villagers say they are ready to face floods, as they fear the project will cost them their livelihood. Flooding of the Bagmati river in fact deposits sediments in the fields, brings vital nutrients for the soil, resulting in increased soil productivity, benefitting the farmers. “Embankment may save us from the flood, but what about our livelihoods? Floodwater is essential for the nutrition of the soil. Farming is the main source of our livelihood, and without flood water, farming will be destroyed in the area,” said Jagarnath Paswan, a resident of Kalyani village in Muzaffarpur district.

“We need to learn from the neighbouring areas where embankment has already caused soil damage,” he added. The Bagmati flooding in Bihar is an annual occurrence “The flood has been partially controlled by constructing flood embankment in certain reaches. Construction of embankment in the remaining reaches also appears to be the desired solution for providing relief against the residual flood problems,” said a report prepared by the Ministry of Water Resources in Bihar. The government has already allocated Rs 548.13 crores (5.48 billion) in funding to embank the river from Muzaffarpur to Gayghar and Darbhanga to Hayaghat. The decision has further riled up people who have already been protesting the decision since 2012. The committee that exists only on paper After facing intense protest by people, the Bihar government set up a three-member committee in 2018 to reconsider their decision. However, so far no report has been prepared. “The committee did not function, so we prepared no report. Government is making decisions without following the directions of the committee,” Anil Prakash, a member of the committee, told Mongabay-India. Apart from Anil Prakash, the committee comprises river expert Dinesh Kumar Mishra and professor Rajiv Sinha who is associated with Department of Earth Science, IIT, Kanpur.

“The committee has held only one meeting in these two years, but we keep getting information about the extension of the committee. The last information I received was about extension till December 2020,” said Prakash. “River embankment has already been done along both sides of Bagmati River in a large area. The first part of the embankment is from Hayaghat to Khagaria and the second part is from Sitamarhi to Dheng. Bagmati enters Nepal after Dheng,” said Dinesh Kumar Mishra, a member of the committee and writer of the book *Bagmati ki Sadgati*. “The river bank from Khoripakar in Sitamarhi to Kanaujgar Ghat in Darbhanga is not being embanked. This is because the river Bagmati is not stable here, and the engineers of Bihar government had advised the government not to embank these areas,” said Mishra. “If even the government’s engineers are not willing to embank the river in that area, why is the government forcing this project?” Mishra raised the question. Flood and fertility connection Bagmati River is known for bringing fertile soil with its sediments during the flood. Farmers observed that the fertility of the region got affected negatively after the embankment. There is scientific research that also backs the farmers’ beliefs.

“Floods carry micro-nutrients, fine silt and loam, and after the water recedes, these nutrients are deposited on fields, where they improve soil fertility and productivity,” said a 2008 working research paper *From risk to resilience*, focused on Lower Bagmati Basin. “The embankment checks the silt deposit, and this results in declined agricultural productivity,” added the paper. “The embankment affected not only the fertility but also fish farming. We used to fish in ditches during flood season. Now, after the embankment, we have lost that opportunity,” said Upendra Sahni, a fisherman. To overcome the regular floods, a 3760-km long embankment has been constructed by Bihar government along the rivers of the state. However, there was no analysis

done to ascertain the benefits or losses of these embankments. Are embankments helpful at all? Specifically, along Bagmati River, the state has already constructed a 478.14 km long embankment and is planning to add 246-km more to it. The government has spent 1800 crores (18 billion) in the past 12 years on the construction of these embankments. The ongoing project will cost 548.13 crores (5.48 billion). The government claims that it will save 3.36 lakh (0.33 million) hectares of land and 93.12 lakh (9.3 million) of Bihar's population from the flood. Past experiences of locals said that embankments do not help in preventing the flood, but add more difficulties to their lives.

“Our experience with embankments is not good. The soil fertility has decreased in those areas, and the fisherman community is also affected by these projects. That is why people are against it,” added Mishra. According to records, Bihar had only 160 km river embankment at the time of India's independence, and the flood-affected area was just 25 lakh (2.5 million) hectares. Now the government records say that flood-affected area has increased to 68.8 lakh (6.8 million) hectares. Unofficial records are even worse. According to them, flood-affected area in Bihar is 72.95 lakh hectares. The locals from Sitamarhi district feel that flood is not such a big issue for them. They can survive floods considering there are also benefits such as fertility in farmlands. “Government should look at the facts, that how often embankments break during monsoon causing sudden floods in the region. They should also compare the fertility of farms in both embanked and non-embanked areas,” said Ranjeev, a Bihar-based social activist.

Mishra's book *Bagmati ki Sadgati*, also attempts to answer – Are embankments helpful in preventing flood, or have they increased the risk of flood even more? “Mithila region of Bihar used to face many kinds of floods; most of them were not severe. The floodwater that used to enter the fields made them fertile. A person faced extreme floods only once or twice in their lifetime,” wrote Mishra. However, after the construction of the embankment the region has faced extreme floods every year. Who is getting the benefit of embankment? “Farmers of this region are not happy with the embankment, and they often break it to allow the flood water in their farms,” said Mishra.

“The embankment on Bagmati has broken as many as 54 times. And the government is still trying to construct embankment in new areas,” said Anil Prakash. “The motive of the government to spend a lot on embankment can be understood by the name of construction companies who are getting contracts to build it. Earlier, an Andhra Pradesh-based company used to work on these projects, but now the work has been allocated to a Maharashtra-based company. A local politician has diverted the contract. It is very clear that who the beneficiaries of these projects are,” alleged a villager Jagarnath Paswan. The locals of 30-32 villages near Gayaghat have formed a strong protest together and barricade the area to stop the construction of the embankment. So the government plans to start the construction near Hayaghat where the

movement is not strong yet. But the farmers are ready to next protest there. Now it remains to be seen whether the government is able to start the construction or chooses to understand the plight of the farmers.

### **Bihar: Man returns to village to start pearl farming; Earn lakhs & employs migrants**

<https://www.thebetterindia.com/252537/bihar-pearl-farmer-earn-lakhs-employment-migrant-laborers-covid-19-business-success-india-him16/>

"While farmers in Patna and its surrounding regions of Bihar usually grow maize, pulses, lentils, cereals and rice, a 28-year-old man from the area has decided to head in a different direction. Nitil Bhardwaj from Murera village in Champaran district is earning lakhs from pearl farming. Nitil belongs to a family of traditional farmers, but went to work in a multinational company in Delhi. He started working in early 2017 as a computer professional, and would earn around Rs 30,000 a month. Around the

same time, his father came across a news article on pearl farming, and learned how it could be a profitable business. He shared this idea with Nitil, who thought the idea was both attractive as well as unexplored in Bihar. Sometime during his leave later that year, he gave it more serious thought, and decided to pursue it. Nitil signed up for training in Madhya Pradesh at Bomoria Pearl Farm, and worked with the management there for a few months. Once he had picked up the necessary skills, he returned to start pearl farming in his village. The risk paid off in the first attempt itself, and Nitil earned Rs 75,000. He started the 'Bhardwaj Pearl Farm and Training Centre' to employ six migrant workers who had lost their job during the COVID-19 lockdown. The potential to earn lakhs Nitil says that undergoing training at the pearl farm convinced him that full-time employment would not help him earn a decent income to support his family. "I did not want to enter mainstream farming, and hence decided to try this new alternative.

In 2018, I quit my job. In my village, I decided to dig a pond on one acre of my family's land by seeking government subsidies provided for pearl farming," he tells The Better India. He adds that in 2019, he planted 400 oysters in the pond. "Ideally, an acre of a pond can accommodate around 25,000 to 30,000 oysters. But I started small, as the risks involved are then less," Nitil says, adding that he invested Rs 25,000 and grew oysters for 8-10 months, which earned him Rs 75,000. "Each oyster demands an investment of around Rs 40. One oyster can produce two pearls, and each of them sells at an average cost of Rs 120. The oysters can remain planted for

months at stretch — which helps improve their quality. A good quality pearl can fetch Rs 200 a piece. But I decided to harvest them at minimum incubation and scale-up immediately,” Nitil explains. In 2020, he planted around 25,000 pearls, from which he expects to earn Rs 30 lakh. He has earned Rs 3.6 lakh so far, and says the income will keep pouring in until October 2021.

Additionally, Nitil has been using the pond to cultivate fish through aquaculture. “I breed fish that are vegetarian and do not harm the oysters. In one season alone, I earn Rs 2.5 lakh from the fish business,” he adds. The farmer’s success has made him famous, and inspired others in the area to pursue pearl farming as well. The fisheries department has also taken note of his efforts. District fisheries officer Surya Prakash Ram says, “The pearl farming initiative has motivated farmers to think beyond conventional practices and demonstrate a solution to multiply income.” Surya says that the department is collaborating with Nitil to train other farmers. A way to stay close to home, and earn a decent livelihood Nitil says that he is training 15 farmers in one batch.

“The training is conducted for a small fee and lasts two days. If pursued with discipline, a farmer can earn lakhs from pearl farming,” he adds. Apart from training the farmers, Nitil has also employed six migrants who lost their jobs due to the COVID-19 lockdown and were forced to return home. Prabhu Yadav is one such migrant earning Rs 7,000 a month by working at Nitil’s pearl farm. “I used to work as a painter in Srinagar and returned in October 2020. Nitil offered me a job to help me in the crisis. The work is satisfying as I don’t spend on rent and other expenses. I can live with the family and no longer have to be away from them to earn livelihood,” he adds. Nitil says that pearl farming, while lucrative, needs attention throughout the growing process. “The health of the oysters has to be monitored every 15 days.

It demands providing healthy food and nutrition. The temperature of the water should be favourable at all times. If an oyster dies, it should be removed immediately to save the others and prevent the infection from spreading,” he explains. At present, Nitil sells the pearls to traders in Mumbai, Delhi and Kolkata. They also export the produce to China and Japan. The farmer says he is glad to have taken the decision to switch to pearl farming. “It is a satisfying feeling to know that I can be close to my family, support them, and earn a better income than living in a city. I appeal to all youngsters to return to their roots and pursue farming or agriculture-related activity. I also feel proud to have supported migrants during the tough times,” he adds.

### **Bihar: Fisheries sector has an important role in overall development**

<https://krishijagran.com/agriculture-world/over-500-farmers-benefitted-through-farmer-training-initiatives-by-nouriture-in-one-month/>

"Livestock rearing and consumption of animal products make an extremely important contribution to the economic and nutritional wellbeing of thousands of people around the world.

Livestock feed plays an important role in the global food industry and it is the largest and most important component to ensure a safe, abundant and affordable animal protein. Anmol Feeds Pvt. Ltd. ventured into the livestock feed industry nearly two decades back and recently launched its products under the umbrella brand Nouriture to meet the growing challenge of quality feeds in the market. The realization that to survive one needs to evolve, prompted the company to initiate Nouriture- a more forward looking, technology driven, future-ready and contemporary brand that can meet the needs of the livestock farmers of today and tomorrow and ensure a niche and need for itself in the market. Nouriture is focused on empowering farmers by educating them and providing solutions tailored to their problems.

It is driven to help farmers to accept modern farming techniques and usage of compound feed. Owing to their aim of educating the farmers, Nouriture recently arranged several farmer initiatives in the state of Bihar. Rohtas, Muzaffarpur, Sitamari and Saharsa were the districts where the programmes were conducted for the farmer training. There was a participation of more than 50 farmers in each event. Nouriture has also organized similar farmer empowering initiatives in the states of UP, Orissa and Assam and through their endeavours have been successful in providing more than 500 farmers with better knowledge and techniques of the sector. Speaking on the initiative, Managing Director of Anmol Feeds, Amit Saraogi said, “Nouriture is focused on the well-being and success of the farmers. It is driven to propel the livestock feed industry towards growth and introduce modern techniques for the overall progress and survival of the industry. Anmol Feeds had set up its first manufacturing unit in Muzaffarpur, Bihar and hence it is one of our goals to significantly sustain and modernize the livestock sector in the state of Bihar.

Fisheries sector has an important role in overall development of Bihar. Despite abundant aquatic resources, fish supply is short of demand in the State of Bihar. Development of the resources with the adoption of the available technologies can bridge this gap, by at least doubling the production from the present level of 2.6 lakh tonnes. Anmol Feeds is committed to the welfare of farmers who form the backbone of the socio-economic growth of the country. We have a vision to train the farmers to their fullest potential for progress, growth and maximum profit. These farmer meetings are a steppingstone towards achieving that objective.” Aquaculture in India is an important economic activity and a flourishing sector with varied resources and potentials. Aquaculture is one of the most important potential sectors of Indian economy. Fisheries alone has employed 145 million people and contributed to 1.07% of the GDP and generated export earnings of Rs 334.41 billion as per a recent estimate of National Fisheries Development Board. It is important for those involved with the sector to remain constantly abreast of the newest global advancements. Keeping this thought in mind, Anmol Feeds held one of their farmer meeting session in Saharsa, Bihar.

Present in the meeting were Mr. Saket Mishra, District officer Fisheries and Animal Husbandry World Bank and Mr. Manoranjan Kumar Singh, Fisheries officer, DFO Saharsa. 78 active fish farmers and representatives of the Matasya jiwi Sahyog Samiti attended the meeting. The main agenda of the meeting was to educate fish farmers on how aquaculture can become an immense profit generator and its role in providing livelihood opportunities. The experts present in the meeting also stressed upon how to start a fish farming business and guidelines to follow for a profitable & sustainable farming business. Farmer Siddharth from Bangaon Uttari, Sitamarhi, Bihar, added, "I am into the occupation of fish farming in an area of 1.5 acres for the last 8 years.

Earlier I used traditional feed for my farming, but for the last 6 months, I am using Matsya Bandhu floating fish feed from Nouriture. My fishes which earlier averaged 0.25 – 0.3 Kg during harvesting now have an excellent average body weight of 1 Kg. I believe that with the application of correct knowledge fish culture will have tremendous opportunities in the future." In their two-decade old journey Anmol Feeds have strived to change the narrative of the feed industry by bringing in modern cutting edge technologies, innovative practices and policies for improved feeding, livestock health care, management and trade. The importance of upskilling of farmers has been one of their core objectives, training them to use modern technology for maximum output which can benefit both the farmer and the country at large. Nouriture by Anmol Feeds is dedicated to lead its organization goals in a direction that will be instrumental in the development of the nation. The mission is maximising utilization of resources which can fetch prosperity for the state and provide employment within the state.

### **Bihar: 28-year-old quits MNC job, hires migrants to grow pearls in ponds**

<https://www.newindianexpress.com/good-news/2021/mar/31/28-year-old-quitsmnc-job-hires-migrantsto-grow-pearls-in-ponds-of-bihar-2283912.html>

"Self-employment is best if done wisely and in a planned way, says 28-year-old youth Nitil Bhardwaj, who is an upcoming role model for youngsters seeking employment in the Bagha district of Bihar. Bhardwaj, who decided to give up his plush job at a multinational company in the national capital, returned to his native last year and started 'pearl farming' in the ponds of his village. ""On hearing our respected Prime Minister Narendra Modi urging Indians to become 'aatmanirbhar' by starting local initiatives, I decided to start pearl farming after researching on it and undergoing formal training,"" Bhardwaj tells The New Indian Express. With the help of six migrant labourers, who had returned during the lockdown, he started this initiative. Owing to their circumstances, the labourers were forced to get back to Murera village of Dinamarwa panchayat under the Ramnagar block of Bagaha. Calling it a lucrative business, Nitil has been pearl farming for the last one year.

"I started farming pearls in ponds spread over one acre of land. If it is carried out sincerely there is no denying that one can earn anywhere between Rs 30 to 35 lakh in eight to 10 months," he says. Nitil is also engaged in duck farming, poultry and fish farming. These initiatives have drastically changed economic conditions for him and others. Explaining the process, Nitil says that pearl farming is carried out in freshwater with oysters which he exports from Kerala. "Pearl farming can be done one of the best aquaculture businesses in states like Bihar where ponds and other water bodies are scattered. We need formal training and financial assistance from the government," Nitil says, further adding that he sells one pearl at Rs 250 or more depending on its design. Nitil's whole family is engaged in this business with him. He is also training migrant labourers and employing them for farming at his village. Impressed with the quality of these pearls, Nitil has already found his customers in traders from Kolkata, Mumbai and Delhi. These traders polish and design the pearls and further export them to countries like China and Japan.

### **Bihar: Biofloc fish farming a new trend in Katihar**

<https://timesofindia.indiatimes.com/city/patna/biofloc-fish-farming-a-new-trend-in-bihars-katihar/articleshow/81306938.cms>

"At least six biofloc-based fish farming projects have been undertaken in the district – three in Azamnagar and one each in Mansahi, Barari and Katihar. In biofloc system, circular or rectangular fish tank is constructed indoors and in a small space. The circular fish tank is made of tarpaulin and rectangular tank with the help of cement and mortar. District fisheries officer Shambhu Prasad Nayak said construction of ponds is going on in full swing at six places in the district. "Indigenous fish varieties like 'tilapia', 'anabus' and 'tengra' are being cultured in a small space. These fish varieties are produced for maximum harvesting and income," he added. Nayak said it takes around four months for these fish species to gain the maximum weight of 300-400 grams.

"In the 15,000-litre capacity tank, the fish production can go up to 800kg to one tonne," Nayak added. Biofloc technique is an intensive fish culture, in which water, aeration, medicines, feed and other aspects are monitored scientifically. Officials said production of these indigenous fish varieties is fast catching up in the district because of their high demand. These fish species can be cultured fast and sold at Rs 300-400 per kg. "Tank and shed for fish culture is ready. In the second phase, seed stocking will be done. This scheme is a part of the 'Jal Jivan Hariyali Mission' of the state government. Several people have shown interest in this new technique of fish farming. The district produces 41 thousand metric tonne (TMT) of fish annually," Nayak added.

### **Bihar: Fish traders get vehicles in Katihar**

<https://timesofindia.indiatimes.com/city/patna/fish-traders-get-vehicles-in-katihar/articleshow/80712630.cms>

"The district administration on Friday handed over four-wheelers, three-wheelers and two-wheelers with ice box facility to at least 16 beneficiaries under the chief minister's fisheries distribution scheme. Katihar DM Kanwal Tanuj, who handed over the vehicles to 16 beneficiaries, said the move was aimed at promoting pisciculture and fish trade in the district. Several officials from the fisheries and other departments were present at the function. District fisheries officer Shambhu Prasad Nayak said 90% subsidy was provided to the beneficiaries by the state's fisheries directorate for availing the scheme.

### **India: Study flags appalling conditions at fish farms across the country, including Bihar**

<https://www.outlookindia.com/newscroll/study-flags-appalling-conditions-at-fish-farms-across-the/2020602>

"Consumers of fish and shrimps across the country could be staring at a health hazard on account of appalling standards of hygiene and reckless use of chemicals at farms where these are reared, says a study. Jointly conducted by the Federation of Indian Animal Protection Organization (FIAPO) and the All Creatures Great and Small (ACGS), the study is based upon investigation of 250 farms across 10 of the highest fish-producing states. States like Bihar, Jharkhand, Chhattisgarh and Assam were surveyed for freshwater fish while Andhra Pradesh, West Bengal, Odisha, Tamil Nadu, Gujarat and Puducherry were covered for both fresh water and seawater varieties. ""We have found shocking conditions in this growing sector. Fish are kept in cramped, filthy enclosures, with no waste management. They are cut up alive. The contaminated water from these fish farms is released into local water bodies and estuaries that spread the parasites further, causing harm to the fish population as well as humans"", Verda Mehrotra, Executive Director of FIAPO, said in a release. She said in Bihar, the investigation was carried out in the districts of East Champaran, Muzaffarpur, Begusarai and Patna covering 20 fish farms. 100 per cent of the fish farms had toxic levels of lead and cadmium, scoring extremely poor on the public health hazard scale (0.25/1).

Additionally, cent per cent of the fish farms had no outlets, which implied dirty water being re-circulated posing a grave threat to fish and human health. Several farmers admitted massive losses due to prevalent diseases and massive floods every year. All the fish farms lacked basic maintenance and were littered, and open defecation is a regular practice near the fish farms. All the fish farms had poor dissolved oxygen levels, which means fish were struggling to survive with high mortality rates. Indiscriminate use of antibiotics, insecticides and pesticides was also rampant, she said. ""Such haphazard management practices also invite the risk of anti-microbial resistance. AMR is the next health catastrophe waiting to be unleashed. Recently, a group of

fisheries scientists called for greater awareness about Anti- microbial resistance (AMR) addressing the need to curb the transmission of AMR bacteria to humans from fish and shrimps", she added.

The unhygienic conditions of meat markets also give rise to events of pandemics, malaria, typhoid, and jaundice, according to Anjali Gopalan, Managing Trustee of ACGS. "We do not seem to align our considerations with our lifestyles and actions, the brunt of which is faced by aquatic life because they exist away from human civilisation. "The lack of marine sentience and sensitivity of the public as well as industries to the health of fish is revealed when we learn about the administrative and political indolence in the country. Consequently, when this is clearly a public health concern we must start today by mobilising resources to improve the conditions to avoid an aquaculture disaster", she added. "Aquaculture is factory farming of fishes, and it constitutes the same systemic problems encountered in the factory farms of land animals: crowding, stress, disease, pain, and death. If you don't want to support that, then don't buy fish, warned Dr Jonathan Balcombe, scientist, speaker and advisor at FIAPO.

### **Bihar: Likely to get fish-surplus tag soon**

<https://timesofindia.indiatimes.com/city/patna/bihar-likely-to-get-fish-surplus-tag-soon/articleshow/79710238.cms>

"With a record production of 6.42 lakh metric tonnes in 2019-20, the state has attained almost self-sufficiency in fish reproduction and is soon likely to become a fish-surplus state. Official records show that the state produced 40,000 metric tonnes of fish more than the previous fiscal (2018-19). "With the adoption of modern technological innovations, production is likely to increase manifold in the coming years, said special secretary-cum-director of state fisheries Dharmendra Singh. Giving details of the strategies being adopted by the department to enhance fish production in the state, Singh said that fishermen are being granted as high as 90% subsidy in purchasing feed and seed for fish production. Culture-based fisheries have increased the production considerably in recent years, he said. He further pointed out that selection of suitable species of fishes for largescale production has also led to the production growth.

Farming of Pangasius fish (best known as basa), which has picked up in the districts of Kaimur, Rohtas, Aurangabad, Nalanda, parts of Patna, Gopalganj, Siwan, Saran, Muzaffarpur and Samastipur has contributed greatly to the quantum jump in fish production. "Pangasius fish culture also gives better productivity level. Against around three tonnes of production in one hectare of waterbody in case of farming of Indian carps such as rohu, basa gives 20 tonnes to 40 tonnes per hectare, Singh added. However, Patna University zoology department teacher D K Paul observed that Bihar is still far behind in fish production as compared with other states. The per capita annual consumption of fish in Bihar is 7.7 kg per person, less than the national average

of 10 kg and the Indian Council of Medical Research (ICMR)-recommended 11.2 kgs. Despite abundant aquatic resources in terms of about 3,200 km of rivers, 100,000 hectares chaur and floodplain wetlands, 9,000 hectares of oxbow lakes or mauns, 7,200 hectares of reservoirs and 69,000 hectares of ponds and tanks, fish supply is short of demand in the state. “Development of resources with the adoption of available technologies can bridge this gap, by at least doubling the production from the present level of production. New developed technologies like monoculture, polyculture, induced breeding and integrated fish farming should be adopted for enhancing the production in the state, Paul added. PU zoology department head Arbind Kumar said that the state is also likely to be benefited from the Rs 20,050 crore-Pradhan Mantri Matsya Sampada Yojana (PMMSY) launched in September this year in 21 states, including Bihar. The scheme aims at doubling fisheries exports, creating more employment opportunities and boosting income of farmers. Under this scheme, many facilities have been introduced in Patna, Purnia, Sitamarhi, Madhepura, Kishanganj and Samastipur districts of Bihar. “The PMMSY will ensure new infrastructure, modern equipment and access to new markets to fish producers and improve avenues for increasing income apart from farming, he added.

### **Bihar: New Ramsar site designated in Bihar could benefit local fishing community**

<https://india.mongabay.com/2020/12/new-ramsar-site-designated-in-bihar-could-benefit-local-fishing-community/>

"Ram Shankar Sahni, a 45-year-old fisherman at Kabar Taal, a lake in Begusarai district of Bihar, is quite happy with the situation of the wetland this year. Usually, it has very little water which makes it difficult for fishing. But this year, Sahni says, that with a good monsoon, the levels of water in the lake have been a relief for many fishermen like him that depend on the lake for their livelihood. “The water level has been good this year because of the heavy showers. We have good catch almost after two decades as the water has also entered in those areas that normally remained dry. We have been catching around 6-7 kilograms of fish everyday as compared to just over a kilo last year because of less water, he says as he offloads the new boat that he has purchased for his son. Ram Shankar Sahni belongs to the traditional community of fishermen known as Sahnis that are dependent on Kabar Taal (also known as Kanwar Taal or Kanwar Jheel) for their livelihood.

While this year has had some relief, the Kabar Taal is under threat from water management activities, encroachment and more. A boost to the future of the wetland came in mid-October when Kabar Taal was designated as a Wetland of International Importance under the Ramsar Convention, an international treaty for conservation and sustainable use of wetlands. This is the first Ramsar site in Bihar. Along with Kabar Taal, the Asan Conservation Reserve in Uttarakhand was also designated as a Wetland of International Importance. With the inclusion of the above two, the total Ramsar sites in India stand at 39. Kabar Taal is Asia's largest freshwater

oxbow lake. According to the Ramsar Convention, it covers 2,620 hectares of the Indo-Gangetic plains in Bihar. “The Site is one of 18 wetlands within an extensive floodplain complex; it floods during the monsoon season to a depth of 1.5 metres. This absorption of floodwaters is a vital service in Bihar State where 70% of the land is vulnerable to inundation. During the dry season, areas of marshland dry out and are used for agriculture, notes the Convention in its designation.

The news of Kabar Taal wetland being declared a Ramsar site has been welcomed by the environmentalists who expect a change in its present condition. “It has been a long battle waged by the environment enthusiasts from across the country. The mindless encroachments and other illegal activities have taken a toll on the health of the Kabar Taal and have destroyed its ecosystem. It is now the responsibility of the state government to protect the site and conserve it. The local community can also chip in to stop bird poaching and illegal constructions that have been shrinking the area of the lake, pointed out Ashok Ghosh, a scientist and chairman of the Bihar State Pollution Control Board. “The water level in the lake has reduced because of heavy siltation and eutrophication (when excess algae and plant growth and their decomposition deprive water of available oxygen, causing death of other organisms) has set in. The fishermen are having plenty of water this year because the inlets and outlets of the lake connecting it to Burhi Gandak river are choked due to silt.

This time though it has proved to be a blessing in disguise because of good monsoon. But it has been cleared to allow the flow of water into the lake, he said. Encroachments have put Kabar Taal at risk. Swathes of the Kabar Taal wetland have been encroached upon and transformed into agricultural land or residential plots. Ghosh who has done an extensive study of the lake found that the area of the lake had reduced to 2032 hectares in 2012 from 6,786 hectares in 1984. His research had also found that the net area sown was 60 percent while the land put to non-agricultural use was 5.13 percent; the permanently water-logged area was a mere 2.80 percent. Some members of the fishing community however are not aware about the Ramsar Convention and its importance, “We are too illiterate to understand about these things. We would only consider it as good news if our livelihood improves else nothing matters. We have been watching political leaders making high promises during their polls campaigns of improving our condition but it has proved to be lip-service. The situation, in fact, has turned from bad to worse so far, fumed Lalu Sahni, 70, who has been a fishermen for the past five decades.

The encroachments coupled with the poaching of migratory birds have been the major issues the wetland has been grappling with over the years. Senior government officials privy to the matter, however, blame a conflict between Sahnis and local landlords for land encroachments and also targeting of migratory birds. “A major chunk of the notified land under Wildlife (Protection) Act of 1972 belongs to the local landlords who were not kept in the loop during the notification process. As a result, they lost their land and turned rebels. The local farmers and landlords still

consider the land as their own and have been capturing it. They also target migratory birds out of anger and frustration, said a senior government official requesting anonymity. According to A.K. Dwivedi, Member Secretary of Bihar State Wetland Authority, “The total area of the wetland is over 6300 hectares out of which around 2620 hectares have been identified as core zone where the water is available most part of the year. The area under the conflict with the locals has been excluded from the core zone.

We are in talks with locals and would allow farming with stern rules including a bar on the use of pesticides and other harmful chemicals that might affect the ecosystem. Potential of eco-tourism Ghosh said that Kabar Taal, has potential to be developed into an eco-tourism hotspot. “The government should try to develop the wetland for eco-tourism as it would not only offer livelihood to the locals but would also generate revenue for the state government. The road transport has to be improved to enable tourists to reach there without any hiccups, he said. Realising the linkage between ecosystems like wetlands and the economy, The Economics of Ecosystems and Biodiversity – India Initiative (TII) was launched in 2011 by the Ministry of Environment, Forest and Climate Change, (the then Ministry of Environment and Forests) to highlight economic consequence of loss of biological diversity and decline in ecosystem services and developed a report on wetlands thematic area in 2017.

“The initiative envisioned mainstreaming of ecosystem services and biodiversity values in developmental programming using an evidence building approach for three ecosystem types namely inland wetlands, forests, coastal and marine ecosystems, pointed out Kumar Deepak, environment project officer at the United Nations Development Programme (UNDP), India who was involved in the report. “The study has been looking into ways of developing local markets of handicraft products, developing resorts and other facilities that would benefit the local communities and also prevent them from destroying the environment ecosystem as it would then become the source of their livelihood. The locals need to understand that wetlands not only offer them fresh oxygen but also provide host of supporting services like maintain the water table and also minimising floods.

### **Bihar: Kabar Lake declared Bihar’s first Ramsar site**

<https://timesofindia.indiatimes.com/city/patna/kabar-lake-declared-bihars-first-ramsar-site/articleshow/79197393.cms>

“Kabar taal' or Kabar Lake, located 22km northwest of Begusarai town, has finally been declared Bihar's first Ramsar site. The declaration was made by the ministry of environment, forest and climate change (MoEFCC) on Thursday, which was also celebrated as National Birdwatching Day. Union minister for environment, forest and climate change Prakash Javadekar on Thursday shared this information on his Twitter handle. “Pleased to inform that

Bihar has got its first Ramsar site. Kabar taal in Begusarai becomes a wetland of international importance. It is an important wetland of the Central Asian Flyway for its population of migratory birds and biodiversity. With this, India now has 39 Ramsar sites (sic), the minister said in his tweet. Ramsar sites are wetlands of international significance under the Ramsar Convention, 1971, an international treaty for the conservation, protection of wetlands. Dipak Kumar Singh, principal secretary (environment, forest and climate change, Bihar) said, “The lake is now on the world map.

However, the state government will work on its restoration. The area of the lake has shrunk a lot over the years, he said. He added, “Earlier, some private areas were also declared a part of the lake. There are many issues with the lake, such as encroachment of its inlets. We will restore and develop the wetland. Spread over 2,620 hectares, the lake hosts 106 species of resident birds and is a nesting ground for 59 species of migratory birds. The site hosts five critically endangered species, including three vultures Indian vulture (*Gyps indicus*), red-headed vulture (*Sarcogyps calvus*) and white-rumped vulture (*Gyps bengalensis*) and two water birds sociable lapwing (*Vanellus gregarius*) and baer's pochard (*Aythya baeri*). In addition, it has 46 species of fishes and supports a large number of flora and fauna round the year. The Kabar Lake was declared a notified area under the Wildlife (Protection) Act of 1972.

In 1989, the Bihar government declared it a bird sanctuary to prevent poaching. In spite of being a proposed Ramsar site since 1987, the lake was not among the 13 wetlands that were declared to be of international importance in 2002. Ashok Ghosh, chairman of Bihar State Pollution Control Board, in a survey report titled ‘Kabar Lake- A Paradise Lost’, had said the water of the lake was declining at an alarming rate due to severe eutrophication. “The depth of the lake is declining due to infestation of aquatic weeds. Besides, there is no inflow-outflow mechanism in the lake. Many people are dependent on the lake for livelihood, especially the Sahni fishing community, he said in the report.

**Bihar: The slow disappearance of a lake in Bihar has pitted two castes against each other**

<https://scroll.in/article/976816/the-slow-disappearance-of-a-lake-in-bihar-has-pitted-two-castes-against-each-other>

"The largest oxbow lake in Asia is dying. Kanwar lake, in the state of Bihar in eastern India, was formed thousands of years ago by the meandering of the Gandak river. Over the past 20 years the protected area and bird sanctuary has shrunk rapidly – but not because of climate change. In 1984, Kanwar lake covered almost 6,786 hectares, a study led by Ashok Ghosh, a scientist and then chairman of the Bihar State Pollution Control Board, found. By 2004 it had shrunk to 6,044 ha and 2,032 ha in 2012. Mohammed Nawazuzzoha, a research scholar at Jamia Millia Islamia university in New Delhi, has carried out more recent analysis on the size of the lake, which is in

the district of Begusarai. “The lake area decreased by 8.9% from 1998 to 2018, he told The Third Pole. “I have excluded the areas occupied by weeds, aquatic plants or agriculture and the final results show that the lake area is as low as 89 ha. Ghosh's research found that the wetland is diminishing due to mismanagement, encroachment and deliberate attempts to dry the lake. As the water has retreated, the land left behind has been occupied by agriculture, housing settlements and a brick factory.

Two groups have competing interests in Kanwar lake: the fishing community, or Sahnis, and the landlords, or Bhumihars. The Sahnis want to safeguard the lake as it is the source of their livelihood, while the Bhumihars want to use the land it covers for agriculture. Nawazuzzoha said that his analysis of satellite imagery shows that agriculture in the wetland has increased by about 12% over the past 20 years. According to Ghosh, almost 60% of the lake's area is being used for agriculture. Today, much of it is covered by paddy fields, making the lake difficult to identify. Arvind Kumar Verma, the district magistrate, said there are no official figures on the exact number of people affected by the conflict, but Land Conflict Watch, a project that maps and analyses land and resources conflicts in India, estimates that about 500 people are impacted. A canal connecting the lake to the nearby Gandak river is at the centre of their struggle. “The canal used to recharge the lake and was also used for transportation from the lake through the river, said Ghosh. The Third Pole's correspondent visited the area in October 2020 and May 2019, and observed that this inlet was blocked, with some areas completely filled in. Ghosh said the blockages appeared between 2002 and 2003. Both Ghosh and Nawazuzzoha said that structures had been built by landlords to intentionally choke the canal and dry up the lake.

A landlord who spoke to The Third Pole on condition of anonymity said the channel “dried due to the accumulation of sand in the way and that this was a “natural process. Heavy monsoons in the past three years, especially in 2020, have filled the lake: the fishermen told The Third Pole that between August and November the lake swells with water. Both researchers said that the landlords now want to open the canal as they have realised that it is holding water in the lake and not allowing it to drain. “Under the Jal Jeevan Hariyali programme of the state government [an initiative to strengthen Bihar's environment], [the district administration is] planning to revive the connecting channel from the Kanwar lake to the Gandak river, said Verma. The landlords support this initiative. One of the biggest challenges to resolving this problem is the lack of leadership by the authorities. “Throughout the course of my research, I have not come to realise the ownership of the Kanwar lake. Whether it is under the wildlife or the irrigation or agriculture department, Ghosh said. Nawazuzzoha agreed that responsibility for the regulation and maintenance of the lake had not been established by the authorities. The local fishers also said the government has turned a blind eye to the lake's conservation.

“We have not seen a project in the Kanwar lake for a very long time, a fisherman added. “Some officials visit the lake for inspections, but no work is carried out. Verma confirmed that no conservation or developmental projects have been carried out in the past 10 years, attributing this to a dispute over ownership of the land. The district administration started demarcating the lake for conservation in 2013, prohibiting the sale and purchase of land. The landlords objected to the move, claiming they owned the land and filed a case in the Bihar High Court. The case is pending. The landlord who spoke to The Third Pole said, “The land was *ghair mazaruah khas* [had owners but no deeds or documentation] until the late 1960s, then the government tried to make it *ghair mazaruah aam*, or public land... After independence the land was under water so there was no proper mapping of it, hence it wasn't documented under the names of their owners. After the land was declared a bird sanctuary, the authorities started looking for owners. He added, “Now the government wants to own the land they have to give us compensation. Over time the price of land has significantly increased... Either they have to pay a hefty price, which they will not, or they have to keep the matter pending. Verma, the district magistrate, said, “We had demarcated the lake area for its conservation.

“Then some people had filed a case claiming the land in the High Court, Verma said. “The forest department, the district administration is involved in the case. The local body has been asked to demarcate the lake area. The final order has been delayed due to the Covid-19 pandemic. Despite the controversy, the fishers told The Third Pole that local landlords continue to sell the land unchecked. A vast number of birds once thrived in the wetland, and in 1989 the central government declared it a bird sanctuary. Salim Ali, the famous ornithologist, visited the lake and identified 60 species of migratory birds and 106 species of resident birds. Before that, the lake was declared a protected area in 1986 by the Bihar government under the Wildlife (Protection) Act of 1972. This legislation prohibited poaching as well as agricultural and industrial activity in the area, Verma said. “Due to the encroachment in the lake over the past two decades, there has been disposal of waste into the lake [which has] polluted the water. The shrinking area has resulted in fewer migratory birds in the region, said Nawazuzzoha. He said that 15 migratory bird species have stopped coming to the lake. “Out of the 106 species of birds identified by Salim Ali in the 1980s, around four are no longer found in the region, he said. The degradation of the lake has had consequences for the fishers.

The daily catch of fish used to be up to 5 kg to 6 kg for a fisherman, but as the water reduced the daily catch fell and traditional farmers started abandoning the place, said a fisherman. Nawazuzzoha said that “several harmful toxic chemicals and pollutants including solid waste resulted in unsuitable conditions for fishing. Hence fishing reduced considerably as the water also reduced. Over time, the fisherman said, the Sahni population shrank as the younger generation migrated to cities in search of work. When The Third Pole visited earlier this month, about 20 fisherman, mostly in their 60s, were rowing their boats in the shallow water left after

the monsoon rains. “If you want to conserve the wetland you have to go against the interest of some landlords, Ghosh said. One impact of Kanwar's decline as a biodiversity hotspot is the area misses out on the opportunities ecotourism brings. There is no official data on the number of tourists who visit the lake, but a fisherman said that some tourists come during the festive season and for the new year. For most of the year, very few tourists visit the lake.

### **Bihar: Fishing Communities Demand – Give Back Our Fisheries: Protect Our Right to Fish Resources and Ganga Waters**

"The Ganga Mukti Andolan (GMA) and Jal Shramik Sangha have been fighting to establish small scale fishing communities' right to sustainably use the fish resources of river Ganga and also to protect those resources and river Ganga. They protested against the illegal encroachments of mafia and landlords on the river Ganga and its tributaries. They raised their voice against Dolphin Sanctuary established without their consent or consultation, which has turned into a ploy to fleece the poor fishers by the forest guards. They objected to the erection of Farakka Dam that severely affected the ecology and flow of the river Ganga. They also opposed use of mosquito and cloth nets to save juvenile fish. They demand that the Ganga and its tributaries should be free of encroachment and the fisher folk should get their free fishing rights, and that the use of mosquito and cloth nets must be prohibited. They also intimated the authorities of the need of police patrolling on river stretches for the safety of fishers as the mafias attack and rob the poor fishers while fishing. Several meetings have been organized to discuss these issues with the local authorities. Every time the authorities promised that that they would look into the matter and take stringent measures.

However, no action was taken. The fisheries department auctioned different areas but the river mafias control the lease process and they prevent the traditional fishers from fishing in the leased out stretches by putting barriers around the area. Many fishermen have been brutally murdered for opposing this coercion. They are threatened by the water mafias that they may again face bloodshed as last year when seven fishermen were murdered including Balram Sahni. The fisher people placed the following demands and held a “Jal Satyagraha – Non violent Protest Demonstration in the waters of river Ganga at Kagzi Tola, Kahelgaon on 28th September from 10 am to 1.30 pm. Hundreds of fisher people, men and women, old and young, stayed in the waters of river Ganga to highlight the demands of the fishing communities. The Demands: 1. Implement in totality the free fishing rights bill passed in 1991. 2. Action should be taken against Jal Mafia and criminals who illegally siege the fishing nets and traps in the river and encroach tributaries of rivers. 3. For averting the brutal killing of fishermen in future, police patrolling should be arranged immediately. 4. Vikramshila Gangetic Dolphin Sanctuary should be withdrawn. 5. Illegal settlement at Champalal should be cancelled immediately.

### **Bihar: PM to unveil Rs 294 crore worth of projects on September 10**

<https://timesofindia.indiatimes.com/city/patna/pm-to-unveil-rs-294-crore-worth-of-projects-on-september-10/articleshow/77985733.cms>

"PM Narendra Modi is all set to inaugurate completed projects and also lay the foundation of new projects worth Rs 294 crore on Thursday, ahead of the assembly elections whose schedule the Election Commission (EC) may announce soon. In this regard, deputy CM Sushil Kumar Modi (SuMo) said on Monday that the projects worth Rs 294 crore are related to fisheries, animal husbandry and agriculture departments aimed at underpinning their scientific farming. While the PM is scheduled to announce proposed projects in five phases till September 25, he would inaugurate completed projects related to the fishery resources worth Rs 107 crore on Thursday. Besides projects related to animal husbandry valued at Rs 94.5 crore and also Rs 74 crore worth of projects related to the campus of Dr Rajendra Prasad Central Agriculture University will also be launched, SuMo said. The Bakhri fish seed farm near Dumra in Sitamarhi district worth Rs 5 crore, fish rearing college at Kishanganj for disease eradication and quality testing and aqua referral laboratory on the campus of Bihar Animal Science University worth Rs 10 crore, fish feed mill at Madhepura worth Rs 1 crore, fish on wheels project at Masurahi (Patna) worth Rs 2.8 crore, and the integrated fish production technology centre on the campus of Rajendra Central Agriculture University at Pusa worth Rs 2.87 crore.

The projects related to animal husbandry department, whose start the PM would announce, are semen station at Purnia (Rs 84.3 crore), embryo transfer technology and IVF laboratory at Bihar Animal Science University (Rs 8.06 crore), and sex-sorted semen project prepared at centres located at Begusarai, Khagaria, Samastipur and Nalanda (Rs 2.13 crore), SuMo said. Similarly, the PM would also inaugurate School of Agri-Business and Rural Management Bhavan (Rs 11 crore) about the Rajendra Central Agriculture University, besides laying the foundation stones for the construction of Boys' Hostel (Rs 27 crore), stadium (Rs 25 crore) and International Guest House (Rs 11 crore) for the same campus.

**Bihar: The lack of government assistance to the boatmen, who were facing great hardships due to the coronavirus pandemic and floods in the state**

<https://timesofindia.indiatimes.com/city/patna/vip-demands-govt-help-to-fishermen/articleshow/77320825.cms>

"Mukesh Sahani, has expressed concern over the lack of government assistance to the boatmen, who were facing great hardships due to the coronavirus pandemic and floods in the state. National vice-president of VIP, Raj Bhushan Nishad, said on Sunday there was no provision of loan from any government agency for nearly 30,000-odd boatmen for making their country boats, which are the only source of survival for the community members. "The government should pay attention to the plight of the boatmen, who come to the rescue of

marooned people in several districts in north and eastern Bihar during floods every year. They ply their boats in rivers, tributaries and water reservoirs on their own, Nishad said. Muzaffarpur, said over a dozen districts such as Muzaffarpur, Darbhanga, East Champaran, Begusarai, Khagaria, Madhubani and Samastipur have a sizeable population of fishermen. “They have virtually been pushed to the brink of poverty.

They didn't get any financial help from the government. Several families were managing to survive by doing other jobs. But majority of them were still engaged in their traditional occupation, he added. He, however, admitted that the cooperative society for fishermen has provided some financial assistance to some boatmen but that is like a drop in the ocean. “Since fisheries have come under the agriculture department, the losses to fishermen should be compensated by the government as farmers, said. The ponds and chauras (water reservoir) were auctioned by the government. However, a number of families had to face huge financial losses due to floods as fish were washed away, he added. State agriculture minister Prem Kumar couldn't be contacted for his comments despite repeated attempts.

### **Assam and Bihar: Six Dead, Over 55 Lakh Affected in Floods**

<https://thewire.in/environment/assam-bihar-flood-update-imd-alerts-kerala>

"Six people died in Assam and Bihar on Wednesday due to floods which have affected over 55 lakh people in the two states, while heavy rains lashed parts of Kerala inundating low lying areas and partially disrupting rail and road traffic. The India Meteorological Department (IMD) issued a red alert for Kerala's high-range Idukki district with a forecast of widespread extremely heavy showers. However, a fresh spell of rains brought relief to the national capital from the sultry weather but caused waterlogging in low-lying areas, affecting traffic movement, electricity and water supply. Kuldeep Srivastava, the head of the IMD's regional forecasting centre, said, “The monsoon trough will be close to Delhi-NCR from Tuesday evening to Thursday. “During this period, southwesterly winds from the Arabian Sea and easterly winds from the Bay of Bengal will reach Haryana, Delhi-NCR, West Uttar Pradesh and northeast Rajasthan, he said, adding that under the influence of these systems, heavy to very heavy rainfall will occur over these areas.

In Assam, three people drowned in floodwater and close to 17 lakh people across 21 districts remained affected by the deluge despite an improvement in the flood situation across the state, according to an official bulletin on Wednesday. Till Tuesday, more than 19.81 lakh people were suffering due to the deluge across 21 districts. A daily flood report of the Assam State Disaster Management Authority (ASDMA) stated that one person each drowned in Barpeta, Kokrajhar and Kamrup districts. With this, the total number of people losing their lives in this year's flood and landslide across the state has gone up to 133, of whom 107 were killed in flood-related

incidents and 26 died due to landslides. The ASDMA said that over 16.55 lakh people were hit by floods in Dhemaji, Lakhimpur, Biswanath, Darrang, Baksa, Barpeta, Chirang, Bongaigaon, Kokrajhar, Dhubri, South Salmara, Goalpara, Kamrup, Kamrup Metropolitan, Morigaon, Nagaon, Golaghat, Jorhat, Majuli, Sivasagar and Dibrugarh districts. Goalpara is the worst-hit with over 4.19 lakh affected people, followed by Morigaon with more than 2.63 lakh people and South Salmara with around 2.50 lakh people hit by the deluge. At present, 1,536 villages are inundated and 92,899.95 hectares of crop area has been devastated across Assam, the ASDMA said.

The death toll due to the flood in Bihar rose to 11 with three fresh fatalities while the number of people affected by the calamity reached close to 40 lakh, the state disaster management department said. All the three deaths were reported from Darbhanga district, it said. The number of people affected by the floods, caused by heavy rainfalls in catchment areas along the Indo-Nepal border, has now reached 38.47 lakh. Residents of nearly a thousand villages across 12 districts of Bihar have been hit by the calamity. Heavy rain forecast in north Bengal

Meanwhile, heavy rain has been forecast in all north Bengal districts, which got a day's respite from the continuous showers that lead to a flood-like situation. Little or no rain was recorded in the 24 hours till 8.30 am in the region, where heavy downpour has caused flooding of low-lying areas in some districts, including Jalpaiguri and Alipurduar. The meteorological department has warned of heavy rain or moderate thunderstorms in Darjeeling, Kalimpong, Jalpaiguri, Alipurduar, Coochbehar, North Dinajpur and South Dinajpur districts till Friday morning.

### **Bihar: Fish lovers elated as Bihar government launches app for home delivery amid lockdown**

<https://www.newindianexpress.com/nation/2020/may/16/fish-lovers-elated-as-bihar-government-launches-app-for-home-delivery-amid-lockdown-2144175.html>

"Residents of Bihar can now get to savour fresh fish without stepping out of their homes amid the lockdown. The fishery directorate of the Bihar government has developed and launched an app through which orders can be placed for the fish of one's choice which will be delivered at doorsteps across the state. Elated at the start of this online service at a time when millions of people are restricted to their homes during the lockdown, Anjani Kumar Singh of Patna said, ""Yesterday, I booked 3 kg of rohu fish online as our grandchildren and other family members have been eager to eat it since the lockdown began. To our surprise, within 30 minutes of booking, fresh fish was delivered to our home."" Echoing similar sentiments, another fish lover Indu Devi of Hajipur said her son booked 2 kg of fish through the app on his smartphone and the delivery was made within one-and-a-half hours. Speaking to The New Indian Express, Dr Prem Kumar, minister of agriculture, animal and fishery resources, said Bihar stands in the fourth position in terms of fish production and nearly 2 crore people are directly linked to the fish trade.

""Starting this system of e-booking of fish with doorstep delivery amid the lockdown is proving to be a great help to people.

All districts of the state are being covered under this online service,"" Dr Kumar said. On being asked about the production of fish, the minister said, ""The state has witnessed a record rise in fish production under the agricultural road map and this year from January to May, 6.42 lakh metric tonnes of fish have been produced, which is around 6.4% more than the total production in the same period last year."" Quoting figures, he said the state imports only 20,000 tonnes of fish from other states and with the help of the state's own production, 33,000 tonnes of fish are exported to Nepal, Siliguri, Ludhiana, Varanasi, Gorakhpur and Jharkhand. ""To promote fisheries, 922 vehicles have been provided to people involved in the business,"" he said. According to official figures of the Indian Council of Agriculture Research, Bihar is blessed with huge aquatic resources including 93000 hectares of ponds, 9000 hectares of oxbow lakes, 26000 hectares of water reservoirs and a large area of wetland in addition to 3200 km long rivers for the massive growth of fisheries. ""Blessed with such abundance of aquatic resources, we are now leaving no stone unturned to become self-reliant under the NDA government,"" the minister added.

### **Bihar's economy registers higher growth than Indian economy in last three years**

<https://www.thehindu.com/news/national/other-states/bihars-economy-registers-higher-growth-than-indian-economy-in-last-three-years-govt/article30906767.ece>

"The Bihar government presented its 14th Economic Survey 2019-20 in the Assembly on Monday. "With an average of over 10% growth, Bihar has registered higher growth than the growth rate of India in the last three years, Deputy Chief Minister and State Finance Minister Sushil Kumar Modi later told journalists. "The per capita GSDP (Gross State Domestic Product) of Bihar was Rs.47,541 at current prices and Rs.33,629 at constant prices. The main growth drivers of the economy in Bihar, which registered a double-digit growth and contributed towards real growth of the overall economy of Bihar during 2018-19, are air transport (36%), other services (20%), trade and repair services (17.6%), road transport (14.0%), and financial services (13.8%), he added. The Survey said that the "fiscal deficit of the State was 2.68% of GSDP, revenue surplus 1.34% of GSDP, and the outstanding public debt liability of the State government was 32.34% of GSDP during the year 2018-19.

"The total revenue receipt of Bihar in 2018-19 was Rs.1,31,793 crore and capital receipt was Rs.20,494 crore. The revenue expenditure and the total expenditure in the state were Rs.1,24,897 crore and Rs.1,54,655 crore respectively...the revenue receipt increased by 12.2% whereas the revenue expenditure increased by 21.7% in 2018-19 over the previous year, added the report. While listing highlights of the Economic Survey report, Mr. Modi further said that "egg

production has increased in the state from 111.17 crore in 2016-17 to 176.34 crore in 2018-19 and the total fish production gone up from 4.79 lakh tones in 2013-14 to 6.02 lakh tones in 2018-19. “Similarly, the annual growth rate of operational agro-based factories in Bihar was 16.4 % over the last 10 years, compared to only 3.3 % at the all India level, he said.

The major employment generating industries, said the report, for working males in the state during 2017-18 were agriculture, forestry and fishing (44.6%), construction (17.1%), wholesale and retail trade, repair of vehicles (12.3%) and manufacturing (9.3 %) and for female workers agriculture, forestry, fishing and education have been the major employment generating industries. “The per capita consumption of the electricity in the state has risen from 145 kwh in 2012-13 to 311 kwh in 2018-19, implying growth of 114 % in six years and the availability of power has increased from an average of 6-8 hours to 20-22 hours in rural areas and from 10-12 hours to 22-24 hours in urban areas, Mr Modi said, while adding, “the power capacity availability in the state was 3889 MW in 2018 which increased to 4767 MW in 2019 and in order to meet the increased demand of power, the state government has also planned for additional capacity of 5335 MW from different sources in a phased manner by 2021-22. The Economic Survey has also put focus on state government's flagship programme of Jal-Jivan-Hariyali to “tackle issues related to climate change and environmental degradation. “Besides, the state government has improved its budgetary allocation and operational efficiency too through CFMS (Comprehensive Financial Management System) since 2019 , added Mr Modi.

### **Bihar: To aid in branding and promotion of export items: Sushil Kumar Modi**

<https://timesofindia.indiatimes.com/city/patna/sumo-state-to-aid-in-branding-and-promotion-of-export-items/articleshow/73911462.cms>

"Animal husbandry department's principal secretary, N Vijayalakshmi, said production of fish in the state has recorded highest growth in the recent years. “For long, Bihar remained a fish consuming state for which varieties of fish used to come from states like Andhra Pradesh, but the state is now turning into a fish producing state, she said, adding, the gap between fish import and production in Bihar was merely 44,000 tonnes which would be overcome in the next fiscal. Deputy chief minister Sushil Kumar Modi (SuMo) on Monday said that the state government would “actively intervene to promote exports from Bihar, which currently languishes at a miniscule 0.05% of the total exports from the country. The state would help in branding of products from various districts to create demand for them in the international market, he added.

“PM Narendra Modi has asked the state governments to make necessary interventions to promote exports of products and items from their respective areas, SuMo Modi said, referring to a recent meeting addressed by the PM in which he had participated. SuMo was the keynote speaker at seminar on ‘State Focus Paper 2020-21’ related to the annual credit plan prepared by

the National Bank for Agriculture and Rural Development (NABARD). He said, “8.74 lakh metric tonne (MT) of food items worth Rs 1,748 crore were exported from the state in 2017-18 was, but it could be increased to Rs 9.35 lakh MT valued at Rs 2,500 crore. SuMo drew the attention of the bankers at the seminar to the annual credit plan that had allotted Rs 292 crore for disbursement among exporters from the state. “Come forward and assist them, so that more products and items could be exported from the state, which, in turn, would also increase the state's share in the total exports from the country, he told the bankers.

The deputy CM added that one product or item would be identified from each district for branding and its “pull-value in the international market would be created. Among the items that he cited for identification were ‘katarni chawal and chura’ from Bhagalpur, fruits (shahi litchi, Bhagalpuri silk and ‘malda’ mango) and sweets as well as handicraft items and Madhubani paintings. Currently, the largest share of exports from the state belongs to non-basmati rice (32%), followed by maize (29%), cereal (9.3%), wheat (6.1%), ‘makhana’, as well as fresh vegetables and honey. “The need is to do proper branding and maintaining their quality, SuMo said.

#### **India: Kerala tops SDG index; Bihar at last rank**

<https://www.thehindu.com/news/national/kerala-himachal-pradesh-ap-lead-performers-in-niti-aayogs-sdg-india-index-2019/article30432342.ece>

"Kerala tops states in progress towards UN Sustainable Development Goals, while Bihar is at the bottom of Niti Aayog's SDG Index, released on Monday. Himachal Pradesh and Sikkim have joined all the southern states in the top tier of front runners who scored more than 65 points, out of a possible 100. Ending hunger and achieving gender equality are the areas where most states fall far short, with the all-India scores for these goals at 35 and 42 points respectively. On the other hand, Niti Aayog has given India an overall score of 60 points, driven mostly by progress in clean energy and sanitation (88); peace, justice and strong institutions (72); and affordable and clean energy (70). The SDGs are a set of 17 broad-based global goals adopted by the United Nations General Assembly in 2015, and intended to be achieved by 2030. With one-sixth of the world's population, India is key to the achievement of the goals. How do the States fare? The UN has developed 232 indicators to measure compliance on the part of member nations. Niti Aayog has adapted its monitoring approach to the Indian context, with a set of 100 indicators of its own for the purposes of this Index. Only 40% of these indicators were also used for last year's baseline index, meaning that the two are not directly comparable.

However, it is still interesting to note that Kerala has retained its top spot from last year, while Uttar Pradesh, Odisha and Sikkim have shown the most improvement. The second SDG – zero hunger – shows sharp divergence in the performance of states, with little middle ground. Kerala,

Goa and parts of the north-east -- including Mizoram, Nagaland, Arunachal Pradesh and Sikkim – have scored above 65, with Goa at 75 points. However, 22 of the states and union territories have scored below 50, with the central Indian states of Jharkhand, Madhya Pradesh, Bihar and Chhattisgarh scoring below 30, showing abysmal levels of hunger and malnutrition. The chosen indicators are related to child stunting, obesity and anaemia, as well as agricultural production and subsidised food distribution. On the fifth SDG – gender equality – almost all states fare poorly. Only Jammu and Kashmir, Himachal Pradesh and Kerala have managed to cross 50 points. The indicators considered include crimes against women, eradicating sex selection and discrimination against daughters, and access to reproductive health schemes, as well as indicators showing women's economic and political empowerment and leadership.

A sex ratio of 896 females per 1000 males, a 17.5% female labour participation rate, and the fact that one in three women experience spousal violence all contribute to a low score countrywide. The Swachh Bharat Mission has contributed largely to the high scores on the sixth SDG – clean water and sanitation – although that was helped by the fact that four out of seven indicators dealt with toilets and sanitation, while only one indicator was related to safe and affordable drinking water. All states and union territories except for Delhi have scored above 65, with the national capital scoring poorly on the percentage of urban households with individual household toilets (less than one percent) and, oddly, providing no data on districts verified to be open defecation free. Delhi also has 81% of blocks with overexploited groundwater, vastly higher than any other state. Government schemes to provide electricity and cooking gas connections to rural India contributed to progress in the seventh SDG – affordable and clean energy – although there were no indicators looking at other important areas such as renewable energy and energy efficiency. To a certain extent, the indicators chosen for the sixth and seventh SDGs seem to align closely with the aims of flagship Central schemes.

### **Bihar: Nitish calls upon people to take up pisciculture, solar power generation**

<https://www.outlookindia.com/newscroll/nitish-calls-upon-people-to-take-up-pisciculture-solar-power-generation/1678903>

"Bihar Chief Minister Nitish Kumar on Thursday called upon the people to tap the huge potential that lay in fisheries and solar power generation and assured full assistance from his government. Addressing a public meeting here on the penultimate day of the first phase of his

state-wide Jal-Jeevan-Hariyali Yatra, Kumar also coined a catchy slogan "neeche machhli, upar bijli" to share his vision of economic activity wherein people conserved ponds for pisciculture and covered the water bodies with solar panels to generate electricity in an eco-friendly way. A solar panel over a pond spread across 7.5 acres can generate one megawatt of electricity. In a district like Siwan and adjoining ones like Chhapra and Gopalganj, there is tremendous potential for pisciculture and solar power generation since the riverine areas along the Ganges are ideal for ponds, Kumar said. Surplus power would be purchased by the state government and transmitted elsewhere through grid system.

So, please, go ahead and take up this model of growth on full scale, the Chief Minister said. Kumar also warned the rural folk against adopting stubble burning a pernicious practice that began in Punjab and Haryana and which state farmers are also taking up unmindful of the consequences. "Please do not cause damage to the soil by the such practice. For your benefit, the government has embarked on heavily subsidized supply of tools for removing parali (stubble)," he said. He also reiterated the decision to organize a state-wide human chain on January 19 to spread the message of his Jal-Jeevan-Hariyali campaign that seeks to underscore the importance of water and greenery for sustaining the life. The campaign followed an all-party meeting of members of both houses of the state legislature on the issue of climate change. "Our commitment to the cause has received adulation from no less a person than Bill Gates who recently met me at Patna and in an interview later raved about the level of awareness he saw in our state, something he did not expect to see outside developed countries like England and America," Kumar said.

### **Bihar: Workshop on Management of Wetland Fisheries**

<https://krishijagran.com/animal-husbandry/workshop-on-management-of-wetland-fisheries-of-bihar/>

"Central Inland Fisheries Research Institute, Barrackpore, Kolkata in collaboration with the Bihar Animal Science University, Patna organized a one-day "Workshop-cum-Training Programme at the Bihar Veterinary College, Patna. The Chief Guest, Dr Prem Kumar, Minister of Agriculture, Animal and Fisheries Resources, Government of Bihar emphasized on the productivity of 200 and 50 Kg/Ha/Year in Bihar's 9,000 ha Maun and 2,00,000 ha of Chaur Water Resources. The Minister stated about the enormous possibilities of increasing it by almost three times. He stressed that ICAR-CIFRI under Wetland Development Programme in 5 Mauns of East Champaran District has visibly shown it to the stakeholder. Dr. Kumar highlighted that the Fish yield increase from 180 Kg/Ha/Yr to 675 Kg/Ha/Yr in Kararia Maun; 190 Kg/Ha/Yr to 320 Kg/Ha/Yr In Sirsa Maun; 70 Kg/Ha/Yr to 140 Kg/Ha/Yr in Rulhi Maun and 60 Kg/Ha/Yr to 120 Kg/Ha/Yr in Majharia Maun has proved that through the technological intervention, the wetland's production and productivity can be enhanced.

Vijayalakshmi, I.A.S., Principal Secretary, Animal and Fisheries Resources, Government of Bihar stressed on the replication of ICAR-CIFRI's model of Wetland Fisheries Development in other Districts of Bihar. She also outlined the various programs run by the Fisheries Department of Bihar for the fishers' benefits. Dr. Rameshwar Singh, Vice-Chancellor, Bihar Animal Science University (BASU), Patna highlighted the signing of MoU between BASU, Patna and ICAR-CIFRI, Barrackpore for collaboration in the various facets of inland fisheries research and development. He stressed that fish production in Bihar can be enhanced with the adoption of technologies. This will also reduce the dependence on the import of fishes from the other states. Nishad Ahmad, Joint Director, Department of Fisheries, urged the project beneficiaries for continuing to practice the culture-based fisheries after the Project's completion. Dr. B.K. Das, Director, ICAR-CIFRI outlined the workshop's objective and the importance of Wetland Fisheries Management in Bihar. He emphasized the increase in productivity of the wetlands of East Champaran District of Bihar by 2 to 3 times through the ICAR-CIFRI's technological interventions. He mentioned that the production of Kararia Maun has increased from 18 tons to 57 tons.

### **Uttar Pradesh and Bihar: Worst monsoon in 25 years kills 148 across India, floods ravage Patna**

<https://www.indiatoday.in/india/story/worst-monsoon-in-25-years-kills-over-100-across-india-floods-rains-in-patna-10-points-1604967-2019-10-01>

"As incessant monsoon rains wreak havoc across parts of India, Bihar and Uttar Pradesh have been reeling under floods since the past few days, with the death toll mounting to 148 in the country. The extended southwest monsoon over the Indian subcontinent has not only caused devastation in several places in the country, but has also broken some old records and set new ones. The highest number of deaths 111 were reported from Uttar Pradesh, while 29 people lost their lives in Bihar since last week. Here's everything that has happened so far in 10 points: 1. India receives highest ever rainfall recorded in last 25 years, Mumbai breaks 61-year record India recorded its highest rainfall this Monsoon since 1994, the India Meteorological Department (IMD) said classifying it 'above normal' as the season officially ended on Monday. However, rain bearing winds still remain active over several parts of the country. Rainfall received so far is 10 per cent more than the normal, which is highest in the last 25 years, an IMD official said. The withdrawal of southwest monsoon has been delayed by a month, the official said.

"Normal withdrawal of southwest monsoon begins by September 1 in Rajasthan and other northern parts of India. This year, the Hikka cyclone has so far brought more showers and southwest monsoon is still here," he added. In Maharashtra, the monsoon has brought copious rains with its late onslaught. Mumbai has received 3,669.6 mm rainfall so far this season - the highest in 61 years - as against its normal quota of 2,350 mm. 2. Over 100 people killed in UP,

flood-like situation persists In Uttar Pradesh, since Thursday, 104 people have died in rain-related incidents, with the state government on Sunday cancelling leave of officials in view of the situation. On September 26, 36 people died, 18 people on September 27, 28 on September 28, 18 people on September 29 and four on Monday, according to officials. The MeT department has predicted rain and thunder showers at many places in eastern Uttar Pradesh and heavy rain at isolated places over the western region on October 1. In Ballia, authorities had to shift about 900 prisoners to other jails after flood waters entered the barracks of the district jail located near the Ganga River. 3. Heavy rains ravage Bihar, death toll rises to 29 Three fresh deaths caused by drowning were reported on Monday afternoon, one from Nawada and two from Jehanabad district, raising the toll to 29 in Bihar.

The disaster management department said six deaths have been reported from Gaya district where five persons were killed in a wall collapse while another person drowned in a river which has been in spate because of rains. The weather department has forecast a long delayed withdrawal of Monsoon and more rains for Bihar, including capital Patna where several areas still remain submerged, and food and relief material are being air dropped. In Patna, normal life was thrown out of gear, with several schools shut, roads inundated, and many shops, hospitals and houses submerged in knee deep waters. 4. Over 4,000 rescued in Patna, IAF chopper air drops food, relief materials More than 4,000 people, including women and children, were rescued from the flood-affected areas of Patna on Monday, the NDRF said. The force said it has deployed five teams, with about 45 personnel in each, to conduct rescue and relief works in the city. Deputy Chief Minister Sushil Kumar Modi was ""rescued"" by a State Disaster Response Force (SDRF) boat. LJP chief Ram Vilas Paswan and his son Chirag Paswan are putting up at a hotel instead of their house in a posh locality of the Bihar capital. An Indian Air Force helicopter commenced air-dropping of food and other relief material to people living in low-lying areas where water level is said to be several feet high. 5. Bihar CM Nitish Kumar conducts aerial survey of flood-hit areas Bihar Chief Minister Nitish Kumar conducted an aerial survey of flood-affected areas on Monday. On Sunday, the CM visited the severely flooded areas of Patna and issued necessary instructions to the officials for resolving the issue. 6. PM Modi discusses Bihar flood situation with Nitish Kumar, assures Centre's assistance Prime Minister Narendra Modi on Monday discussed the flood situation in Bihar with CM Nitish Kumar and said the central government stands ready to provide all possible help. ""Spoke to Bihar CM NitishKumar Ji regarding the flood situation in parts of the state. Agencies are working with local administration to assist the affected,"" PM Modi tweeted. 7. Rahul Gandhi urges Congress workers to help in relief, rescue operations in Bihar Congress leader Rahul Gandhi on Monday made an appeal to the party workers to join the relief and rescue work in the flood-hit Bihar. Taking to Twitter, Rahul Gandhi offered his condolences to families of the flood victims and called on his party workers to immediately join the relief and rescue operations. ""I express my condolences to the families of the people who lost their lives and appeal to the Congress workers

to immediately join the relief and rescue work of the affected people", he tweeted. 8. Deaths in rain-related incidents reported from other states As many as 13 deaths were reported on Saturday from Uttarakhand, Madhya Pradesh and Rajasthan. In Gujarat, three women drowned after their car was swept away at a flooded causeway in Rajkot district on Sunday following heavy rains in several parts of the Saurashtra region. In Jharkhand, three members of a family died in Dumka district after a wall collapsed on them following heavy rains in the region. 9. Rains predicted in Delhi for this week, city witnesses driest monsoon in 5 years Delhi may witness scattered rains over the next three to four days, according to the weather office. In a year the rest of India witnessed "above-normal monsoon", the city recorded the lowest rainfall since 2014 with a deficiency of 38 per cent, the IMD said. The city recorded 404.1 mm rainfall this monsoon -- from June 1 to September 30 -- against the 30-year average of 648.9 mm, a shortfall of 38 per cent, an official said. 10. Situation in other states Of the 36 meteorological subdivisions of the IMD, two -- west Madhya Pradesh and Saurashtra and Kutch -- recorded precipitation in "large excess". In the hill state of Himachal Pradesh, light to moderate rainfall occurred in most places since Sunday evening, bringing the maximum temperature down by a few notches, the meteorological department said.

## **Uttarakhand, Uttar Pradesh, West Bengal and Bihar: Pollution control board directs 4 state to take action against ganga polluters**

<https://www.asianage.com/india/all-india/020819/pollution-control-board-directs-4-state-to-take-action-against-ganga-polluters.html>

Taking strict note of effluent and industrial waste being discharged into the Ganga river, the CPCB has directed four state pollution control boards to take action on units, including closing them, if they don't comply with environmental norms. In separate letters to the chairmen of the Uttarakhand, Uttar Pradesh, West Bengal and Bihar pollution control boards, the Central Pollution Control Board (CPCB) has directed them to process reports of inspections within 15 days. It said action, including the closure of industries violating norms, will be taken within 15 days of submission of the inspection reports. These inspections were carried out by technical institutions or under joint initiatives between them and the state boards. The CPCB said till now, over 400 grossly polluting Industries (GPIs) have been inspected, but "very few" reports were submitted to the state boards by institutions such as the IITs, Jamia Milia Islamia, Moti Lal Nehru National Institute of Technology and 12 others.

"Industries like chemical, distillery, sugar, pulp and paper, textile, slaughter house, bleaching, food and dairy located in states of Uttarakhand, Uttar Pradesh, West Bengal and Bihar have been discharging effluent directly or indirectly into the Ganga through drains or tributaries which cause adverse effect on the water quality of the river and its tributaries," the apex pollution body said in the letters issued a week ago. Inspection is supposed to be carried out of all polluting units and reports have to be given to state pollution control boards (PCB) within 15 days by technical institutions, as per CPCB directions. "However, it has been observed that though 31 GPIs were inspected in Bihar and Uttarakhand each till July 21, out of which, one report was given to the Bihar PCB and four to the Uttarakhand PCB," it said. In Uttar Pradesh, 380 GPIs were inspected but 153 reports were submitted to the state pollution control board by technical institutes. In West Bengal, 46 GPIs were inspected, but only nine reports were submitted to its pollution control board, the CPCB noted.

"The central government has notified standards for discharge of environmental pollutants from industries and common effluent treatment plants (CETPs) under the Environment Protection Act," it said, adding that annual inspection of GPIs was made mandatory in 2017. The CPCB in a meeting in April with state boards, National Mission for Clean Ganga officials and 19 technical institutions decided that the institutes will submit inspection reports to the state boards concerned, which will then take action within 15 days and ensure follow up actions. However, the CPCB found that several such reports are yet to be processed.

## **Assam and Bihar: Death toll in Assam, Bihar floods reaches 174**

<https://www.indiatoday.in/india/story/death-toll-in-assam-bihar-floods-reaches-reaches-174-1572771-2019-07-24>

The death toll in Bihar and Assam floods mounted to 174, with a total of 1.09 crore people being affected by the calamity in the two states, officials said. Though water levels have started receding in several districts of the two states, both reported two deaths each since Monday. With both the casualties taking place in Madhubani district of Bihar, the toll in the state reached 106. In Assam, the number of deaths touched 68 as two more people died in Morigaon and Golaghat districts since Monday. A total of 28.01 lakh people were affected in 19 of the 33 districts of the northeastern state, officials said in Guwahati. Though the flood waters have receded in Biswanath and Karbi Anglong districts, the deluge hit Lakhimpur and Baksa again, the Assam State Disaster Management Authority (ASDMA) said.

In the Kaziranga National Park in Golaghat district the death toll of animals rose to 204, including 15 rhinos, since July 13, it said. In Bihar, water levels have started receding in several districts and consequently the number of relief camps and those taking shelter at these have also gone down considerably, Disaster Management Department officials said. A population of 80.55 lakh in 12 districts are still affected in the state. The number of relief camps on Tuesday was 54, as against more than 130 a week ago and the number of people staying at those places has gone down from over one lakh to 29,400, the officials said.

## **Bihar: Andhra fishes to be sold in city as period of ban ends**

<https://timesofindia.indiatimes.com/city/patna/andhra-fishes-to-be-sold-in-city-as-period-of-ban-ends/articleshow/67761295.cms>

Fish from other states, including Andhra Pradesh, can now be sold in the Patna Municipal Corporation area as the 15-day ban period ended on Wednesday. Talking to TOI over phone on Thursday, health department principal secretary Sanjay Kumar said, “A final decision in this regard will be taken after a two-member team from Bihar, headed by fisheries department director Nishat Ahmad, returns from Andhra Pradesh and submits its report.” The team had left for Andhra on Monday for checking fish samples, ice used in their packaging and transportation. Its report is likely to be submitted on Thursday.

The state government had imposed a 15-day ban on sale of all kinds of fishes — local as well as those brought from outside — on January 14, following reports of presence of high levels of formalin and other heavy metals in them. Although the ban on live fishes was lifted on January 17, that on dead ones continued. Andhra chief minister N Chandrababu Naidu wrote a letter to his Bihar counterpart Nitish Kumar on January 21 and urged him to send a technical team to his state for looking into the allegation of formalin use for preserving fish. Thanking CM Nitish

Kumar, Bihar Rajya Machli Vyavasay Sangh secretary Gautam Sahni said, “Our sufferings will end with the end of the ban.”

### **Bihar: Team inspects West Godavari fish exporting unit**

<https://www.thehansindia.com/posts/index/Andhra-Pradesh/2019-01-30/Bihar-team-inspects-West-Godavari-fish-exporting-unit/484517>

Responding to the invitation sent by Andhra Pradesh government to test the quality of fish exported from the state, a delegation of officials from Bihar visited a fish exporting plant and tested the quality of fish, verified the packaging system and inspected the export procedure. A team of officials led by Principal Secretary N V Vijay Lakshmi of Bihar visited export plant in Unguturu mandal of West Godavari district on Tuesday. The visit was made in response to the invitation sent by Andhra Pradesh government. Earlier, the Bihar government had imposed ban on imports of fish from Andhra Pradesh alleging that harmful chemicals were used in cultivation and packing the fish. Fish and prawn farmers in West Godavari are suffering losses due to the ban imposed by Bihar government.

The Andhra Pradesh government decided to convince the Bihar government to lift the ban and asked the officials to verify the export units in West Godavari. Andhra Pradesh commissioner of fisheries Ram Sankar Naik, joint director of fisheries S Anjali and fish exporter Manoj Kumar have explained to the Bihar delegation that harmful chemicals are not used for exporting of fish to other states. Exporter Manoj Kumar said 120 fish traders export 8 to 12 tons of fish in over 100 trucks every day to other states. He said there is no scope for using the harmful chemicals in cultivation or packing of fish. Commissioner of fisheries Ram Sankar Naik said teams comprising the officials of animal husbandry, food safety and fisheries were constituted in the state to inspect the trucks to test the quality of fish exported from the State. West Godavari district collector Praveen Kumar, Bihar officials Bipin Sarma, Ajay Kumar, fish traders and fish farmers present on the occasion.

### **Bihar: Patna bans fish sale for 15 days**

<http://www.indiapost.com/patna-bans-fish-sale-for-15-days/>

The Bihar government has banned sale, transportation and storage of fish for 15 days in Patna Municipal Corporation area, after reports confirmed presence of toxic chemical formalin in samples. The decision was taken following the report of Kolkata’s Central Food Laboratory, which confirmed the use of formalin and other heavy minerals like lead, cadmium and mercury beyond the permissible limit in all 10 samples of fish collected from Patna, officials said. “Keeping public safety and health in mind, the department has decided to ban sale, transportation, storage of all types of fish for 15 days in Patna Municipal corporation area.

“All the 10 samples were found unsafe for human consumption under Food Safety and Standards Act 2006,” Bihar Health Department’s Principal Secretary-cum-Food Safety Commissioner Sanjay Kumar told reporters here. Food Safety Officials had collected 10 samples from Patna Municipal Corporation area on October 10, 2018 and sent them to the Central Food Laboratory, Kumar said, adding, the specimen included local fish and those imported from Andhra Pradesh and West Bengal. Formalin was found in excess of permissible limit in seven samples, while the heavy metals were detected in all 10 samples, he said. Food Safety Officers have been directed to collect fresh samples from different cities, including Muzaffarpur, Purnea, Darbhanga, Bhagalpur, Gaya and Patna, Kumar said and added that necessary action would be taken based on the reports of CFL, Kolkata. Kumar said that it may take six-eight weeks to receive the reports of the new samples.

The health department would also asked Animal Husbandry Department officials to send an expert team to West Bengal and Andhra Pradesh. “Our officials (the expert team) will apprise of the CFL report to their counterparts in Andhra Pradesh and West Bengal and would request them to get the matter probed,” he said. Kumar said those found violating the provisions of the Food Safety and Standards Act, 2006 may attract either imprisonment of up to seven years or fine of up to Rs 10 lakh or both. The use of formalin and other heavy metals beyond the normal limit may cause various ailments in humans like pneumonia, bronchitis, Hepatitis and cancer, the officials said.

### **Bihar: Conservation success story: How gharials were bought back from the brink in Bihar’s Gandak river**

<https://scroll.in/article/909454/conservation-success-story-how-gharials-were-bought-back-from-the-brink-in-bihars-gandak-river>

Lalsa Yadav gushes with a big smile on his face every time he spots a gharial in the river Gandak, that flows through West Champaran district of Bihar, bordering Nepal. He tries to take his rickety boat close to the adult gharials (*Gavialis gangeticus*) enjoying a sun-bath in a chilly wintery afternoon, but they disappear into the deep water. He oars his boat further with the hope of seeing more of the large-sized reptiles in the river. “Contrary to popular belief, they are very shy by nature and escape inside water even on slight disturbance. The river has quite a number of gharials nowadays which has made it easy to spot them. We are lucky to have them,” he said with a sense of pride. Gharials are members of the crocodile family, historically found in various parts of the Indian sub-continent. The 50-year-old fisherman with a strong body and bulging muscles has every reason to feel proud.

After all, he has worked tirelessly with conservation experts and administration to protect and bring back the population of gharials from the brink of extinction, in the river Gandak, a transnational river between India and Nepal and a tributary of river Ganga. “We [the fishing

community] have played a big role along with the authorities to save the reptiles that were in the danger of being hunted down or eggs getting washed away due to sand bank erosion.” “The efforts have paid off as gharials can now be easily spotted in the river because of the increase in their population,” he added, pointing to two sub-adults at the far-end of the river. Indeed, the population of gharials has witnessed an upward spiral in the Gandak that now houses the second largest population in the country, after the river Chambal (National Chambal Sanctuary) stretch that covers Madhya Pradesh, Rajasthan and Uttar Pradesh, claim those involved in its conservation.

A remarkable increase Based on three surveys done by Wildlife Trust of India between 2017 and 2018, around 211 gharials of different age-groups are present in the river as compared to merely 15 recorded in 2010. The Wildlife Trust of India conducted three continuous surveys in the entire stretch of the Gandak river in 2017-'18. In the survey conducted from February 4-11 2017, 119 gharials were sighted in the entire stretch of the river. In 2018, two consecutive surveys (February 9-17 and 21-27) documented 148 and 166 gharials respectively in the same stretch. Around 40 hatchlings have been sighted in 2018 after the survey so experts expect the number to increase this year. The findings have brought cheer to conservationists as the gharial is a critically endangered species.

Endemic to the Indian subcontinent, the gharial is the most aquatic of all extant crocodylians and resides in flowing rivers with deep pools, high sand banks and good fish stocks. Its distribution range has shrunk significantly and currently it occupies only about two percent of the former range. Old references indicate that the gharial was widespread across the Indian subcontinent: it was common in the Indus river in Pakistan, Gandak river in Nepal (locally known as Narayani), Jumuna river in Uttar Pradesh and Kosi river in Bihar. It was also found in Burma (now Myanmar), Bhutan and Bangladesh. In India, the gharials are now found mainly in Chambal, Girwa, Ghagra and Gandak river basins.

The population has registered a 98% decline between 1946 and 2006; the adult population nosedived, with a 58% reduction across its range in just nine years, starting from 1997. The reason for the decline has been attributed to over-hunting for skins and trophies, egg collection for consumption, killing for indigenous medicine and excessive and irreversible loss of the species habitat. In such a scenario, presence of the second largest population of the critically endangered gharials in the Gandak river becomes important for conservation of the species. The gharial reinforcement project “Despite available knowledge about gharial population in the Gandak, little effort was made to document and implement conservation measures until the survey supported by Wildlife Trust of India and other conservation organisations documented presence of about 15 gharials in the Indian stretch of the river in 2010 and proposed conservation measures including strengthening of the remnant population,” said Samir Kumar Sinha, the head of species recovery division, Wildlife Trust of India.

The work for the conservation started in 2014 when Wildlife Trust of India and Bihar Forest Department jointly started the gharial reinforcement project in the river Gandak. Around 30 captive-born and reared gharials from the Sanjay Gandhi Jaivik Udyan (Patna Zoo) were released in the Gandak, followed by post-release monitoring. “The release stock comprising of sub-adult individuals (three males and 27 females) was examined for health condition and acclimatised by providing live fish as food for six weeks to allow for inculcation of hunting skills in them. Prior to transportation, each individual was sexed and marked,” he said. Gharials are marked by distinctive marks in the bony part of their tail. “Two individuals were fitted with satellite transmitters, while VHF [Very High Frequency] tags were implanted on four individuals for remote monitoring.”

A VHF tag is a transmitter that sends out signals that can be picked up by a corresponding receiver. Six months after their release, monitoring results found 60% (18 out of 30) of the released gharials surviving in the wild. The team also spotted several gharials released by Nepal almost 75-100 kilometres from their release site. “We also found the captive-born and released gharial had started sharing the habitat with wild individuals. This showed the presence of habitat selection instinct in the captive-born and reared gharials,” said Subrat Kumar Behera, assistant manager, Wildlife Trust of India. An ideal habitat More success came in 2016 when the Wildlife Trust of India located six nests with 148 eggs in Chiurahia Reta near Ratwal Brige in Gandak.

The nests were protected involving locals until successful hatching and the success was approximately 24%. The discovery made the Gandak river the fourth extant breeding site of gharial in the country, in addition to Chambal, Girwa and Ramganga rivers. In 2018, the team identified the congregation sites in the month of February and two nests with 57 eggs were found near the Ratwal Bridge. Due to bank erosion, the nests were shifted scientifically to a safe distance from the water line in the same site. About 35% eggs hatched successfully. The land-use features have also made Gandak a perfect habitat for the reptiles. The sand banks and bars that are important for basking and nesting activities constitute about 4.49% of the area. Additionally, gharials also use the sand banks or bars with temporary agriculture activity which is about 10.92% of the area.

The average water depth recorded in the lean season is around 2.64 metres which is sufficient for adults and sub-adult gharials that prefer deeper areas as compared to juveniles and yearlings. Gandak also has less fishing pressure as fishing activities are not recorded in more than 55% of the stretch. Encounter rate of fishing boat and individuals involved in fishing has been 0.3 and 1 per km respectively. Moreover, the wetlands associated with the river covering 7,929 hectares area are fish breeding grounds that keep the river replenished with fish resources. The lesser human settlements within 2 km of the banks are temporary in nature and farmers undertake farming only in non-rainy seasons. HK Roy, the field director of Valmiki Tiger Reserve which covers a portion of Gandak said that the state government is serious about increasing the population of gharials and their habitats.

“The Bihar government has sanctioned a budget of over Rs 27 lakh for building a hatchling centre in Motihari and for creating awareness among people, particularly those living in close vicinity of the river, regarding the reptiles,” he said. “We are distributing pamphlets and other material to the locals to inform about gharials and crocodiles as often people get confused and consider the former as dangerous while infact gharials mainly survive on fish and have rarely attacked humans. We are also imparting training to our staff members to spot the gharials using scientific techniques.” He said that the river is relatively better protected up to 40 km stretch after entering Bihar due to the location of Valmiki Tiger Reserve on the left bank and Sohagi Barwa Wildlife Sanctuary in Uttar Pradesh on the right bank for approximately eight kilometres.

The need for conservation policies But everything is not hunky dory for the gharials in Gandak. Among the prominent challenges for their survival is the Gandak Barrage, as the release of excess water often creates problems for gharials. In March 2017, increased water level in the river due to opening of gates of the Gandak Barrage submerged the sand banks that destroyed the gharial nesting grounds. In rare cases, small gharials have also known to get caught in fishing nets, resulting in their death. “There has to be a change in the policy level from the top and authorities must discuss with wildlife experts before releasing water from the barrage as often the nesting sites get destroyed. The nests should be shifted to a higher ground before the water is released.

The community level participation is also vital as often nests get destroyed by animals,” said BC Choudhury, Crocodile Specialist group member of International Union for Conservation of Nature Species Survival Commission. “We have also submitted a proposal to the Bihar government to declare the stretch of the river Gandak as conservation reserve because it also houses endangered species of turtles and dolphins apart from gharials. The government can also develop eco-tourism by facilitating the sightings of gharials and dolphins. It will not only give employment to locals but will also inspire them to protect the gharials,” he added. He concluded that there are several stretches where human activities prominently affect habitats of aquatic life. This needs to be managed and mitigated to ensure secured habitat to life forms of the river ecosystem.

### **Bihar: Extends ban on AP fish**

<https://www.thehansindia.com/posts/index/Andhra-Pradesh/2019-01-23/Bihar-extends-ban-on-AP-fish/480786>

The Bihar government on Wednesday decided to continue its ban on sale, storage and transportation of fish from Andhra Pradesh in Patna following lab tests that confirmed presence of high content of toxic chemical formalin. A team of officials will visit Andhra Pradesh to examine the fish, an official said. Sanjay Sinha, Principal Secretary of state health department, said a meeting called by the chief secretary on Wednesday decided that the ban will continue on

fish from Andhra Pradesh. “It was also decided that a team of state government officials will visit Andhra Pradesh in a day or two to examine ponds as well as wholesale markets there,” Sinha said.

Last week the state government had lifted the ban on sale of live fish, three days after it banned the sale, transportation and storage of all kinds of fish. After Bihar banned the fish from Andhra Pradesh in Patna, Andhra Pradesh Chief Minister N Chandrababu Naidu urged his Bihar counterpart Nitish Kumar to take steps to restore the fish trade in the larger interest of farmers and those engaged in the trade.

### **Bihar: Bihar government relaxes fish ban in Patna, allows trade of live fish**

<https://www.hindustantimes.com/patna/bihar-government-relaxes-fish-ban-in-patna-allows-trade-of-live-fish/story-Tq6xbtIF6yqLCpGcJVMJVL.html>

The health department Thursday evening lifted the ban on trade of live fish within municipal areas of Patna following massive protests. The fortnight long ban on sale, transport and storage of all varieties of dead fish would, however, continue. The food safety wing of the health department had imposed a ban on trade and transport of all varieties of fish in Patna for 15 days on Monday. The ban followed laboratory reports indicating presence of high content of cancer-inducing formalin and heavy metals, like lead and cadmium, in fish samples collected last October from 10 different locations within the municipal area of Patna. Principal secretary (health) Sanjay Kumar, who is also the commissioner of food safety, Thursday said, “The ban has been lifted for live fishes.” He did not elaborate.

The Bihar Rajya Machhli Vyavsayi Sangh, a state body of fish businessmen, however, was not satisfied with the government’s decision. Anuj Kumar, secretary of the association, called for lifting of ban on trade of dead fish as well. “We always suspected that a small yet powerful lobby of fish breeders, led by a state minister, was behind the ban. The government decision to lift the ban selectively has strengthened our belief,” he said. “The fish breeders in Bihar will reap a rich harvest, pocketing four-five times their normal profit as they will jack up prices of live fish,” he said. Kumar said that against Patna’s average daily sale of 90-100 tonnes of fish, live fish accounted for only 5-6 tonnes, thus leaving a huge gap between demand and supply. The association would take out a protest march from Bazar Samiti to Gardanibagh via Kankerbagh on Friday.

“Those dealing in fish from across the state are converging here tomorrow to participate in the protest march. We expect around 50,000 to 1 lakh people to join our protest tomorrow,” Kumar said. Criticising the government’s decision, the Cooperative Fisheries Federation had also demanded from the government an unemployment allowance of at least Rs 500 per fisherman per day during the fish ban period. The federation said that many fishermen suffered heavy losses because consignment of fish was in transit when the government announced a ban on them

all of a sudden on January 14. The federation claimed that fish sellers had to dispose them off at throw away prices because of the ban. Anyone violating the ban is liable to imprisonment of up to 7 years and fine of Rs 10 lakh, under Section 59 of the Food Safety and Standards Act, 2006, which deals with punishment for unsafe food.

### **Bihar: Spent just Rs 491 per capita on health**

[https://www.downtoearth.org.in/dteinfographics/india\\_s\\_health\\_crisis/index.html?utm\\_source=Mailer&utm\\_medium=Email&utm\\_campaign=Down%20To%20Earth-1459661](https://www.downtoearth.org.in/dteinfographics/india_s_health_crisis/index.html?utm_source=Mailer&utm_medium=Email&utm_campaign=Down%20To%20Earth-1459661)

Mizoram's per capita health expenditure is Rs 5,862, almost five times the Indian average, with the state spending 4.2 percent of its GDP on health in 2015. Arunachal Pradesh (Rs 5,177) and Sikkim (Rs 5,126) followed at the top. At the other end of the spectrum, Bihar spent Rs 491 per capita on health -less than half the Indian average- spending 1.33 per cent of its GDP on health. Just above Bihar were Madhya Pradesh (Rs 716) and Uttar Pradesh (Rs 733). While Delhi spends Rs 1,992 per capita on health.

### **Bihar: Fish sale dips in Bhagalpur, Banka**

<https://timesofindia.indiatimes.com/city/patna/fish-sale-dips-in-bhagalpur-banka/articleshow/67561748.cms>

Reports of formalin content detected in fish samples has hugely affected the sale of fishes in local fish markets in districts like Banka and Bhagalpur. Amidst price rise of vegetables, the presence of formaldehyde, which can cause diseases like cancer, in fishes sourced from Andhra Pradesh and marine water fishes has created panic among the consumers and hit the fish business. According to local market sources, sale and purchase of fishes brought from Andhra Pradesh and Kolkata have dropped to nearly 50%, whereas demand for local fish, mostly from fresh water rivers and ponds in the region, have gone up. Several tonnes of fishes were imported from Andhra Pradesh to Berhampur everyday for sale. After fishes sourced from Andhra were banned in the state capital due to use of formalin chemical, the import of fishes from the neighbouring state to Bhagalpur started declining.

Banka district fisheries officer (DFO) KK Sinha said, “We are making an effort to prevent consumption of fish either from Andhra Pradesh or any other place. We have geared up our machinery, though we have not received any specific directive for this region. There is a sharp prop in sale of fishes and as per our statistics it has come down by at least 40%.” Bhagalpur deputy director (fisheries) Sanjay Kisku, could not be contacted for his version as he is out of town. A fish trader Manish Kumar at Tilkamanjhi market said, “Over 100 sellers are engaged in fish trading in Bhagalpur. There is a huge drop in fish sales. People are only interest in buying local fresh fish.”

## **Bihar: Government to decide on fish ban in two days**

<https://timesofindia.indiatimes.com/city/patna/govt-to-decide-on-fish-ban-in-2-days/articleshow/67459825.cms>

A day after laboratory tests in Kolkata confirmed very high level of formalin in fish samples, health department principal secretary Sanjay Kumar said the final call on ban would be taken in a couple of days. “It is really a serious issue and the department will take some serious decision,” said Kumar. State health minister Mangal Pandey could not be contacted as he was out of station. On Tuesday, Kumar said the tests confirmed high level of formalin in seven out of ten fish samples sent to Kolkata lab. The samples were collected from the wholesale fish market in Patna. Alarming, all the ten samples had high level of heavy metals like lead and cadmium, which adversely impact human health. Formalin is a carcinogenic chemical and its use in food product is very dangerous.

The same chemical is applied on a dead body to preserve it for longer duration. State animal and fisheries resources department had earlier written to the health department to take necessary action to prevent formalin-laced fish from entering the state market. They had conducted a test on 85 samples in Patna and Kolkata labs. After finding high level of formalin in 25 samples, animal and fisheries resources minister Pashupati Kumar Paras had asked the health department to ban the fish being procured from coastal region, especially from Andhra Pradesh. On Wednesday, Paras said the decision on banning fish from outside will be taken by health department as it was not under his jurisdiction.

Former head of paediatrics department at Patna Medical College and Hospital, Dr Nigam Prakash Narayan, advised the parents not to feed preserved fish to their kids. “Be it children or elderly people, formalin severely impact human health,” he said. He said formalin has both short and long-term effects on health. “This is a cancer-causing agent and leads to nausea, loss of appetite, skin irritation, respiratory problem, cough and breathlessness,” he said. However, he said, there was no harm in eating fresh local fish.

## **Bihar: Government to boost fishery sector in state**

<https://timesofindia.indiatimes.com/city/patna/govt-to-boost-fishery-sector-in-state-sumo/articleshow/66755760.cms>

Deputy CM Sushil Kumar Modi on Thursday said fish production in the state had made new strides as it went up from 2.79 lakh metric tonne (MT) in 2005 to 5.87 lakh MT in the last fiscal. He said the state also exported 32,000 MT of fish to Nepal and other states last year. Addressing a function to mark the World Fishery Day at Gyan Bhavan here, Modi said the per capita availability of fish in Bihar stood at 8.79kg per year, which was near the national average of 10kg per year. Union minister for agriculture and farmers’ welfare Radha Mohan Singh said the

Centre had allotted Rs 1.84 lakh crore for the development of the fishery sector as part of a 'Blue Revolution' in the country. "As many as 29,127.73 hectares of water points have been developed for fish farming in the country," he said.

Modi said when the first NDA government was formed in the state, it paid huge attention to developing the fishery sector as part of which fish farmers were given training to practise scientific farming. It also boosted the income of farmers, he added. "The state has 462 fishermen's cooperative societies. The government is planning to provide an assistance of Rs 250 crore to these societies in consultation with the central agency," Modi said. He also appealed to the bankers to provide loans to fishermen at 4% interest rate.

### **Bihar: Wetlands are on a ventilator, but there is still hope from the ground**

<https://india.mongabay.com/2018/10/18/bihars-wetlands-are-on-a-ventilator-but-there-is-still-hope-from-the-ground/>

Seventy-year-old Narayan Sahni reminisces the days when he used to catch around 8-10 kilograms of fish from the Kanwar Lake in Bihar almost every day. The catch was enough to run his family of four, including his two children. But for the past decade, he finds it a challenge to even catch 400-500 grams of fish from the lake over two days. Narayan fears that the Sahnis, a traditional fishing community from Bihar, would disappear from the state landscape if no serious steps are taken to save the wetlands. "There is hardly any fish left in the lake as most of the area has been encroached on or transformed into agricultural land. There is no water even during the monsoons. Mass constructions have blocked the entry points of water into the lake, which has led to the destruction of biodiversity and loss of our livelihood," he rued, taking a long breath and getting lost in memories of when the lake alone fed the hungry mouths of thousands of fishermen who depended on it.

A few metres away, Ravindra Sahni (40) has returned, disappointed after spending over five hours in the wetlands. The catch is not enough to feed his family, leave alone selling it. "I started early, around 4 am in the morning, in the hope of catching some fish but I got virtually nothing. The handful of fish is too little for my children. I cannot think of selling it. The wetlands have become death lands for us where our epitaphs would be written," he said sounding visibly sad over the present state of affairs. Situated in Begusarai district of north Bihar, around 125 kilometers from the state capital Patna, the Kanwar Lake Bird Sanctuary best summarises the fate of the wetlands in the state, which are in bad state thanks to excessive encroachments, coupled with the apathy of the administration that is yet to take the issue of dying wetlands seriously.

The rapidly shrinking Kanwar lake The word "lake" now appears to be a misnomer for Kanwar, which has the distinction of being Asia's largest oxbow lake. It has shrunk rapidly post 2000. An extensive study by Ashok Ghosh, a scientist and incumbent chairman of the Bihar State Pollution

Control Board has found that the lake covered 6,786 hectares in 1984, which reduced to 6,043.825 hectares in 2004. By 2012, the lake was a mere 2,032 hectares in area. His research had also found that the net area sown was 60 percent while the land put to non-agricultural use was 5.13 percent; the permanently water-logged area was a mere 2.80 percent. The local fishermen want the sanctuary area to be reduced to 566 hectares and declared as a 'Krishi-cum-Pakshi Vihar' but so far the demand has remained unfulfilled.

Even other lakes like Baraila and Gogabil suffer from similar issues of encroachment and siltation that is turning the water dirty. Bihar's wetlands The National Wetland Atlas of Bihar in 2010 had identified over 4416 wetlands with around 130 wetlands having an area of over 100 hectares. In addition, 17582 wetlands (smaller than 2.25 hectares) were also identified. The total wetland area was estimated to be around 4032.09 square km – about 4.4 per cent of the geographic area. The state government has declared nine wetlands covering an area of 125 square km as protected areas. Seven of these protected areas are bird sanctuaries. Almost 90 percent of the wetlands are in North Bihar and are dependent upon six major tributaries of the Ganga flowing out from the central Himalaya on to the plains, between the Nepalese border and the Ganga itself. From the river Gandak in the west to river Mahananda in the east, the northern part of the Gangetic plains is studded with numerous small freshwater lakes and chauris (tectonic depressions), the vast majority of which are oxbow lakes marking the historical courses of the Bayanadi, Burhi Gandak, Sapt Kosi and Mahananda rivers.

The damage to the wetlands is not confined to these districts alone. The situation is worse in the state capital Patna, where several water bodies have been grabbed thanks to soaring land prices. The disappearance of water bodies leads to massive water-logging during heavy showers in the city. "The erratic rainfall due to climate change has increased the importance of wetlands. They are equipped with natural water sinking capacity and absorb the water during the rains which is utilised for fishing and agricultural purposes. In Bihar and especially in Patna, the situation has reached to such a point that even the water bodies owned by the government have been encroached for illegal constructions," pointed out Kumar Deepak, environment officer, United Nations Development Programme (UNDP). "The choking of drains leads to water logging in the state capital and its periphery." Wetlands are extremely important for Bihar that suffers from high level of arsenic in water.

Ghosh claims that a whopping one million people in 18 districts of state are reeling under arsenic poisoning against the official claim of 13 districts by the state government. The worst affected districts include Bhojpur, Buxar, Vaishali, Bhagalpur Saharsa and Khagaria. In 2004-05, he had found 1900 micrograms of arsenic in one litre of water in the outskirts of Patna against the World Health Organization (WHO) prescribed limit of 10 micrograms. "The wetlands are the natural purifiers of toxic water as they dilute the arsenic level and recharge the underground water. The state needs more wetlands for survival but the rapid urbanisation has been leading to

the spread of severe ailments like cancer, diabetes and cardiovascular diseases among others as due to high level of arsenic in water,” said Ghosh.

Poor management To add to the misery, a Composite Water Management Index (CWMI) report released by NITI Aayog in June this year had placed Bihar among the worst performing states in terms of water management. The report expressed concern as the states performing poorly on this index are home to around 50 percent of the country’s population and make up its agricultural basket. The CWMI comprised 9 broad sectors with 28 different indicators covering various aspects of ground water, restoration of water bodies, irrigation, farm practices, drinking water, policy and governance. When quizzed about it, senior state government officials in private raised questions on the authenticity of the report. Wetlands are also home to a large range of birds, mammals, amphibians, fish, insects, crustaceans and reptiles.

Ali Hussain, a well-known naturalist, concedes that the vanishing wetlands have also deprived migratory birds of their safe havens. “Their numbers have obviously come down and fast disappearing wetlands is one of the reasons for it. The birds do not get adequate water and food as sugarcane cultivation has replaced the grains in most of the Gangetic wetlands flocked by the birds,” he said, while also blaming poaching for their dwindling numbers (despite the ban). In 2016, the Bihar government took a significant step in the conservation of water bodies by banning the construction or re-construction of any building within a strip of land covering 200 metres of any water body. “The state government is serious about the conservation of wetlands and it has already denied permission to construct a medical college over a wetland in Samastipur.

We are trying to clear the inflow-outflow mechanism of the lakes so that they get uninterrupted supply of water. The state irrigation department has also prepared a budget proposal of Rs 5 crore for the protection of water bodies in the state,” said Santosh Tiwari, nodal officer (wetlands) in Bihar, while adding that the State Wetland Authority is yet to become functional. He said that the government is focusing on the revival of Kanwar Lake, Baraila Bird Sanctuary in Baraila and Kusheshwar Asthan Bird Sanctuary in Darbhanga, all of which need immediate attention. A ray of hope from the ground Amidst the grim, there is a story of hope too. A section of people have realised the importance of wetlands and are trying hard to save them. The case at point is Mutlupur in Muzaffarpur district of Bihar, where a group of farmers have turned the wetlands into a productive area and source of livelihood.

The area is flood-prone as the rivers Gandak and Bagmati skirt the village on the northern and southern sides. The village had 87 acres of low-lying wetland, which were considered a blight since they were seemingly non-productive. A group of 22 farmers consulted veterinary, agricultural, fishery and horticultural experts to apply on the ground the latest technologies and developments in integrated farming. The farmers have planted over 16,000 timber saplings in a bid to create green cover. The revival of the wetland has also led to an increase in fish catch that has generated livelihoods for several local youth and has managed to arrest migration. Experts

say that conservation of wetlands is necessary as they play host of roles in the ecosystem, “The damage to the wetlands stop carbon sequestration as they begin to release significant amounts of the stored carbon back into the atmosphere in the form of methane reducing their ability to sequester additional carbon.

Their basic function was to act as sponges and they were nature’s own initiative at flood control but large scale urbanisation has led to the massive damage during the floods. Their sinking capacity is declining and they have been reduced to cesspools of foul-smelling filth. They were also home to variety of medicinal plant species used by the rural masses to treat many kinds of disorders but their destruction have also spelled doom for natural treatment of ailments,” rued Nilanjan Ghosh, Senior fellow and head of economics and water governance at Observer Research Foundation (ORF). He concluded that creating awareness is the best and perhaps the only option to prevent wetlands from becoming wastelands.

### **Bihar: Bihar planning to ban fish from Andhra Pradesh**

<https://www.deccanherald.com/national/bihar-planning-ban-fish-andhra-697997.html>

The Bihar government is mulling over a proposal to ban fish imported from Andhra Pradesh after laboratory test reports confirmed the presence of formalin, cadmium and lead. These harmful chemicals are used for the preservation of fish, transported from the far-off coastal state. The report has been forwarded to the health department, which is the competent body to take a call on banning the ‘cancerous fish’. “We got the fish samples tested at Central Institute of Fisheries Technology (CIFT), Kochi and Food Testing Laboratory, Kolkata. The reports confirmed the presence of harmful chemicals like formalin, cadmium and lead,” said Bihar’s Animal Husbandry and Fisheries Minister Pashupati Kumar Paras. Formalin is a toxic and carcinogenic chemical used to preserve dead bodies in mortuaries.

This chemical is applied to prevent fish from rotting during transportation. “Besides, exposure to cadmium can lead to flu, damage to lungs, kidney and even cancer,” said a senior official in the fisheries department. “The laboratory test reports have been forwarded to the health department which will take a call on banning Andhra fish,” said Paras. The health department is, however, not in a hurry to enforce a ban on fish imported from Andhra Pradesh. The department has decided to collect fish samples afresh and get them tested at the designated laboratory before taking a stand on banning it. “We will collect the fresh samples soon and send it to the laboratory for test. Based on the outcome of the report, the health department will decide the next course of action,” said Health Minister Mangal Pandey. “Bihar consumes 6.4 lakh metric tonnes of fish. Out of which 5.9 lakh metric tonnes of fish is supplied from within the state (ponds, lakes, reservoirs and rivers), while the remaining 50,000 metric tonnes of fish is procured from Andhra Pradesh,” said the source.

## **Andhra Pradesh and Bihar: Andhra fish bone of contention for Bihar**

<https://www.telegraphindia.com/states/bihar/andhra-fish-bone-of-contention-for-biha/cid/1671509>

The health department is treading cautiously when it comes to banning fish from Andhra Pradesh in the markets of Bihar. The department has decided to collect the fish samples afresh and get them tested at the laboratory before taking any stand on the issue. The development assumes significance because the animal and fisheries resources department had recently alerted the health department about presence of formalin in the fish coming from the southern state. The chemical, which is carcinogenic, is used for increasing the shelf life of fish. Sources in the health department said any decision on banning the item would be taken only after sample collections from all the places where these fish come from and sending them to the laboratory. “There are norms and well-defined protocol for collecting the samples as well as getting them tested at designated laboratories,” said an official with the health department, adding that if these norms are not followed those involved in Andhra Pradesh fish trade might move court challenging the department’s decision.

State health minister Mangal Pandey said: “Our field officials would soon complete the sampling collection work after which these would be sent for laboratory testing. The department would take further steps in accordance with the outcome of laboratory test.” The state fisheries directorate has decided to continue its awareness drive to inform consumers about the possible threat from fish coming from Andhra Pradesh. “We too had collected samples and one of them had been sent to the food testing laboratory in Calcutta. The test report confirmed the presence of formalin and hence we informed the health department, which is authorised to ban any edible item, and also continued our awareness drive,” a senior official with the directorate said.

## **Bihar: Two Indians swept away by Sunkoshi river in Nepal while fishing**

<https://m.hindustantimes.com/india-news/two-indians-swept-away-by-sunkoshi-river-in-nepal-while-fishing/story-SE0pyKdz3Jb9jBIZUWbGBK.html>

Two Indian nationals have gone missing after being swept away by the Sunkoshi river in Nepal’s Sindhupalchok district, police said. The incident occurred on Sunday when the duo were fishing in the river at Bahrabise area in the district, which is 75 km from Kathmandu, they said. The missing persons were identified as Ruplal Sahani, 30, and Manohar Sahani, 25. Both are residents of Sitamarhi district of Bihar, police said, adding that search is on for the missing persons.

## **Bihar: Bid to do away with fish trade middlemen**

<https://www.telegraphindia.com/states/bihar/bid-to-do-away-with-fish-trade-middlemen-256632>

Plans are afoot to weed out the role of middlemen in marketing of fishes produced in Bihar to ensure that fishermen get their due from direct sales. To start with, the Bihar Fish Cooperative Federation will be set up at the state-level, which will work as the apex body of all the fishermen's societies. "The registration process of the federation is in the final stage and a formal announcement will be made soon. The secretary of the animal and fish resources department will be its ex officio chairperson, while the fisheries director will be its managing director," an official in the state fisheries directorate told The Telegraph. The federation will also have representatives from the cooperative, agriculture, industry and finance departments and all the heads of the divisional level fishermen's societies, which too will be set up soon, will be its members.

The fishermen's societies function at the block-level only and of 534 blocks of Bihar, these function in 462 blocks with 4.1 lakh fishermen as their members. "Once the state-level federation and the divisional-level societies get functional, the state government will get a channel to help fish farmers marketing their products directly to customers," said the official. Majority of the fish farmers now sell their products to middlemen, who in turn, sell the fishes to wholesalers from where it reaches the markets. In this process, around 15 to 20 per cent of the actual fish price is pocketed by the middlemen and wholesalers. Also, another practice is common in the hinterlands - under which fishermen are asked to provide 1kg additional fish for every 5kg of fish purchased by middlemen. "Once we have the new system in place, the federation will help farmers bring their products to the market and they will just have to pay for the transportation.

In the long run, we intend to set up fish outlets across the state using which fishermen can supply their products directly to these outlets at government rates," said the official. The official said the new system will also help the department assess the fish production in a better manner because the data collected from the markets at present make the basis on which fish production is estimated. Bihar produces 5.87 lakh metric tonnes of fish now.

## **Manipur, Madhya Pradesh, Jharkhand, Bihar and Odisha: Training on fish feed underway at CIFA**

<https://www.dailypioneer.com/state-editions/bhubaneswar/training-on-fish-feed-underway-at-cifa.html>

A NFDB-sponsored five-day national training on "Recent Trend on Feed and Feeding Strategy for Various Life Stages of Commercially Important Freshwater Fish" from August 21 to 25 at the ICAR-CIFA here is underway. Inaugurating the programme, ICAR-CIFA Director Dr BR Pillai emphasised the production of cost-effective diet for different life stages of fish by using

locally available feed ingredients. She also expressed that in order to increase the present fish production of 3.0 tons/ha to 6.0 tons/ha, supplementary feed is essentially required. She had advocated for the sustainable and eco-friendly aquaculture.

Course Director Dr KN Mohanta opined that for doubling the income of fish farmer, the input optimisation is the need of hour. He also spoke about the different feeding strategies to be followed to reduce production cost and increase the profit margin. Programme Coordinator Dr KC Das gave the outline of the training program and ICAR-CIFA Principal Scientist Dr SC Rath offered a vote of thanks. Fisheries Department officials from the Government of Manipur, Madhya Pradesh, Jharkhand, Bihar and Odisha and Officers from the other Central Governments, entrepreneurs, progressive fish farmers and the trainers from the Aqua Field School (AFS) participated.

### **Bihar: Govt intervenes to aid fish farmers**

<https://www.telegraphindia.com/states/bihar/govt-intervenes-to-aid-fish-farmers-245139>

The fish farmers' cooperative societies in Bihar are set to receive help from the government. The aim is to strengthen the societies which in turn would help in improving the condition of fishermen. A total of 462 cooperative societies of fishermen are working in Bihar in as many blocks of the state and these have a membership of around 4 lakh fishermen. "The government stands for making one office building for each cooperative society at the place of their functioning," an official in the animal and fisheries resources department told The Telegraph, adding that each office would be equipped with a computer. The government would also provide services of a manager to the societies, and pay them salary.

The government would also help the cooperative societies in keeping their accounts audited and services of chartered accountants would be provided to them. "These moves would change the way the fishermen cooperative societies function at present," said the official, adding that presence of managers would usher in professionalism. According to the plan, each society offices would also have retail outlet using which fishermen would be able to sell their products. To mobilise funds, the government is planning to take help of National Cooperative Development Corporation for loan.

### **Bihar: Fishermen plea to govt**

<https://www.telegraphindia.com/states/bihar/fishermen-plea-to-govt-243896>

The Bihar Co-operative Fisheries Federation on Tuesday pressed for a comprehensive roadmap to boost fish production, maintaining that the sector remained under-developed in the state. During a programme on National Fishermen's Day in the state capital, the federation criticised the government over annual fish production in Bihar, which the federation said has been falling

from 2015 to 2017. Rishikesh Kashyap, managing director of the federation, said that Bihar's annual demand of fish is nearly 6 lakh metric tonnes whereas the total production has not exceeded 5 lakh metric tonnes. This leads to Bihar importing fish from other states - predominantly Andhra Pradesh - worth over Rs 2,000 crore. He said: "Instead of strengthening the state's own fishing industry, the government resorted to importing fish in order to meet local demand.

Therefore, due to lack of political will, the sector remained under-developed and resulted in below-par fish production in the state. However, there is huge potential in Bihar's fishing industry in terms of revenue generation and employment creation." According to official estimates, Bihar's per capita annual fish consumption is 7.7 kg, while the national average is 10 kg. Chief minister Nitish Kumar had said in August 2017 that the government would boost local fish production so that Bihar becomes a fish surplus state by 2020. Rishikesh appealed to formulate a dedicated policy for fisheries development, which is currently included in the agricultural roadmap.

"The fishermen community also faces technical hurdles as they not able to avail of new technological equipments due to absence of any subsidy from the Bihar government," he said. The federation said its major demands are inclusion of fisheries in the Centre and the state's disaster relief fund, and long-term settlement of ponds, and fish insurance on the lines of crop insurance. According to the federation's estimates, over one crore people are engaged in fishing for livelihood in Bihar.

### **Bihar: Fishing body wants damages**

<https://www.telegraphindia.com/states/bihar/fishing-body-wants-damages-239549>

Co-operative Fisheries Federation (COFFED) on Friday demanded compensation from the state government in lieu of a two-month annual ban imposed by authorities on fishing in state rivers. Under Section 13 (1) of the Bihar Fish Jalkar Management Act, 2006, there is a ban on fishing in the Ganga, Gandak and other states' rivers from June 15 to August 15 every year to allow for fish breeding and multiplication. Officials say fishermen and stakeholders lose temporarily but will in the long run, reap rich benefits as the fish population grows.

But officials of the apex co-operative body of fishermen accused the state government of destroying their livelihood by not giving them compensation despite the central government's July 2014 order. According to COFFED managing director Rishikesh Kashyap Nishad, the Centre has ordered that fishermen in Bihar be given a compensation of Rs 9,000 in total for the two-month period, but no compensation had been made available to them since 2006.

## **Bihar: State level workshop and meeting of small scale fishworkers developed an action plan**

The National Platform for Small Scale Fish Workers (Inland) has opened its Bihar chapter. Around 50 representatives of fishing communities from about 12 districts of the state alongwith leaders of novements and organisations working on environment, water and fisheries issues met at Patna on 9th and 10th May 2018 to discuss the main problems facing the small scale fishing communities of the state and the ways and means to address the same. They decided on an Action Road Map for the next six (6) months and also formed an Ad-hoc Committee to take the activities forward.

The State Level Workshop was inaugurated by Sri Rana Ranvir Singh, Minister in Charge Department of Cooperation, Smt N. Vijayalakshmi, Principal Secretary Department of Animal Husbandry and Fisheries, Sri Nishat Ahmed, Director of Fisheries and Sri Anand Madhav, Director Gender Cell inaugurated the programme by lighting of lamp. Pradip Chatterjee, Convener of the National Platform, in his welcome address, highlighted the importance of fish in the food and nutritional security of the citizens of the country. He mentioned the predominant role of inland fisheries in both production of fish and employment in fisheries sector. He stated the livelihood crisis of small scale fishing communities of the country in general and of Bihar in particular. He highlighted the sorry state of the rivers, lakes, wetlands and ponds as well as the denial of tenure rights of the small scale fishing communities. He mentioned the improper, undemocratic and corrupt functioning of the fisheries cooperatives. He emphasised that the small and traditional fishing communities are by far the largest primary stakeholders and natural custodians of our water bodies. Good fish needs good water. He requested both the dignitaries and the participants of the workshop to work diligently to Save Water, Save Fish and Save Fisher People.

In the end he reminded that since the National Policy for Inland Fisheries and Aquaculture is under the process of preparation, the Government of Bihar needs to be sensitive to the situation and needs of the small scale fishing communities and give their suggestions accordingly. Nalinikant, Member of the National Committee of the Platform, mentioned the importance of water courses in Bihar and the problems related to the management of rivers and watershed with their immense adverse impacts on the ecological status of water bodies including rivers, lakes, wetlands and ponds. He stressed that unless the small scale fish workers are organised and empowered, it is impossible to save the water bodies.

Suman Singh, Member of the National Committee of the Platform, emphasised the largely invisible and unrecognised role of women fish workers. She strongly advocated the need and importance of women's empowerment in fisheries for the well being of the sector. She suggested formation of women fish worker cooperatives as an important measure towards this. Hounarable Minister, Sri Rana Ranvir Singh said women are by nature finest manager. They manage family,

resources, social system better than male members. That is why, department is making all efforts and developing plan to integrate more women into agriculture, livestock and fishery sector. Even national budget has made provisions for development of fishery sector. Principal secretary Smt. Vijayalaxmi invited suggestions from the workshop mentioning that the Government of India is making a policy for inland fisheries.

A draft version is ready for introducing to all State government. She proposed setting up of all women cooperative in each district similar to women's dairy cooperatives. She also explained various subsidy based schemes for fishing community. Director of Fisheries, Sri Nishat Ahmed shared progress of Bihar state's fisheries production performance over the years. This year fishery production growth rate was 14% than previous year. He acknowledged fact that still women specific programs have not surfaced in Bihar. But in coming years some concentrated women specific interventions will be developed. Now Bihar is also exporting fish to other States and nearby countries like Nepal and Bhutan. He requested the National Platform to work with the Department in bringing about prosperity to the fisheries sector and small scale fishing communities. Sri Anand Madhav shared that gender cell is doing one research study on performance of women in fishery sector. They will share the findings of this report on 10th July, the National Fish Farmers' Day.

Sri Ranjeev from Ganga Mukti Andolan shared how water resources, inter country water agreements will decide future of fishery sector in Bihar. Ashoka fellow Mr. Neelkanth from Centre for aquatic livelihood Jaljeevika shared importance of conserving native fish varieties and importance of traditional knowledge system for development of fishery sector. Sri. Jitendra from Navjagriti, Sri. Kishor Mandal from Samta Grameen Vikash, Sri Narayan Jee Choudhary from Mahila Gram Vikas Parishad, Sri Rajnath Prasad and other experts and activists participated in the deliberations. The meeting suggested that a National Meeting should be held at Delhi on 10th July 2018 to highlight the inland fish workers' issues at National Level. It was decided that Sakhi Bihar will host the Secretariat of the Platform in Bihar at their office at Patna. A ten (10) member Ad-hoc Committee was formed with Smt. Suman Singh and Sri Nalinikant as Joint Conveners to take the work forward.

### **Bihar: Fishing cheer for Bihar**

<https://www.telegraphindia.com/states/bihar/fishing-cheer-for-bihar-225440>

Bihar has caught up with the national fish productivity level and the state now boasts of having a three metric tonne per hectare productivity. This feat could be achieved owing to 14 per cent increase in fish production in the state in 2017-18. According to the figures compiled by the state fisheries directorate, which works under the aegis of the animal and fisheries resources department, the state produced 5.87 lakh metric tonnes of fish in 2017-18, which was almost 14 per cent more than the production level of the previous fiscal. The state had produced 5.10 lakh

metric tonnes of fish in 2016-17. "In fact, 2017-18 is special for us because we not only achieved the national average of fish productivity this year, but also we crossed our own target of producing 5.50 lakh metric tonnes of fish in the year," a senior official of the state fisheries directorate told The Telegraph.

Buoyed by the achievement of 2017-18, the animal and fisheries resources department is now thinking of effecting an upward revision of fish production target during 2018-19. "Earlier, we had set the target of producing 6 lakh metric tonnes of fish in 2018-19. But now we are working out the possibilities if this could be scaled up to 6.5 lakh metric tonnes or not. A decision will be taken shortly after taking various factors into account," said a senior official of the department. If this upward revision takes place and the desired target is achieved, Bihar could hope to achieve self-reliance in fish production by the end of 2018-19.

At present, the state which boasts of 93,000 hectares of ponds, 9,000 hectares of oxbow lakes, 9.41 lakh hectares of chaur (low) land, which remain submerged in water for six to seven months a year, 26,000 hectares of reservoir and 3,200km of rivers, still depends on fish supply from other states because it has still not achieved the production level of 6.42 lakh metric tonnes of fish production which also happens to be its annual demand. "The 6.5 lakh metric tonnes production level is achievable provided the state government comes up with some scheme which would encourage wide-scale use of fish feed which is a must for scripting a turnaround in the fisheries sector," said the official. Kirti Sahni, a progressive fish farmer from Sitamarhi district, echoed the official's view and said: "Fish feed worth Rs 75,000 will be needed annually to run fisheries in one hectare of water body. The state must pay half the input cost to fish farmers to encourage use of the food, which could help enhance the productivity in a big way." Sahni said the state had the potential of achieving 5 tonnes per hectare of fish production.

### **Bihar: Fish production boost**

<https://www.telegraphindia.com/states/bihar/fish-production-boost-220361>

Bihar produced 25,000 metric tonnes of fish more in 2017-18 than the previous fiscal. According to state fisheries directorate data, the state produced 5.35 lakh metric tonnes of fish till February 2018, while the figure for 2016-17 was 5.10 lakh metric tonnes. "We are hoping to cross 5.5 lakh metric tonnes in 2018-19, which is quite encouraging," said a senior official in the directorate. Bihar, which has 93,000 hectares of ponds, 9,000 hectares of oxbow lakes, 9.41 lakh hectares of chaur (low) lands which remain submerged in water for six to seven months in a year, 26,000 hectares of reservoir and 3,200 km of rivers, still depends on supply from other states to meet its local annual demand of 6.42 lakh metric tonnes of fish.

The per capita annual consumption of fish in Bihar is 7.7 kg per person, less than the national average of 10 kg and the Indian council of medical research-recommended 11.2 kg. The state government, in its third agricultural roadmap released in November last year, has set a fish

production target of 8.02 lakh metric tonnes by the end of 2021-22. One of the most important contributors the production growth in 2017-18, the fisheries directorate said, “has been farming of Pangasius fish (best known as basa) which has picked up in the districts of Kaimur, Rohtas, Aurangabad, Nalanda, parts of Patna, Gopalganj, Siwan, Saran, Muzaffarpur and Samastipur”. The production cost for Pangasius — which is fast replacing bekti as the fish of choice for restaurants and eateries — is around Rs 60 per kg and the farmers get a market price of Rs 100 to 110 per kg. Pangasius fish culture also gives better productivity level. Against around 3 tonnes of production in one hectare of waterbody in case of farming of Indian carps such as rohu, basa gives 20 tonnes to 40 tonnes per hectare.

Also, the official said, availability of quality seeds due to good production by local hatcheries is contributing to the growth story. Against its annual requirement of 900 million fingerlings, the 153 hatcheries of the state supplied 400 million fingerlings in 2017-18 up from 382million fingerlings from 142 hatcheries in 2016-17. “We have 18 more hatcheries in the pipeline which are likely to become functional by June this year,” the official said. The official also said that gradually — thanks to government efforts — farmers of the state are shifting from capture fisheries to feed-based fisheries, which was helping in enhancing the productivity of the water bodies.

### **Haryana and Bihar: MoS urges farmers to adopt bee-keeping, fish rearing to boost income**

[http://www.business-standard.com/article/economy-policy/mos-urges-farmers-to-adopt-bee-keeping-fish-rearing-to-boost-income-118032400675\\_1.html](http://www.business-standard.com/article/economy-policy/mos-urges-farmers-to-adopt-bee-keeping-fish-rearing-to-boost-income-118032400675_1.html)

Union Minister of State for Agriculture and Farmers' Welfare Parshottam Rupala on Saturday exhorted farmers to adopt allied agriculture activities in order to boost their income. "Haryana which is known for traditional farming of rice, wheat and sugarcane should also adopt allied agriculture activities like fish farming, bee-keeping as so to enhance their income," Rupala said was addressing a gathering on the first day of three-day Agri Leadership Summit-2018 here today. The union minister also appreciated the Haryana government for taking effective steps towards realizing Prime Minister Narendra Modi's vision to double the income of farmers by 2022. "Since the agriculture is the subject related to states, the vision to double the farmers' income could only be achieved with the cooperation of all states," he asserted.

While referring to the Minimum Support Price (MSP), he said that present Central Government under the leadership of PM Modi is the first such government which has announced that minimum support prices (MSPs) for all notified crops would be at least one and half times their cost of production. Besides, to ensure that farmers at the grass root level get the benefit of MSP, a policy would be prepared in consultation with NITI Ayog. The Union Minister said the central government has implemented various decisions, rules and Act for the welfare of farming community besides making separate provision of budget. While emphasising the need of

adopting peri-urban concept of farming besides agriculture, minister hoped that export by Haryana farmers should be maximum in the country. He assured the state government all support and cooperation of his Ministry for the promotion of agriculture in the state. He said that by organizing the summit of agri leaders, Haryana has given a new direction not only to other States but also to the country.

Earlier, speaking on this occasion, Agriculture Minister of Bihar Prem Kumar said that under the leadership of Chief Minister Manohar Lal Khattar, all round development has been ensured in Haryana. He said Bihar is an agrarian state with about one crore population engaged in agriculture sector. Kumar said that both Haryana and Bihar should work together in areas of mutual interest for the progress of both States and also to realize the Prime Minister Modi's vision of building a new nation. Agriculture and Farmers' Welfare Minister O P Dhankar said the state government is implementing the concept of Peri-urban farming to meet the growing demand of vegetables, fruit, milk and flowers of four crore population of Delhi and National Capital Region (NCR). He urged the farmers to link with the market and directly sells their produce to the consumers as this would help them increasing their income.

The state minister said the state government has a plan to set up Kisan Bazar in all towns of the state. He said that 11 centre of excellence has been set up in the State with the assistance of Israel. He assured that there is no dearth of fund with the government for agriculture sector adding that a budget provision of Rs 510 crore has been made for setting up of Bagwani Village in the state. Similarly, the budget of Fisheries Department which was Rs five crore earlier has now been increased to Rs 150 crore. Earlier, Dhankar said that the state government would soon introduce a new seed Act to protect the farmers from the risk of loss of crops caused by fake seeds and pesticides. The new seed Act would make the farmers risk-free from the loss from fake seeds and pesticides, he added. He said the old existing Seed Act in the state only provided for Rs 500 fine and imprisonment for a maximum of six months for selling fake seeds.

There are three kinds of risks in agriculture and these are seeds and pesticides, climate and market, he said. Expressing concern over the problem of water-logging in cultivable area, Dhankar said temporary arrangements had been made to deal with the problem and areas with high water-logging possibility had been identified. On this occasion, BJP state President Subhash Barala asked farmers to take inspiration from the progressive farmers and adopt horticulture and floriculture and other cash crops to enhance their income. He said that the present State Government has ensured water even in those areas of Mahendergarh-Narnaul which had been deprived of the same for the last several years.

## **Bihar: The way ahead for fish farming**

<https://blogs.economictimes.indiatimes.com/et-citings/the-way-ahead-for-fish-farming/>

Bihar consumes a billion dollars-worth of fish every year. But we produce only 50% in the state, and the rest comes in through unorganised retail. We have 9,000 sq km of waterlogged, unproductive land, an area as large as Cyprus. We have all that land just sitting there, contributing zero to the lives of 1.2 billion people in India and 130 million people in Bihar. We could take that unproductive, waterlogged land, which has no use — you can't do agriculture, you can't build a hospital or school on it or [create some sort of] industry on it — and convert it into profitable fish farms, because it's good only for storing water. The demand for fish is huge, and it addresses malnourishment and provides food security.

We started our first fish farm in 2014. In the last three years, we've grown significantly. Fish farming is very profitable, and it spits out cash. The yields are about 16 times higher than the [average] agricultural yield in Bihar. We reinvest whatever [profit] we make to prove a point about the potential. The task ahead of us is to build the whole value chain.... Bihar has 15 million fishermen, and we are connected to only 500,000. We send them text messages about diseases to look out for, or when it's a good time to fish, and what rates are prevailing in the markets. There's a lot more that needs to be done.

## **Bihar: Insurance pitch for fish farmers**

<https://www.telegraphindia.com/states/bihar/insurance-pitch-for-fish-farmers-206586>

The state government is looking into a proposal to introduce an insurance scheme for fish farmers on the lines of crop insurance. The animal and fish resources department is working out details. As of now, fish farmers do not have any such insurance cover. This financial security can also help avail of loans from banks even after issuance of Kisan credit cards to fishermen, as proposed by the Union budget presented on February 1. "We are working out details of the proposal and the same would be sent for the state government's approval," a senior official of the state fisheries directorate told The Telegraph. "This insurance cover can prove to be a game-changer for fish farmers in the state, as it would give banks confidence to provide loans to fish farmers once Kisan credit cards are issued."

According to insurance sector norms, insurance cover is given for fish culture if the farmer is rearing fish in a captive water body, like a pond. Out of Bihar's total annual fish production of 5.10 lakh metric tonnes, around 3.6 lakh metric tonnes are produced in ponds spread across 93,000 hectares. If one takes into account the number of fishermen who will benefit from the insurance scheme, the number is a huge 4 lakh fishermen associated with 457 fishermen cooperative societies set up at the block level. These farmers practice fish culture in private- and government-owned ponds. It is not that Bihar has not tried its hand at giving insurance cover to

fish farming. A beginning was made in 2009-10 when an insurance scheme was launched in which one public sector insurance company was roped in to provide the service.

"The effort didn't succeed as the premium rate was quite high," said the fisheries directorate official. "While half of the premium amount was being paid by the state government, the balance had to be paid by the fish farmers. As it didn't prove economical, only four to five big farmers opted for the scheme and it was subsequently discontinued." Now, the directorate was working on a proposal to ensure that a major chunk of the premium cost is borne equally by the Centre and the state while the fish farmers has to pay only 10 to 12 per cent of the insurance premium amount.

### **Bihar: Fish federation for aid**

<https://www.telegraphindia.com/states/bihar/fish-federation-for-aid-198917>

The state government has started the process of setting up Bihar fish cooperative federation to provide financial aid to fish farmers and enhance production. The bylaws for setting up the apex body, which would take control of all the fishermen cooperative societies, have been formulated and have been sent to the registrar of cooperative societies for registration. "After registration of the federation, the apex body would become functional," said a senior official in the state fisheries directorate. The aim of setting up the federation is to streamline the functioning of fishermen cooperative societies, which work at the block-level and also to provide them funds so that modern techniques of fish farming could be practiced in the state.

### **Bihar: Fish vans by February**

<https://www.telegraphindia.com/states/bihar/fish-vans-by-february-193804>

The state government's plan of providing fresh fish supplies to city residents through mobile vans is set to get delayed. The government had planned to launch it from December, but the service is unlikely to be available before February. The delay, according to state government sources, is due to the Centre, which is supposed to provide half the cost of the vans that will sell the fish. Two vehicles, each costing around Rs 10 lakh, are to be bought. "The Centre is not releasing funds due to non-submission of utilisation certificate of some of the funds which it has issued in the past," said an official in the state animal and fisheries resources department. "The necessary documents are being sent to the Centre." "The same vans will sell fish-based snacks in the evening hours.

After the Centre releases funds, tenders would be floated. The winning bidders would have to bear half of the van cost and provide the manpower. "The fisheries directorate would help the entrepreneur in getting assured supply of fresh fish through fisheries cooperative societies," the official said. If entrepreneurs do not show interest, the animal and fisheries department would

provide the funds and manpower to start the service. "We are committed to start the service and at any cost it will be started latest by February next year," said a senior official at the state fisheries directorate. According to the tentative plan, one van would be stationed somewhere between Gandhi Maidan and Patna station and the other one on Bailey road between Saguna Mor and Raja Bazaar.

### **Bihar: This man from Bihar is earning Rs 90 lakh a year through fishery business**

<https://yourstory.com/2017/12/yatindra-kashyap-fishery-business/>

Hailing from Motihari district of Bihar, farmer Yatindra Kashyap is raking in lakhs of rupees through fishery. While most farmers are finding it difficult to financially succeed in farming, farmers like Yatindra are inspiring others to take up fishery. The government of Bihar has been encouraging fishery and is contributing 50 percent of the capital needed to build the pond for rearing fish. The amount required to build a pond for fishery is nearly Rs 12-15 lakh. However, there are many who are willing to take this risk as the return on investment is also high. Yatindra says that when he started five years ago, he had to go through many struggles as he was not very well-aware of the business practices and farming methodologies in this field.

However, he gradually learned with time and has now succeeded in making a good profit. Since Yatindra lacked the required knowledge in the beginning, he began gathering more information. After discussions with a number of experts, he learned that introducing new techniques in fish farming would turn out to be more profitable. Yatindra realised that the new-born fish from hatchery are priced at nearly Rs 5 lakh each. If five such fish are taken from the hatchery in a month, then the monthly income would amount to Rs 20 lakh. The demand for these fish in the market lasts for six months. Yatindra rears 50 tonnes of fish in 25 acres of pond, and earns nearly Rs 75 lakh through this.

He has inspired many in his village to take up fishery as a profession. Since there is an abundance of water resources in this area, the farmer here can decently profit through this business. With the government's keen interest in promoting fishery, the concerned departments have actively started searching for small water bodies which are suitable for fish farming. Since the weather conditions and water resources are favourable for fishery, the government initiative can prove to be extremely helpful for the farmers in Bihar.

### **Bihar: Plans scheme to save dolphins**

<https://www.telegraphindia.com/states/bihar/bihar-plans-scheme-to-save-dolphins-191540>

Fishermen will be compensated and rewarded if they save Gangetic dolphins from death when the animals get trapped in fishing nets. The compensation will be for the net the fishermen would need to cut to release the trapped animal and the reward would be for releasing it back in the

river. "We intend to launch this scheme soon," deputy chief minister Sushil Kumar Modi, who holds the charge of the environment and forest department, said on Wednesday. Modi had hinted about the launch of such a scheme while speaking at the Dolphin Day programme held in Patna on October 5, after fishermen's representative Ramashish Choudhary Nishad had highlighted the efforts of a fisherman from Fatuha who had saved three dolphins. A senior forest department official said the fishermen would be given up to Rs 20,000 as compensation for the damaged net if they release the trapped dolphins.

"An additional sum of Rs 5,000 would be given to such fishermen as reward for their effort," added the official. "Every now and then we come across incidents in which dolphins die after getting trapped in fishing nets." Bihar is home to around half of the estimated 3,000 Gangetic dolphins, the national aquatic animal which is an endangered species, in the country. Dolphins need to come to the surface of the water to breathe. While calves need surface every 10 seconds to one minute, adult dolphins surface every three minutes to breathe. If they are trapped in fishing nets, they cannot come up for air, and die.

R.K. Sinha, a nationally acclaimed expert on Gangetic dolphins, said the government step deserved appreciation, but added: "There should not be any misuse of this scheme and only the genuine claimants should be rewarded." He also expressed concern over the common practice of fishing in night hours and said that often fishermen go to sleep after lowering the net and in such a circumstance it would be difficult to save dolphins that get trapped in nets.

### **Bihar: Subsidy sop for fish farmers**

<https://www.telegraphindia.com/states/bihar/subsidy-sop-for-fish-farmers-187272>

The animal and fish resources department has decided to give input subsidy to fish farmers willing to opt for supplementary fish feed. The decision is meant to achieve the target of producing 8 lakh metric tonnes of fish per annum by 2022, as envisaged in the state's third agriculture roadmap. "Half of the fish-feed price would be provided as subsidy input to the farmers opting for this scientific input which helps in rapid growth of fishes," said a senior official of the state fisheries directorate. He said enhancing productivity was key to achieving the goal of making Bihar not only self sufficient in terms of consumption but also supply fish to other states. The average fish productivity in Bihar is 3 tonnes per hectare of waterbody and the aim is 5 tonnes per hectare. The state produces 5.10 lakh metric tonnes of fish annually, against the demand of 6.42 lakh metric tonnes.

The gap is filled by importing fish from other states. Fish farmers of Andhra Pradesh and Telangana supply a good chunk to Bihar. "Fishes cultured in captive water bodies like ponds need supplementary food for rapid growth as the water bodies do not contain all the necessary items required for the fishes," the directorate official said. "Ideally, 4.5 lakh tonnes of fish feed should be used by farmers of Bihar; just about 6,000 tonnes are being used. That is why we have

decided to provide input subsidy to fish farmers." According to department plans, half of the fish feed cost would be provided as subsidy. The government has also decided to promote setting up of fish-feed mills.

Those willing to set up such mills can obtain subsidy from the government - half of the cost incurred on setting up the mill, with the upper limit being Rs 50 lakh. At present six fish-feed mills are functioning in the state whose combined production is at 1,060 metric tonnes per annum. The remaining fish feed used in the state comes from outside. With the subsidy push, several fish-feed makers have shown interest in setting up plants in the state. "Seven such mills with a combined production capacity of 3,995 metric tonnes are coming up in Bihar," said the officer. He said the state was expecting more such players coming to Bihar as the state would need 4.5 lakh tonnes of fish feed once farmers start scientific farming in a big way.

### **Bihar: Wetlands Are "Wastelands"? Here's How One Bihar Village Proved Us All Wrong**

<https://www.thebetterindia.com/116185/mutlupur-farmers-transform-neglected-wetland-integrated-farming-bihar/>

Mulki Devi and Satrugan Mahto, both marginal farmers from Mutlupur, no longer worry about their wetlands remaining unused. "I never dreamt that this wetland would turn productive in my lifetime," gushes Mulki Devi. Satrugan Mahto is happy that his wetland, which was put to no use, is now a part of an integrated farm, earning him an income. He is also confident this income will increase in the future. Mutlupur in Muzaffarpur district of Bihar is flood-prone, as the Gandak River and Bagmati River skirt the village on the northern and southern sides, respectively. The village had 87 acres of low-lying wetland, locally known as chaur, which was considered a blight since they were not productive in any way. But a group of farmers have turned chours productive and turned them into a resource of livelihood.

Derelict wetland to integrated farm It was Gopalji Trivedi, former vice-chancellor of Rajendra Prasad Central Agricultural University at Pusa, now a farmer in Mutlupur, who convinced the farmers to use the barren wetland for agricultural purposes. "I persuaded the farmers to change the face of the low-lying Korlaha Chaur. Despite the initial reluctance, they joined hands and the wetland that was derelict for decades is the village's centre of attraction now," the octogenarian told VillageSquare.in. 22 farmers including Trivedi, whose landholdings ranged from small to big, joined hands to develop the wetland. They formed an association and an advisory committee to manage the development process. The group consulted veterinary, agricultural, fishery and horticultural experts to use the latest technology and developments in integrated farming.

"Our focus is on fisheries, as it is the most suitable for wetland use. We have integrated poultry, a goat farm and a dairy unit into our development plan," Trivedi said. Fisheries – The mainstay In the Korlaha Chaur, there are 17 big ponds, the largest spread over 14 acres. Nearly 50 local

residents, mostly youth, fish in the chaur's ponds. "Every day I take fresh fish from the chaur and sell them in villages near Mutlupur. Now I can earn my livelihood, and I have stopped thinking of migrating to other states for work. There are dozens like me here, who are selling fish as it is a profitable business," Mukesh Kumar, a Dalit youth, told VillageSquare.in. Ramchander Prasad said that availability of fishes in the big ponds has made it easy for youth like him to make a living locally. According to officials in Bihar's fisheries department, the state requires over 600,000 tons of fish annually, whereas the production is less than 500,000 tons. But more than 30,000 tons of fish from Bihar are sold in West Bengal and exported to Nepal.

Presently, the per capita annual consumption of fish in Bihar is 7.7 kg compared to the national average of 10 kg per person. Bihar is not producing adequate fish to fill its own demand despite having plenty of water resources including wetlands. The state government has decided to work towards making Bihar a fish-surplus state by 2020. "Thousands of hectares of wetlands across the state could be used for aquaculture. This can not only turn Bihar into a fish-surplus state but make it a main supplier of fish across the country," Shivraj Singh, manager of a fishery, told VillageSquare.in. Agro-forestry In a bid to create a green cover, the farmers have planted over 16,000 timber saplings. Hundreds of fruit-bearing trees such as jamun (Java plum), jackfruit, Indian gooseberry, ber (Indian date), sweet lime, mango, guava and lemon bring them regular income. Vegetables and food grains are also cultivated.

"Our goal is to utilise every bit of our natural resources to produce food," Trivedi pointed out. Agriculture experts had repeatedly said that dry land agriculture is unsuitable for wetland areas. But the farmers are happy that they have succeeded in their experiment. Mangala Rai, the former agriculture advisor to the chief minister of Bihar and former Director General of Indian Council of Agriculture Research (ICAR), has lauded the farmers for being an inspiration to others. As the benefits of agriculture and horticulture in the chaur are obvious, people envy Korlaha, said Mulki Devi with a light-hearted smile. Social change The wetland had been a haven for anti-social activities for five years now. The negative outlook associated with it has changed, and it is now a symbol of prosperity. The development has created employment opportunities for many of the local youth, besides being a source of income for the farmers. According to Singh, the plan is to generate 200 jobs in the coming years, besides indirect employment opportunities for neighbouring villagers.

Replicating the Mutlupur model There are 941,000 hectares of chaur in Bihar, which remain submerged for six to seven months a year. Of these, more than 500,000 hectares have been declared suitable for fishing. "Despite the large population of traditional Shahni (caste) fishermen, only 500 acres are being used for fish farming," an official of the state fisheries department told VillageSquare.in. Sukhdeo Rai, a farmer, said wetlands are not wastelands; they can pave the way for prosperity in rural areas if developed along such lines. Impressed by the success of Korlaha Chaur development, another group of farmers is in talks with Singh's farm to develop their 70 acres of wetland.

According to Mangala Rai, if managed efficiently, wetlands of Bihar can be turned into an agricultural goldmine. He stresses the need to adopt latest scientific and technological practices for better management of wetlands in the state. "If we can develop wetlands for integrated farming in Mutlupur, people in flood-prone villages in north Bihar, particularly in Seemanchal, Koshi and Mithilanchal regions, can do the same. Use of wetlands for agriculture and fisheries would change the face of rural Bihar. It can also be an example for the country, ending the hopelessness of farmers," Trivedi told VillageSquare.in.

### **Bihar: 2020 target for fish surplus tag**

[https://www.telegraphindia.com/1170830/jsp/bihar/story\\_169788.jsp](https://www.telegraphindia.com/1170830/jsp/bihar/story_169788.jsp)

The Nitish Kumar government will undertake an exercise to assess the exact amount of fish that is imported to meet the local demand with an aim to make Bihar a fish surplus state by 2020. According to market estimates, the state needs around 6.42 lakh metric tonnes of fish annually against which it produces around 5.10 lakh metric tonnes. There is, however, a catch. Some of the fish, produced locally in Bihar, go to markets in Bengal and Nepal which leads to further widening of the demand-supply gap. Market sources feel that around 30,000 metric tonnes of Bihar fish go to Nepal and Bengal annually. "During a recent review meeting of the animal and fisheries resources department, the chief minister categorically told us to find out the exact amount of fish which we import from other states and then make plans accordingly to make Bihar fish surplus by 2020," a senior official of the department told The Telegraph.

The official said a fish farmers' federation was being planned with which all those associated with production and marketing would be linked. "The federation's network across the state would help us generate authentic data on the fish demand and production," added the official. Until the time the federation is set up, the department will contact some major suppliers who get fish imported from other states to collect information. "By contacting the source point, we would try to get a rough idea about the fish coming from other states. This would help us prepare a detailed plan to enhance local fish production," said the official. As things stand now, Bihar has abundant water resources at its disposal to undertake fish farming. The state has 93,000 hectares of ponds, 9,000 hectares of oxbow lakes, 9.41 lakh hectares of chaur (low) lands which remain submerged in water for six to seven months in a year, 26,000 hectares of reservoir and 3,200km of rivers. It produces 5.10 lakh metric tonnes of fish annually and the productivity is around 3 tonnes per hectare.

A lot of the fish coming from outside is from Andhra Pradesh which sell for prices lower than the local variety. While local fishes cost between Rs 200 and Rs 400 per kg, those coming from outside are available in the range of Rs 140 to Rs 200 per kg. Fisheries department officials, however, played down the issue. "Fish coming from outside are three to five days old whereas locally produced fish are fresh and of better quality. People in general prefer fresh fish and inputs

collected by us from the market suggest that the local fishes are the first choice of the majority of customers," said one official. A prominent fish seller of Motihari town, Jiten Sahni, agreed. "Fresh fish is the first choice of customers. Even poor people go for it. They compromise on the quantity but not on the quality," he said. Sonu Kumar, a fish seller from Patna's Raja Bazaar, said much the same. "Imported fish are generally purchased by the small hotel owners as the low prices add to their margin.

But most individual customers prefer local fish," he said. A source in the animal and fisheries resources department said an internal assessment has revealed that Bihar has the potential of attaining 5 tonnes/hectare productivity level. Also, there is a huge potential to increase the internal demand of fish. At present, the per capita annual consumption of fish in Bihar is 7.7 kg per person whereas the national average is 10 kg per person. According to the recommendations of the Indian Council of Medical Research, an individual ideally should consume 11.2 kg of fish every year.

"High prices of fish keep them away from the reach of the poor people. Once production increases, prices would stabilise and common people too would be able to consume the fish of their choice," said an official of the department. The official, however, pointed out that a few creases needed to be ironed out towards making Bihar a fish surplus state. "Against the sanctioned 1,391 posts, only 378 persons are working in offices linked to the fisheries directorate. The government needs to fill these vacant posts immediately," he said. Department officials refused to speak on the manpower shortage, claiming that filling the vacant posts and expanding the network of experts could be decided at the highest level only. Efforts to speak to animal and fisheries resources department minister Pashupati Paras proved futile.

### **Bihar: Farmerâ€™s Notebook: How Integrated Farming Can Help Ensure a Sustainable Income**

<https://thewire.in/172193/farmers-notebook-integrated-farming-can-help-ensure-sustainable-income/>

Integrating crop production with livestock management helps to reduce operational input costs of farming and augments productivity, production and income per unit area. Agriculture is not just about growing crops, nor is it about the physical drudgery involved or about the vagaries of monsoon playing with the lives of farmers. It is more about the scientific management of crop husbandry and its successful integration using the available technical guidelines. For a farmer to earn a decent living, it is not enough to be content with growing some crops alone. Along with crops, he must rear some animals to ensure stability in income. In order to reduce the load of food from fragile land, integrated natural resource management is a proven way to ensure a monthly income, reduce operational input cost of farming, augment productivity, production and

income per unit area and ensure food and nutritional security to ever growing population of India.

Kavindra Kumar Maurya from Charuipar village in Nalanda district, Bihar, is a good example of displaying entrepreneurial spirit. His fish farm is located about 2 km east of Noorsarai and 50 km southeast of Patna, and is well-connected by road and rail. “After the completion of my masters in botany, I started farming on my 6.10-acre land 20 years back but I could not get enough returns to sustain my family requirements. One of my friends inspired me to start fish rearing on my land. As per his suggestion, I first started fish farming in the year 2000. I started rearing fish in one pond of about 0.75 acres by purchasing fish seeds from the government fish seed farm.” He invested about Rs 40,000 of his savings on fish seed, feed, fertiliser and labour, but lack of scientific know-how proved to be an obstacle in getting the desired production and income.

He earned Rs 25,000 as net profit from the sale of fish. He realised that the profit margin through aquaculture is higher when compared to agriculture and started to gather technical information on the subject. He approached the fisheries department for training, which then guided him towards the Central Institute of Fisheries Education regional centre at Kakinada, Andhra Pradesh in 2006. Upon the completion of his training programme, he expanded his pond area in 2006 and started fish farming in a scientific way. “I was introduced to Tun Tun Singh in 2006, currently working as a lecturer at fisheries training and extension centre in Mithapur, Bihar. During my training programme, he advised me to integrate available resources such as horticulture, livestock, vermicompost and honey bee farming and helped me integrate my available resources.

He also advised me to participate in a training programme on horticulture and honey bee farming. At present I have seven ponds (covering three acres), a one-acre bundh (dike) used for banana and vegetable farming, about 32 honeybee boxes for honey production, one cow and remaining 2.10 acre land for turmeric, potato, ginger, elephant foot etc production. I also installed a three HP solar water pump from the fisheries department of fisheries on 90% subsidy which helps in maintaining water level in the ponds and also for irrigating the crops,” Maurya said. According to him, Singh regularly visited his farm and gave the scientific input to increase productivity per unit area. He produces all the above mentioned crops in his own land and as a result his dependence on local market for buying has come down.

“A perfect farmers is one who never depends on market for his daily food items,” Maurya added. During the year 2014-15, he sold fish worth about Rs 7 lakh, banana worth Rs 25,000, vegetables worth Rs 15,000, honey worth Rs 25,000 and other crops amount to Rs 1.25 lakh. The total net profit of this integrated fish farm in 2014-15 was Rs 5.90 lakh. He never sold milk and vermicompost. Maurya has developed and trained more than 100 farmers in integrated fish farming and acts as a master trainer in their area. Integrated fish farming is the best example of more crops per drop of water to ensure economic viability, income and environmental

sustainability to the marginal and small farmers, and it can be effectively developed through participatory approach of extension workers, scientists and farmers families, says Singh.

### **Bihar: 2020 target for fish surplus tag**

[https://www.telegraphindia.com/1170830/jsp/bihar/story\\_169788.jsp](https://www.telegraphindia.com/1170830/jsp/bihar/story_169788.jsp)

The Nitish Kumar government will undertake an exercise to assess the exact amount of fish that is imported to meet the local demand with an aim to make Bihar a fish surplus state by 2020. According to market estimates, the state needs around 6.42 lakh metric tonnes of fish annually against which it produces around 5.10 lakh metric tonnes. There is, however, a catch. Some of the fish, produced locally in Bihar, go to markets in Bengal and Nepal which leads to further widening of the demand-supply gap. Market sources feel that around 30,000 metric tonnes of Bihar fish go to Nepal and Bengal annually. "During a recent review meeting of the animal and fisheries resources department, the chief minister categorically told us to find out the exact amount of fish which we import from other states and then make plans accordingly to make Bihar fish surplus by 2020," a senior official of the department told The Telegraph.

The official said a fish farmers' federation was being planned with which all those associated with production and marketing would be linked. "The federation's network across the state would help us generate authentic data on the fish demand and production," added the official. Until the time the federation is set up, the department will contact some major suppliers who get fish imported from other states to collect information. "By contacting the source point, we would try to get a rough idea about the fish coming from other states. This would help us prepare a detailed plan to enhance local fish production," said the official. As things stand now, Bihar has abundant water resources at its disposal to undertake fish farming. The state has 93,000 hectares of ponds, 9,000 hectares of oxbow lakes, 9.41 lakh hectares of chaur (low) lands which remain submerged in water for six to seven months in a year, 26,000 hectares of reservoir and 3,200km of rivers. It produces 5.10 lakh metric tonnes of fish annually and the productivity is around 3 tonnes per hectare.

A lot of the fish coming from outside is from Andhra Pradesh which sell for prices lower than the local variety. While local fishes cost between Rs 200 and Rs 400 per kg, those coming from outside are available in the range of Rs 140 to Rs 200 per kg. Fisheries department officials, however, played down the issue. "Fish coming from outside are three to five days old whereas locally produced fish are fresh and of better quality. People in general prefer fresh fish and inputs collected by us from the market suggest that the local fishes are the first choice of the majority of customers," said one official. A prominent fish seller of Motihari town, Jiten Sahni, agreed. "Fresh fish is the first choice of customers. Even poor people go for it. They compromise on the quantity but not on the quality," he said. Sonu Kumar, a fish seller from Patna's Raja Bazaar, said much the same.

"Imported fish are generally purchased by the small hotel owners as the low prices add to their margin. But most individual customers prefer local fish," he said. A source in the animal and fisheries resources department said an internal assessment has revealed that Bihar has the potential of attaining 5 tonnes/hectare productivity level. Also, there is a huge potential to increase the internal demand of fish. At present, the per capita annual consumption of fish in Bihar is 7.7 kg per person whereas the national average is 10 kg per person. According to the recommendations of the Indian Council of Medical Research, an individual ideally should consume 11.2 kg of fish every year. "High prices of fish keep them away from the reach of the poor people. Once production increases, prices would stabilise and common people too would be able to consume the fish of their choice," said an official of the department.

The official, however, pointed out that a few creases needed to be ironed out towards making Bihar a fish surplus state. "Against the sanctioned 1,391 posts, only 378 persons are working in offices linked to the fisheries directorate. The government needs to fill these vacant posts immediately," he said. Department officials refused to speak on the manpower shortage, claiming that filling the vacant posts and expanding the network of experts could be decided at the highest level only. Efforts to speak to animal and fisheries resources department minister Pashupati Paras proved futile.

#### **Bihar: Bihar flood toll rises to 341**

<http://www.thehindu.com/news/national/other-states/bihar-flood-toll-rises-to-341/article19543994.ece>

The Met office in its forecast said that Patna, Gaya, Bhagalpur and Purnea are likely to witness generally cloudy sky with the possibility of rain or thundershower. With 37 more deaths, the toll in Bihar flood rose to 341 on Tuesday even as 1.46 crore people are affected by the deluge in 18 districts of the state. The flood toll stood at 304 till Monday in Bihar with 1.38 crore people battling the deluge in 18 districts. Around 7.61 lakh people have been shifted to safer areas. With water receding in some places many people have returned home. Prime Minister Narendra Modi would make an aerial survey of flood affected districts of Bihar on August 26, said Deputy Chief Minister Sushil Kumar Modi. "PM coming on 26th Aug for aerial survey of flood affected dists of Bihar (sic)," Sushil Modi said in a tweet.

Special Secretary in state Disaster Management Department Anirudh Kumar said that 2.29 lakh people are putting up in 1,085 relief camps. Kumar said Araria district alone accounted for 75 deaths, followed by Sitamarhi (36), West Champaran (36), Katihar (26), Kisanganj (23), Madhubani (23), East Champaran (19), Darbhanga (19), Madhepura (19), Supaul (15), Gopalganj (14), Purnea (9) Muzaffarpur (7), Khagaria (6), Saran (6) and Saharsa (4), Sheohar (4). Chief Minister Nitish Kumar reached Purnea by road from Patna after a helicopter in which he had to travel developed some snag and inspected some relief camps, an official accompanying

him said from Purnea. The CM would stay in Purnea on Tuesday and would go to Araria, Katihar and Kisanganj on Wednesday, the official said. A total of 1,608 community kitchens are under operation in flood affected areas in which 4.52 lakh victims took meal on Tuesday, the state Disaster Management department report said.

With flood creating havoc in as many as 18 districts of Bihar, the legislators have started contributing to the Chief Minister's relief fund. Sushil Modi said he had made a request to the PM for a visit to Bihar during a meeting of chief ministers and deputy chief ministers of BJP-ruled states in Delhi on Monday. He said during the meeting all BJP-ruled states were asked to contribute to flood relief work in Bihar. He told reporters that all BJP Legislators would meet on Wednesday to decide to contribute their one month salary in flood relief. Former minister and JD(U) MLA Ranju Geeta donated her one month salary in the CM relief fund. A road construction department statement said a total of 203 state highways and other roads under it were damaged in flood waters in different places out of which 95 per cent have been repaired and made motorable. The Met office in its forecast said that Patna, Gaya, Bhagalpur and Purnea are likely to witness generally cloudy sky with the possibility of rain or thundershower on Wednesday.

### **Bihar: India's Bihar state reels under unprecedented flooding**

<http://www.aljazeera.com/news/2017/08/india-bihar-state-reels-unprecedented-flooding-170820174216830.html>

Residents in the Indian state of Bihar are struggling to recover from the devastation caused by floods and landslides that have killed more than 250 people, destroyed crops and swept away houses and roads. The eastern state, which was hit this month by heavy downpours that also wreaked havoc in other parts of South Asia, is facing its worst deluge since 2008, affecting nearly 13 million people spread across 20 of its 38 districts. Ashish Ranjan, a resident of Araria district in the eastern part of the state, said the impact of the flood was massive. "Thousands of people are living on the highway for more than a week now," Ranjan told Al Jazeera from Araria, where 57 people have died - the highest death toll in the state. "It has totally destroyed Araria. People here say they had never seen these kinds of floods in their lives. It's a really bad situation here," he said. At least 253 people have died and up to 152 animals have also perished, the state disaster management authority said in a statement on Sunday.

Nearly 7,000 villages have been affected by the flooding, forcing more than 400,000 people to seek shelter in 1,358 relief camps set up by state authorities. The state government, run by an ally of Prime Minister Narendra Modi, has assured all support to the flood-hit population. It has rushed National Disaster Relief Force (NDRF) and State Disaster Relief Force (SDRF) teams, as well as the army, to help millions of people marooned in their homes. But Ranjan said that the "government response was inadequate", accusing authorities of not acting quick enough. "There

could have been some warning to the people when the water left Nepal [in the north] before it reached Araria. Evacuation could have been carried out," he said.

Authorities said they were busy in organising relief measures and that everybody was taken by surprise by the flash floods. Pratyaya Amrit, principal secretary of the state disaster management authority, said the biggest challenge was to restore road connectivity. "We are working on a war footing," he was quoted as saying by local media. He said that halogen tablets for water purification are being distributed in the flood-affected areas. "Rs 3,000 (\$47) cash will be transferred to people's bank account, and we are assessing the damage caused to houses and agriculture," he said. Along with Araria, three other districts in eastern Bihar - Purnia, Katihar and Kishanganj - bore the brunt of the flash floods that swept a region known as Seemanchal - meaning border area, due to its proximity to the border with Nepal and Bangladesh. Nazrul Islam, 34, is from Satkua village in Kishanganj near the Nepal border. He said 400 out of the 600 houses in his village have been affected by the floods, with 50-60 homes made from tin-sheet and bamboo completely destroyed.

"I have to walk for 8km to reach the nearest road," he said. "Milk is not available for kids, and basic amenities are lacking," Islam told Al Jazeera, adding that relief work had started in the area, including the distribution of rice, potato, dal and salt. "People are eating one time instead of three times a day as the remote areas still remain disconnected from the district headquarters," he said. Pankaj Dixit, district magistrate of Kishanganj, admitted that "connectivity was the biggest issue" as roads and telecommunication networks were snapped by the deluge. "Nearly 200,000 families have been affected [in Kishanganj], he told Al Jazeera. "We are working with NDRF and SDRF teams, focusing on relief work." The flood waters entered the district on the early hours of August 12, sweeping away houses mostly made from tin-sheet and bamboo. The region is considered one of the poorest in India.

Tanweer Alam, a businessman from Belwa village, 10km from Kishanganj district headquarters, said his business was affected badly, as cement kept in his warehouse was washed away. "The government claims it has distributed food packets but they have not reached our area. Many of the government claims are not true. People are helping each other as part of the community initiative," he said. Kamarmoni village, 5km from Kishanganj district headquarters, also witnessed widespread destruction, with houses, animals and crops washed away by the marauding waters. Hasan Jawed, a local journalist in Kishanganj, said that nearly three million people in the region were in need of urgent help. "No central government funds have come through.

The state government and the district administration were also late in their response," he said. "Transportation is still in disarray, there is shortage of diesel and petrol as there is no fuel in petrol stations, while telecommunications have partially been restored," he said. Jawed runs a Facebook and Whatsapp group called Khabar Seemanchal that has helped in the dissemination of

information regarding government relief and rehabilitation work. The district magistrate is among the 10,000 members on its WhatsApp group. Three rivers Mechi, Mahananda and Kankai pass through Kishangunj, bringing flood waters at regular intervals.

Jawed said that successive governments have failed to implement measures to check flooding in the region. Maulana Asrar-ul-Haq Qasmi, a member of parliament from Kishangunj, said that he wrote a letter to Modi and Chief Minister of the state Nitish Kumar on August 12, asking them to send in the army. Yet, he said he had received no response. "Had they listened to me, we would not have seen this day. So many lives could have been saved," he told Al Jazeera by phone. Having reached a flooded area via Nepal, the 75-year-old Congress party MP described the situation on the ground as really bad. "Villages after villages have been washed away," he said.

### **India: Heavy rains, floods continue to batter Assam, West Bengal, Bihar; several dead, millions displaced**

<http://indianexpress.com/article/india/heavy-rains-floods-continue-to-batter-north-india-several-dead-millions-displaced-bihar-assam-west-bengal-4800304/>

Heavy rains, inundation, and floods continue to wreak havoc in India, with the death toll rising in Assam, Bihar and West Bengal this week. Over a crore people have been affected by the situation, with many shifted to relief camps and temporary shelters. Train and rail services of the Eastern Railway have also taken a hit, with many lines inundated or damaged in the rains. Assam The number of lives claimed by the floods in Assam has touched 123; 11 more deaths were reported on Wednesday. Nearly 33.45 lakh people in 24 districts of the state have been affected till now. Dhubri is the worst hit district, with 8.5 lakh people affected, followed by Morigaon (5.1 lakh). According to the Assam State Disaster Management Authority (ASDMA), 304 relief camps have been set up so far.

Assam Chief Minister Sarbananda Sonowal met Prime Minister Narendra Modi on Wednesday to appraise him of the situation. He requested the prime minister to set up an inter-ministerial team headed by a cabinet minister to visit the state and take stock of the situation. The water level of the Brahmaputra has receded, and is below the danger mark in Dibrugarh, but is still flowing above danger levels in Jorhat, Biswanath, Kaziranga, Tezpur, Morigaon, Guwahati, Goalpara and Dhubri. In Kaziranga National Park, nearly 59 per cent of the area remains inundated, an improvement from the 90 per cent it was three days ago. Over 100 anti-poaching camps remain under water. Bihar The death toll in Bihar has risen to 72, with over 73 lakh people affected by incessant rains and inundation. Fears of floods have gripped the state, after at least 14 districts in the north were submerged, the latest being Gopalganj. Yesterday, a pregnant lady delivered a baby on a rescue boat with the help of NDRF personnel in Madhubani district.

Chief Minister Nitish Kumar and his deputy Sushil Kumar Modi were to conduct an aerial survey of the Bettiah and Valmikinagar areas yesterday, but were forced to abandon their plans

due to bad weather. They are currently monitoring the situation from Patna. So far, 2.74 lakh people have been relocated to higher ground, while 1.16 lakh people have been taken to relief camps. West Bengal The toll in West Bengal hit 32 on Wednesday. Over 14 lakh people have been affected in six northern districts of the state, namely Malda, Alipurduar, Jalpaiguri, Cooch Behar and South and North Dinajpur. The state government has set up more than 600 relief camps, while NGOs have added at least 800 till now. NDRF and SDRF teams have been deployed in the region to help with rescue efforts.

In a statement, West Bengal Chief Minister Mamata Banerjee said: “We have to rescue the people first and only after that we will start evaluating the magnitude of damage due to the floods. I have already spoken to the prime minister and home minister.” Meghalaya Around 1.2 lakh people have been displaced in the West Garo Hills district of Meghalaya due to floods caused by the rising of the Brahmaputra tributary, the Jhingam River. “A total of 136 villages in Selsella block along with 3-4 villages in Tikrikilla blocks have been affected by the recent flood. Over 1.2 lakh people have been affected and a total of 22,898 households were hit in the current flooding of the area,” district deputy commissioner Pravin Bakshi was quoted as saying by PTI. Relief camps have been set up and the SDRF has deployed teams for rescue operations. Bengaluru Meanwhile, the capital of Karnataka received the highest rainfall in a day in August in 127 years on Tuesday.

Heavy rains lashed the city, which received 12.8 cm of rain in five hours from Monday night to Tuesday morning. The worst-hit parts of the city were Koramangala, HSR Layout, Ejipura, Jayanagar, JP Nagar, BTM Layout, Bannerghatta Road and parts of Indiranagar. While no deaths were reported, power lines were snapped, vehicles submerged, streets were flooded and trees were uprooted. Uttar Pradesh On Wednesday, after taking stock of the flood situation in Dhaurahra tehsil, Uttar Pradesh Chief Minister Yogi Adityanath has directed district officials to ensure effective relief measures are taken for the people who have been affected. “Any laxity in this regard would be taken seriously,” he has told them. He had previously conducted an aerial survey of Gonda, Shrawasti, Balrampur and Bahraich districts.

### **Bihar: We don't talk of sustainable development anymore: Prof GD Agrawal**

<http://www.governancenow.com/news/regular-story/we-dont-talk-of-sustainable-development-anymore-prof-gd-agrawal>

Shortly after prime minister Narendra Modi vowed to save the Narmada river in Madhya Pradesh, a two-day conference has been organised by the Bihar government in New Delhi to conserve and rejuvenate river Ganga. Eminent environmentalists, activists and religious leaders gathered at the first day of the event led by Bihar chief minister Nitish Kumar. The conference on ‘Incessant Ganga’ held discussions on sedimentation -- a colossal impediment to incessant flow of river Ganga. Former environment minister Jairam Ramesh, eminent environmentalist

Professor GD Agrawal, and water activist Rajendra Singh were also present at the event. Experts criticised the Narendra Modi government for the excessive exploitation of Ganga and not understanding the river's hydrology.

Slamming the central government, GD Agrawal said, "There is a term called sustainable development, which has been missing from the past few years. We hear only of development, and not sustainable development. When you talk of Ganga you must understand the needs and rights of everyone -- including plants, animals and the river itself." Talking about the problem of siltation, Bihar CM Nitish Kumar said, "Siltation is destroying Ganga's ecology and health. It is causing devastating floods in Bihar every year." He urged for a countrywide policy on silt management and asked the centre to consider removing the Farakka barrage in West Bengal. Huge amounts of silt get deposited in 200-250 kms of the Ganga river bed because of the pressure from Farakka barrage. As a result the depth of the river in the area has decreased, which causes massive floods during the monsoon. It also causes adverse effects on the ecosystem.

Disappearance of Hilsa, a fish found in Ganga, is one of the problems that fishermen face. The Farakka barrage was commissioned in 1975 and has a total of total 123 gates. But many of its gates have outlived their economic life and serviceability. "Only 60 gates are functional at present", said the panelists at the event. Former environment minister Jairam Ramesh talked about the need to look at alternative solutions to solve the Farakka barrage problem. Criticising the water highways project, waterman Rajendra Singh said that the government is ignoring river's health in the name of development and inland transport. "Ganga has been reduced to ponds, canals and lakes in plains. Still the government is going to launch 16 new projects on the river... This kind of development will be an injustice for the society as well as for the nature," he said.

### **Bihar: Efforts on to boost fish production in Bihar: Awadhesh Kumar Singh**

<http://timesofindia.indiatimes.com/city/patna/efforts-on-to-boost-fish-production-in-state-minister/articleshow/57798540.cms>

Animal husbandry and fisheries minister Awadhesh Kumar Singh said in the assembly on Thursday that efforts were being made to give a big push to fish production in the state by involving even the local societies of women. Singh said fish production in the state stood at 5.6 lakh metric tonne (MT) as on date against the target of 6.22 lakh MT. "As consumption of fish in the state is 7.02 lakh MT, around 1.42 lakh MT is imported from other states," the minister said, adding only 2.88 lakh MT of fish was produced in the state in 2010-11. Singh was giving the government's reply to the House debate on his department's budgetary demand of slightly over Rs 581 crore for the 2017-18 financial year against which cut motion had been moved by senior BJP member Arun Kumar Sinha.

The BJP-led NDA opposition members walked out of the House, demanding that the government take effective steps to stop functioning of illegal slaughter houses in the state. The minister, however, accused the opposition of making attempts to "create an atmosphere of intolerance" in the state by raising the issue of illegal slaughter houses. He said the state government is duty bound to prevent cruelty to animals for which both state and district level committees have been existing. Referring to the state government's bid to promote accelerated fish production and dairy activities, apart from rearing of cows, goats and poultry, the minister said CM Nitish Kumar has also been paying focused attention to them, and the government is duty bound to evolve and provide alternative sources of income to persons who have been displaced from jobs due to imposition of total prohibition from April last year.

### **Bihar: Fishing in Ganga's troubled waters**

<http://www.thehindu.com/todays-paper/tp-features/tp-sundaymagazine/fishing-in-gangas-troubled-waters/article17410699.ece>

In Bihar's floodplains, the relationship between the fishermen and riverine animals teeters between harmony and animosity. It is mid-April and the river surface is glaring hotly at us. The Ganga at Bhagalpur, where we are, is nearly 2 kilometres wide, and on the hot day when everything seems limp with exhaustion, winged fishers are in action. Ramdev Nishad, a happy-go-lucky fisherman and friend on whose boat we are, cannot take his eyes off the little terns: they fish with raw energy and surgical precision, skimming off little river shads (Gudusia) from just beneath the water surface. The ternlets, as these birds were once called, are so accurate that Nishad cannot help but exclaim and sigh, again and again. It is nothing new for him, having fished in the Ganga for over 30 years. But he cannot but envy the bird.

"Had this bird been around in greater numbers, that would have meant the end of all fish in the Ganga!" Now a cormorant emerges near our boat, with a silver *Mystus* catfish gleaming in its beak. "And this one, too..." Nishad continues, in his dramatic and tragicomic style, "God did not give us such good eyesight, or even we would have caught more fish and been richer." Subhasis, who has been working with fishing communities in this area for a long time, says, "God has given you a brain. What about that?" Nishad is quick to respond, "The poor have less of that also. We are all stupid ( Hum sab to moorakh hai )," referring to his illiteracy. River animals and river people have a complicated relationship. There is no particular harmony of any sort, but there is no inexorable animosity either. If anything, there is a deep visceral connection between them, one that connects their tissues to river sediment—through fish.

The act of fishing, for river animals and river fishermen, is an expression of their love, which is, quite paradoxically, realised only through deception, ambush, and killing. In Bihar's Gangetic floodplains, where the 'law of the fishes' prevails, the act of fishing is also one that can lead to murder, threat, and harassment. "Make no mistake," warns Nishad while we eat fried fish, "one

day we are all going to be this fish.” For Nishad and his fisher clan living in the Naugachhia town, fish are both animate and inanimate—they live only to be caught. Among humans, the fishing community knows the river and its ways unlike anyone else. But among animals, they feel they are lag behind: nothing can match a wild animal’s instincts. The feeling of ‘backwardness’ among a community as marginalised as theirs, is not limited to the socio-political reality, but includes their shared ecology with river animals.

A dying river Illiteracy might be the least of the troubles that the Nishad or Mallah community face. For over 100 years, they were oppressed under a private fishing and boat-ferrying regime, based on extracting rents and taxes from fishing communities on the Ganga. After that regime ended, they now find themselves at the receiving end of brutalities by criminal mafia who dominate the fishery sector by setting up destructive nets and cutting off access to fishing grounds. Many fishermen are now rapidly exiting the the occupation, moving to construction labour or farm work in Punjab and Haryana. And the fate of their counterparts, the river animals, is not very different. The Ganga, despite the proclamations and chest beating, is gradually dying. Fish stocks have declined considerably, and embankment construction and waterways development (dredging and large ship traffic) continue to threaten its endangered wildlife.

In such a tight space, the relationship between the fishing community and animals teeter somewhere between desperation and animosity. Naresh, an elderly fisherman who lives in Nishad’s locality, is our philosopher and guide. “You might not believe in rebirth, but we do. I would want to be a river dolphin in my next life — there are more people who care for it.” The Bhagalpur and Naugachhia fishermen often find ways of comparing themselves with the dolphin, in a way that reflects their strongly connected fates. The rhetoric that “the Mallah fisherman will survive only if the dolphin survives” may be subject to ecological scrutiny, but carries major political traction in the conservation politics of the place. The Vikramshila Gangetic Dolphin Sanctuary, a protected area in which Bhagalpur lies, poses an additional risk to life for many fishermen.

The Forest Department staff in a bid to make a quick buck, seize their nets at whim, while entirely ignoring the highly destructive fishing gear set up by the mafia. No fishing rights to the space have been settled, so fishermen have found the best way out: always pledge support to dolphin conservation, even if it means they do not have to do anything specifically for it. Although targeted hunting has nearly stopped, the accidental bycatch of dolphins in gill nets makes up for a similar amount of mortality. With a highly damaged habitat, exacerbated during the dry season and waterway dredging, this mortality rate is expected to increase. It may be the case that an otherwise casual relationship between fishermen and dolphin has been worsened by the destruction of the Ganga, the ultimate consequence being the death of dolphins, and the erasure of the fishing community from policy makers’ agendas.

Otters are people But amid this depressing scenario, there are bonds of a strange—but hopeful—kind. As we move along the river’s side-channel, Naresh bends forward and cups his ear. “ Ud bol raha hai” , he says: the smooth-coated otters ( Ud ) in the tamarix bush on the islands are ‘talking’. Sure enough, we see two round heads looking at us through a dense reed patch along the inner channel. They squeak, whistle and flee. Then one pup and a larger otter return to the sand spit again, rolling and playing with a fisherman’s abandoned net. Soon, more otters join in, with the sentries of the pack standing erect on their hind legs every now and then, and squeaking at us. They carry on with fishing and within the next 20 minutes, the pack returns to the scrub patches. In Bhagalpur, otters are not killed or hunted by fishermen, and as a result it is easy to see them closely on the floodplains.

Many believe that killing an otter brings bad luck, and can lead to disease and deprivation. Naresh continues, “Otters are not animals, they are people. They are us — a fishing community.” River animals include humans, and river humans include animals. The line between them is artificial and thin, the stories of loss similar. The writer studies river biodiversity and fisheries in Bihar’s Gangetic floodplains. No fishing rights to the space have been settled, so fishermen have found the best way out: always pledge support to dolphin conservation, even if it means they do not have to do anything specifically for it.

### **Bihar: The Ganga’s missing dolphins**

<http://www.hindustantimes.com/static/ganga-dolphins-missing/>

The sun is riding high by the time we polish off a plate of puris and parval bhaji topped with a sickly-sweet, thickly curled jalebi. Our boatman Pramod — a tall, dark, smooth-skinned man with sharply angled features — is waiting for us on the banks of the Ganga. At the ghat, we find women in wet saris and pot-bellied, bare-chested men, immersed in the river, using tiny aluminum pots to pour the holy water over their heads. We clamber onto the boat and head east. The river, a sparkling bright green in the morning sun, stretches ahead of us. With me are Nachiket Kelkar, a young, soft-spoken researcher with Ashoka Trust for Research in Ecology and the Environment and Subhasis Dey, a spirited, deeply empathetic researcher with Vikramshila Biodiversity Research and Education Centre. Both are walking, talking encyclopedias on the ecology of river dolphins and fisheries in this region, having worked with communities on the river for over a decade.

Together, we are searching for dolphins in eastern Bihar's Bhagalpur district. Here, a 67-kilometre stretch of the river that lies between the towns of Sultanganj and Kahalgaon is home to the Vikramshila Gangetic Dolphin Sanctuary, the only reserve legally dedicated to India's national aquatic animal: the most ancient of all cetaceans, the blind, side-swimming, endangered Gangetic river dolphin or *Platanista gangetica gangetica*. The Holy River As we coast along the river, a row of toddy palms comes into view on the distant south bank. A couple of decades ago,

the river lapped at those palms. Today, the waterline is about half a kilometer away. It's our first visual marker of the extent to which flows in the Ganga have been steadily reducing: this year, the depth sensor tells us, it's at an all-time low.

Tear-shaped silt islands or diaras, dotted with clumps of sedge, grass and local vegetation, rise from the water. These islands that emerge from the river, and are reclaimed by it at will, are full of life. Two bright-beaked skimmers perch on one edge; lesser whistling teals brown an opposite edge; open-billed storks forage in the shallows; a row of hard-shelled tent turtles basking in the sun plop back into the river in sudden alarm at the putt-putt of our boat. Walls of silt rise up from the green waters on both sides of the river, pocked, like ancient computer punch-cards, with the homes of bank-mynas. The birds flit in and out, dipping and rising in a murmur. A grave greater adjutant stork wades past us, its wizened face wary as it examines us. Two more display their massive black and white wingspans further out on the diara and a fourth bird makes an awkward landing. This part of eastern Bihar, one of only three regions where storks breed, has been a breeding site for the endangered stork species. There is, reportedly, a stable population of 300 individuals here.

All along the Ganga-Brahmaputra-Meghna basin, diaras are claimed and 'owned', farmed and patrolled. The silt is as fertile as it gets, and the claim across the basin is that vegetables grown on these silt-islands are the tastiest in the world. Silt transforms floodplains into food bowls. Silt makes deltas. Silt is the silent, unassuming hero of South Asia. And the Ganga is probably the siltiest river in the world, even more than the Amazon. Tumbling down from the Gangotri glacier some 1,500 km to the north-west, in Uttarakhand's Himalayas, the Ganga begins its descent as Bhagirathi. Mixing Alakananda into itself at the multihued confluence of Devprayag, the river cleaves the Himalayan mountains, picking up massive amounts of silt along the way, and hurtles down towards the plains. Its white waters roil past Rishikesh, placate at Haridwar, and flow down to the floodplains of Uttar Pradesh.

The holy river turns putrid at Kanpur, and is so severely extracted that it is nothing but sand when it flows into Allahabad. Here, the waters of Chambal remake its flows. Defying all scientific odds, its dark waters purify a million sins at Varanasi while taking in more foul foam, fecal matter, chemicals and cadavers. And then the Ganga enters Bihar. After suffering the conurbations and confusions of modern civilization, the river is renewed. The Ghagra, Gandak, and Kosi rivers, coming down from the Nepal's side of the Himalayas, infuse it with fresh life. In Bihar it is no longer the 'holy waters of Gangotri' but the sum of its tributaries. That is its savior. It meanders now with fresh waters and braids its way through the floodplains for another thousand kilometers, down to West Bengal and Bangladesh, en route to its home in the Bay of Bengal.

We have intercepted the river in the lower floodplains. Its swatch here is arced with ox-bows and punctuated with comma-shaped diaras — silt islands that are neither completely land nor water.

Soon, the river will drink from the clouds, its flow will be largely fluvial and it will try its best to erase memories of the abominations upstream. In search of the Gangetic dolphin From the lower observation deck of this boat specially outfitted for dolphin surveys, three pairs of eyes — two experienced, one novice — seek signs of the trademark arc of soft grey, of a beak-like snout cleaving the surface to breathe, of the gentle curve of a dorsal fin diving back in: the Gangetic dolphin or “Soons,” which sounds the same as a nasally pronounced “sauce.” We'd spotted one when we had pushed away from the shore, but have seen none since. This, my researcher friends point out, is unusual — in this season, 70-100 dolphin sightings is par for this short course.

We go past the four kilometer-long Vikramshila Setu (or bridge) at Bhagalpur and past the burning ghat. The Bhagalpur Engineering College hostel comes into sight — the marker for the outer limit of safe passage along the river. Beyond the college, men on horses roam the diaras with guns and black flags in hand, waylaying boats, looting and, occasionally, even killing those who refuse to comply with their demands. Not wanting to tempt fate, we turn around and return to the Sultanganj ghat, traversing a stretch where 15-20 individual dolphins have hung around for years. Now, they are nowhere to be seen. Speculations abound in the team. Had they been hunted? Had they moved downstream? Had dredging of the river, deepening it for impending barge-traffic, disturbed them? Had they died of other causes? There were no answers yet, only alarm and concern. The Bane of the Barrage On paper, the dolphin sanctuary is a protected stretch of river but in a heavily human-dominated landscape. People all along the route, from Sultanganj to Kahalgaon, use the river for various purposes.

There are 3000 fishing families in the area that depend directly on the river, as they have for generations. Every morning for the ten days I was there we headed to the market to see what fish had come in. That was an indicator of the biodiversity of fish in the river. The Kahalgaon fish market is shaped like a sleeping ‘m’, lined with open 8ft x 10ft stalls, colored in purples, sunshine yellows, pista greens, fuchsias and electric blues. In the doorway of each stall hangs a huge scale, the weights towering beside it on the scratched, concrete floor. An ice crusher stands at the hump end of the “m” and shudders into use every hour or so, its rhythmic crushing drowning our voices. We are at Chandan's purple stall at 7 AM on a late May morning. We perch ourselves on hastily gathered rickety plastic chairs and wait for the market to come alive. The catch should have come in by this time, Chandan says. Maybe the squall of the previous night, where silt flew in from the diaras like white arrows, meant a bad night for the fishers and they'd be late.

We'd have to wait and see. Chandan has never taken to the river to fish, but his father, Dasharathji, now pushing 70, is a veteran fisherman and respected village elder. “We've been here about 200 years,” he tells us. “This is our hometown.” Back then, his family would ferry cargo and people in much bigger boats. Although they fished, they were not dependent only on fishing. But the catch was plentiful. If they put out their nets at 8 am, by noon they'd catch 100 kilos worth of fish. The fish would then be packed in ice that would arrive from Bhagalpur

before it was transported to Nabadwip and Chinsurah in West Bengal. “One year, there was so much hilsa, so much hilsa!” His face breaks into a toothy smile at the memory. “It sold for just Re 1 for a kilo, and still no one to buy!” These days hilsa caught in Indian waters rarely weighs a full kilo and sells for around Rs. 800, the price for choice cuts rising as high as Rs 1,500-2,000 in the festive season.

The river's stock of fish, according to Dasharathji, has depleted in both biodiversity and abundance. Multiple studies have confirmed that stocks have plunged between 70 percent and 90 percent in the last thirty years. What we see at the Kahalgaon fish market is no aberration — the story repeats itself the next day, and the next, and the next. We never see the weighing scales outside the stalls move, burdened by the heft of fish. With nothing else to do, two little fisher boys convert a stall into a recreation room and start up a game of carrom. The other stalls, including Chandan's, wait for fish that never come. The same eerie quiet envelops fish markets all along the Ganga. “Ever since the Farakka barrage was built, hilsa, jhinga, pangas, bachwa, seelan and other migratory fish are completely finished,” says Mantu, a 70-year-old fisherman. “We don't ever see them any more.” Every fisherman, in Kahalgaon, in Barari, in Naugachia, in Koskipur, on both banks of the Ganga, past the confluence of the Kosi, said the same. Hilsa (*Tenualosa ilisha*), the queen of fish, the prized meal in any Bengali household, used to swim up the Ganga, against the monsoon freshet, all the way to Allahabad, to spawn. The young ones would then return to the sea and repeat the spawning cycle come the next monsoon. But that changed when India built the barrage at Farakka in West Bengal. Their upward migration barred, hilsa, tiger shrimp and such plunged to near zero upstream from the barrage. This was the beginning of the collapse of fisheries in the Ganga. Fishermen are quick to identify Farakka as the root of all their ills. The barrage is definitely to blame but it doesn't explain the disappearance of non-migratory species of fish, such as *Hemibagrus menoda* known locally as belonda. The blame for that lies elsewhere. The Fishermen who don't know how to fish

In 1991, the Ganga Mukti Andolan led the effort to free the Ganga from panidars — feudal water lords who are the equivalent of zamindars in the water. They laid claim to stretches of the river and “owned” everything on that stretch, including fishing or any other use of the river. Fishers were free to choose whether to work or not. But if they worked and refused to pay up in the form of half the catch (which was the norm), they were threatened. The abolition of these feudal water-lords was necessary but freeing the Ganga from oppressive contracts turned out to be a double-edged sword. Now, anyone could fish anywhere. While that seemed like a win at first blush, it has proved disastrous for both traditional fishermen and the river's ecology. As more non-fishermen took to fishing, the number of people fishing in this part of the Ganga swelled. The fishermen of Kagzi Tola in Kahalgaon speak over each other as they rush to explain the destruction of their river as they see it. At first, they say, it was a few fishermen who came upriver from West Bengal and put out mosquito nets to catch fish. Now, instead of 10 fishers there are 100 fishers and these include non-traditional fishermen too. They all set up mosquito nets across the river for all 12 months of the year. “Earlier, one boat cast one net,” explains Dashrathji. “Now, with cheap

nets available, each boat casts ten nets.” There is a simple way to distinguish the ‘traditional’ fishermen from the free riders. Those who can weave a fishing net by hand are the real deal. “Non-fishers,” fishermen say, can buy expensive nets but they don’t know how to fish. The problem with using the the mosquito nets, they explain, is that the weave is so fine it catches everything — gravid fish, baby fish, yearlings. These baby fish — the next generation of riverine stock — die in the nets and are tossed back into the river since there is no market for such small catch. Thus, entire generations of fish are killed on a daily basis, rapidly eroding the river’s stock beyond the possibility of replenishment. If fishing in the Ganga were restricted to hand-made nets, fishermen believe, the river would be fecund still. For the part-timers, fishing is not a primary business. They depend on their fields, where they grow vegetables. Sustainable fishing is not a priority, intent as they are on making a quick buck. The traditional fishermen, however, have no land and no alternate means of livelihood. They depend on the river for all of their sustenance. “If we don’t allow the eggs to hatch, if we don’t allow the fingerlings to grow, how can we expect to eat tomorrow?” This is a refrain we hear across traditional fishing communities in the Ganga-Brahmaputra-Meghna basin. To add to the fishermen’s woes, oppressive panidars have now been replaced by armed bandits. Marauding the diaras, these gangs regularly target fisherfolk. “They waylay us with our fish and force us to cook and they take our fish away,” says Dashrathji. “If we don’t comply, they could kill us.” There are several such rival gangs, all of them armed and dangerous. The dolphin-survey team has been caught in crossfire twice, an unwitting bystander in a gang war that never ends. The case of the missing dolphins The plot thickens with the non-appearance of the dolphins. The Gangetic dolphin is almost completely blind. Evolving, as it has, in silty, murky environs for over 30 million years, it has all but lost its eyesight. Its eyes have no lenses and it can only sense the direction of diffused light. Sound is everything. It navigates, feeds, avoids danger, mates, breeds, nurses babies and lives by echolocation: dolphins send out sound waves that echo back, allowing them to sense where something is located. What effects will the plan to make the Ganga a major waterway have on this endangered creature? How will dredgers and continuous navigation by large barges and tourist ships affect its population? In March 2016, the government of India passed the National Waterways Act (NWA), which identifies 106 rivers that will be engineered into cargo-carrying waterways. The rationale is that shipping is “greener” than road traffic. But, says Kelkar, “There has unfortunately been barely any debate on the ecological and social risks the NWA poses to river biodiversity and to the communities that depend on the river.” The importance of riverine ecology, and of the livelihoods it sustains, seems to be absent from the radar of not just administrative and political circles but also prominent environmental and scientific groups. As per the plan, National Waterway 1 (NW1) will go from Haldia in West Bengal to Allahabad in UP along the Hooghly, Bhagirathi, and Ganga. It will involve the construction of more barrages along the river and heavy dredging of silt so that a width of 45m and a depth of 3m can be maintained throughout. This would enable passage for barges carrying 1,500-2,000 tonnes of cargo. "Constructing more dams between Allahabad and Haldia will convert the Ganga into big ponds," Bihar's Chief Minister Nitish Kumar said last year. “It will adversely affect the river’s

ecosystem. We should allow uninterrupted flow of the Ganga waters.” Kelkar, writing for the South Asia Network for Dams, Rivers & People, has analyzed the NWA and called out its implications. Now, as he and I sit by the Ganga watching the sun hemorrhage into the river, his observations come alive. We see a dredger silhouetted against the fiery orange shimmer of the river. It scoops up sediment from the river bed and plumes it back into the main channel of the river. This is crucial to maintaining navigability of NW1, given the Ganga's heavy sediment load — it is also a potential death knell for aquatic species. Many species of fish live, feed and breed at the bottom of the river bed and under small rocks. Dredging disrupts and scoops out these breeding and feeding grounds, endangering the survival of the species, Kelkar explains. As we travel along the river, a more sinister fallout of dredging comes to the fore. The plume that the dredger jets into the river's main channel settles further downstream and functions like a plug. This plug heightens the riverbed in the center and deepens it by the shores. Imagine a “W” shaped river bed with its elbows resting near the shores. The river, obstructed by these plugs and trying to find the path of least resistance, rushes into and over these deep channels, scouring off silt from under the concrete of the ghats. This is where locals and pilgrims take a dip in the holy river. Thus far, no one had any reason to expect a sudden, deep drop off. But since December 2015, when dredging started to become regular in the reserve, there have been twenty deaths by drowning in Bhagalpur's Barari Ghat alone — people washed away because the ground beneath their feet was replaced by swift currents. To state the obvious, dredging should not be happening in the sanctuary, much less during the vital fish-breeding season. Ongoing research has predicted that Gangetic dolphins will become extinct from many rivers without adequate flow. Dredging and vessel engines can mask the dolphins' hearing of lower echolocation frequencies, which might severely limit their ability to find food and navigate. Also, the physical upheaval of river sediment caused by dredging seems to disturb river dolphins. Writing about the negative impacts of heavy dredging on dolphins near Bhagalpur, Kelkar's team had this to say: “During intensive dredging operations, the surfacing frequency of river dolphins (breathing time between dives) reduced approximately 3 times as compared to a natural dive-rate of approx. 1.5-2.5 minutes during feeding peaks. In dolphins, this is a clear indication of stressful physiological and body conditions. Further, Ganges river dolphins are highly vocal in normal circumstances, but their acoustic activity was noted to be much lower than on an average non-dredging day. Further, river dolphin mortality due to boat propeller hits has been recorded on a couple of occasions from the same area. During the movement of tourist cruise ships, we observed that the impact of loud sounds produced by the engines lasted for over two minutes — in which river dolphin diving behaviour showed signs of suppression.” Dredging, clearly, is not dolphin-friendly. Here's a statistic that heightens the worry over a distinct depression in sightings on our days in the sanctuary: over 90 percent of the endangered Gangetic dolphin population overlaps with the proposed National Waterways. Even if the dolphins had to move, where would they go? The dredgers and barges would be everywhere. (After I left, a short survey on this stretch of the river confirmed that the dolphin sightings in short stretches around Bhagalpur and Kahalgaon have fallen 66-75 percent. There have been whispers of dolphin deaths, which are still unconfirmed.)

Falling waters Water levels in this stretch of the Ganga are at their lowest ever. But the National Waterways plan calls for more barrages. While the irrational demand for “barrages every 100 km” may not come to pass — though how the waterway will function with the proposed cargo load sans these barrages is a question worth asking — any interruptions to the flow would further fragment habitats for dolphins and migratory fish and “reduce the Ganga to ponds” in the words of Bihar CM Nitish Kumar. The plan for waterways does not seem to consider the most important ingredient for a waterway: availability of water. The Ganga and its upstream tributaries have already been dammed several times over, diverted into canals, sucked up for irrigation and syphoned off into power generation. While the monsoons make it seem like there is a “surplus” of water, it is flows in the dry season that should be the determining factor. In most of India's rivers, those flows are dismal. There is also the troubling matter of a rapidly receding Gangotri glacier, now receding at (depending on who you listen to: the government or independent scientists) 10m per year or 22m per year respectively. Either way, it is retreating and the freshwater available will at some point begin to diminish. Then there are the inherent hazards of shipping cargo along ecologically invaluable ecosystems. The consistency of mishaps in the Bangladesh Sundarbans, including an oil spill, should set alarm bells ringing. The Ganga feeds and supports 600 million people. Misguided engineering has already contributed to disastrous social and ecological outcomes (Farakka being just one case in point). Mishaps and more engineering may just be the proverbial last straw that breaks this camel's back. One evening, after crisscrossing the river, while taking depth readings and becoming increasingly alarmed at the pronounced “W” of the channel we were in, we climbed an ancient granite outcropping in the middle of the lower Ganga. Squeezing between and clambering over rocks, half-climbing a tree to reach nearly 100m above the river for a bird's eye view, we watched yet another day dissolve. It is the last day of May. The waters of the Ganga should have started to rise by now. But the depth meter shows a lower value than two months before. Either there is less glacial ice available for melting this year or whatever coursed down from the Himalayas is impounded behind dams. The Ganga's holy water is to be had in bottles bought online, channeled for farmers, and sucked up to power bright city lights. What is left for the lower Ganga? Not much. No water. No fish. No livelihood. No dolphins. The social-ecological web of the lower Ganga floodplains hangs on by a thread of hope stretched precariously thin.

### **Bihar, Uttar Pradesh and Madhya Pradesh: Reviving the Farakka debate**

<http://www.thestatesman.com/news/opinion/reviving-the-farakka-debate/164057.html>

The recent floods in Bihar and to a lesser extent in places such as eastern Uttar Pradesh and parts of West Bengal and Madhya Pradesh have again raised serious questions about the role of dams and barrages in flood protection. The massive discharges of the Sone river water from Bansagar dam have contributed to the fury of Ganga floods in an unexpected way. While this has led to a debate on dam management, what has attracted even more attention is the statement by the Chief Minister of Bihar regarding the adverse impact of the Farakka barrage on making Bihar more

prone to floods. While this is not the first time the adverse impact of the Farakka project has been highlighted, the issue being raised by a Chief Minister in rather strong terms has its own importance.

Apart from voicing the apprehension that the project by increasing the silt load in the Ganga has made it difficult for flood waters to be cleared quickly, Nitish Kumar has called for a review of the Farakka project and if such a review supports the frequent allegations of its disruptive and harmful role, the possibility of decommissioning it should be kept open. While some dam projects have been decommissioned in other countries in recent times, this is the first time that a senior leader in India has raised this possibility. There are many implications, as some of the projects now under consideration, including those which are part of the massive river link project, may have similar impacts of worsening the flood situation instead of providing protection from floods. Hence it is important to examine the old Farakka controversy in some detail.

Apart from Nitish Kumar, several other senior leaders and social activists in Bihar have spoken about the adverse impact of the Farakka project on floods and on the livelihood of fisherfolk caused by a big reduction in fish. A former West Bengal Irrigation minister Debabrata Bandyopadhyaya had said some years back that the people of Malda and Murshidabad are doomed by this project. He had said this in the context of increasing erosion of land as the river bed was clogged by too much silt. Bangladesh has all along been opposed to the Farakka project due to the adverse impacts on water availability. If our people are so unhappy with the project and the neighbours are also so unhappy, then why did we spend so much money to build the barrage in the first place? This is actually a classic case of trying to correct earlier mistakes by making bigger ones. This very expensive (in economic as well as ecological terms) story starts with the dams of the Damodar Valley Corporation (DVC). A lot of silt and sand accumulates in the lower reach of Hooghly river which was earlier flushed into the sea by the normal floods of Damodar and Rupnarayan rivers.

But this natural process was disrupted by the DVC dams. Silt deposits accumulated, reducing the water carrying capacity of the river and causing destructive floods. The navigability of the river was threatened, endangering the future of Calcutta Port. It was at this stage that Farakka Barrage was taken up on the plea that this would divert more water to the Bhagirathi above the Hooghly. But the real story turned out to be quite different and this became a case of more costly mistakes being committed in the name of correcting previous mistakes without bothering to learn. Bangladesh was soon complaining that after the diversion, the lesser flow to the Padma river led to sand accumulation in its lower reach which could even change the river flow and hence bring floods in new areas, while also causing water shortages in other areas in the lean season.

There were also reports of salt water intrusion in coastal areas and adverse impact on fisheries. It was only a matter of time before reports of adverse impacts also started appearing from several

parts of India, namely Bihar and West Bengal. In fact well-articulated advance warnings had been voiced by a high-placed official and engineer who was well informed about the region. When his warnings about the ill impacts of DVC dams started to actually appear true, he suggested that instead of building the Farakka barrage the government should consider the alternative of giving up the irrigation component of DVC and instead using this water to flush the lower Hooghly. But like his previous advice of not building the DVC dams this second caution too was not approved by government officials and big construction lobbies which decided to go ahead with the Farakka project. One can only hope that with the recent opening up of this old debate the question will be examined impartially and decisions that are most in conformity with the protection of environment and sustainable livelihoods of people of India and Bangladesh will be taken.

### **Bihar: Pearl farm: A new work culture**

<http://www.thehindubusinessline.com/specials/india-interior/pearl-farm-a-new-work-culture/article9036805.ece>

While surfing the Internet, Jaishankar, a progressive farmer of Tetari village in Begusarai district of Bihar, came to know of Ashok Manwani, a pioneer in design pearl farming. He lost no time inviting Manwani to his village to train under him. That was in 2009. Jaishankar has since harvested over 10,000 pearls in his own pond by breeding mussels from the Budi Gandak river. “I expect to sell them in one lot to a Delhi trader, who will be visiting the village later this month.” Jaishankar has even uploaded a video of his work on YouTube. Another farmer, Suyog Kawle, met Manwani in 2007 at an agriculture exhibition in Gadchiroli and soon trained under him. Kawle, who belongs to village Ballarpur in Chandrapur district of Maharashtra, started collecting mussels from the nearby Wainganga river and these are now mushrooming in a pond constructed by him.

He is yet to explore the market, but sells his pearls to the other farmers he meets at agriculture meets and exhibitions. He says the pearls sell for 250-1,500, depending on their quality. Like Kumar and Kawle, more than 500 farmers have trained under Manwani and are today earning from either pearl culture or simply breeding and selling mussels. Born into an agricultural family, Manwani had read an article about freshwater pearl farming when he was in college. Fascinated, he began experimenting on his own. He collected mussels from Morna river in Akola district but failed to develop pearls. Finally, in 2000, he underwent training at a pearl culture institute in Bhubaneswar. A year later he started teaching the art. In 2003, he met Kulanjan Dubey and together they started experimenting with different techniques for pearl culture, despite having no outside funding.

“It was not easy. Sometimes we lived in the jungles and practised on different species of mussels,” he recalls. The duo developed simple tools like a mussel opener and a wooden mussel

stand to cultivate designer pearls. They continued with their research for several years and, at the same time, created awareness about pearl farming among villagers in Maharashtra, Gujarat, Bihar, Madhya Pradesh, Chhattisgarh and Uttar Pradesh. Manwani and Dubey (now married to each other) have developed a simple technique that farmers can easily adopt. Manwani says that fish farming alongside pearl farming can increase the production of mussels. He wants more farmers to know that pearls come not just from the sea, but can also be cultivated in every village where there is a river or a pond or other water body. The Bioved Research Institute of Agriculture and Technology in Shringverpur, near Allahabad, Uttar Pradesh, invited the couple to offer training at its premises.

“We are developing different kinds of designer pearls instead of the usual round ones. It takes longer to produce and is more complicated. Designs in the shape of deities like Ganesha, Lakshmi, Hanuman, Lord Buddha and other shapes like a heart or cross are easy to do.” They even use mussel shells to make eco-friendly handicrafts like incense stands, mobile phone holders and other showpieces. The couple has received several awards for their innovative work in pearl farming. Krishi Vigyan Kendras now invite them as resource persons. Not interested in running a business of his own, Manwani says his mission is to see that even the poorest of farmers can earn through pearl culture. “That will be the ideal reward for the years of struggle my wife and I have put in,” he says unassumingly.

### **Bihar: No bridges over troubled waters**

<http://indiaclimatedialogue.net/2016/07/18/no-bridges-troubled-waters/>

Every January, fishermen at Beldour and Chautam administrative blocks in Khagaria district of Bihar take part in the rather strange practice of donating boats at the confluence of Koshi and Bagmati rivers. They collect close to 60 boats, place them in a straight line connecting the riverbanks and build a temporary pontoon bridge. “These boats are pillars and we are going to construct a bridge over it,” local boatman Gopal Yadav said. “Keeping a straight line matters or else heavy vehicles that will ply on this bridge will drown,” he added, showing off his newly acquired engineering skills. The villagers complete construction of the pontoon bridge within a fortnight by laying bamboo poles tied with ropes over the boats. Local villagers started making this bridge, locally known as Nauka Setu (boat bridge), every year since 2011 after the nearby concrete bridge, BP Mandal Setu, and a steel bridge over the rivers collapsed due to the heavy flow of the rivers.

The pontoon bridge saves the villagers a detour of nearly 150 km to reach Supaul and Madhepura districts in Bihar and also to reach Nepal. Although small buses, cars, loaded vans and even government vehicles bumpily cross this Nauka Setu, no scientific study has ever been done on how much load the bridge should be allowed to carry. The boat bridge is risky and can collapse anytime, according to Amarendra Sinha, block development officer of Beldour. This

bridge is closed or dismantled from May to December when both the rivers are in spate. “But the villagers have no option because it’s the only mode of transportation for nearly a million people from January to May,” Sinha told [indiaclimatedialogue.net](http://indiaclimatedialogue.net).

Bridges and climate change Bridges getting washed away due to floods and riverbank erosion is becoming more common in Bihar as severe weather conditions increase in frequency because of climate change. This leads to hardship for large numbers of people, who are in some places trying to cope by making temporary bridges of doubtful safety. The Bihar state government in 1991 constructed the concrete BP Mandal Bridge to connect Khagaria with the rest of the province. “Engineers artificially created the confluence of Koshi and Bagmati rivers to pave way for construction of the bridge,” river expert Dinesh Mishra told [indiaclimatedialogue.net](http://indiaclimatedialogue.net). Ever since it was inaugurated, the bridge faced mild to severe damage to its pillars due to unpredictable water flow.

Finally on August 29, 2010, the Koshi River washed away around 10 pillars of the bridge. The district administration declared the bridge to be dangerous and closed it till further notice. Several efforts were made to repair the bridge but the strong current of the river foiled every attempt. The government then decided to construct a steel bridge some distance away from the BP Mandal Bridge. The 566-metre bridge built on steel piles was constructed at a cost of Rs 1.7 million (USD 25,337) and inaugurated on June 8, 2011. Local residents named it the caterpillar bridge as it had as many as 92 pillars to withstand the strong currents of the Koshi and Bagmati rivers.

On July 16, 2012, the new bridge too succumbed to the strong current of the rivers. A 200-metre portion of the bridge was washed away. Government engineers tried to retrieve the bridge by pulling it up by ropes and chains but failed to prevent it from being washed away repeatedly. “While the steel pile bridge is beyond repair, the Mandal bridge is being repaired again,” Satyendra Kumar, superintendent engineer of the water resource department of the Bihar government, Khagaria division, told [indiaclimatedialogue.net](http://indiaclimatedialogue.net). The repair was supposed to be completed by 2016. Now, “repair work is still going on and it will take another one year to complete it,” Kumar estimates.

Many bridges in danger These two bridges are not the only ones in the state that have suffered massive damage because of raging rivers that are changing course more frequently. In Bhagalpur, the 4.7 km Vikramshila Setu on Ganga River, the third-longest river bridge in India – connecting the districts of Purnea and Katihar – is also suffering massive damage. In the same region, the 1.8 km Koshi Mahasetu inaugurated in 2012 is facing a threat because of a weakening guide dam on the eastern part of the bridge. This is also threatening to submerge at least five villages. The bridge was built to save travel time by nearly five hours between Madhubani and Supaul districts. A similar bridge between the two districts was destroyed in an earthquake in 1934.

After that, it took the government 78 years to connect the two districts. In the case of Koshi Mahasetu, the situation is so alarming that Deputy Chief Minister of Bihar Tejaswi Yadav wrote a letter to federal transport minister Nitin Gadkari to immediately help the state to strengthen the guide dam. Yadav in his letter has mentioned that even the Central Water and Power Research Station has recommended repairing the eastern guide dam to protect the Koshi Mahasetu from damage. Alarm bells started ringing for the Vikramshila Setu after its pillars started crumbling. A team of retired engineers from Tilkamanjhi University voluntarily inspected damaged pillars 15 and 16. One of the engineers, Ashok Kumar Sinha, told [indiaclimatedialogue.net](http://indiaclimatedialogue.net), “Pillars number 15 and 16 have gone down by 15 mm.

A major portion of wall around the pillars has been washed away triggering collapse threat of the bridge due to erosion caused by the Ganga.” Expert advice The Bihar government consulted Nayan Sharma, a professor at the Indian Institute of Technology at Roorkee to seek a solution to protect the BP Mandal Setu and the adjoining steel bridge. Sharma points out that he gave warning to the state government regarding the imminent adverse impact of climate change and erratic flow of rivers on both the bridges. “It’s not only about these two bridges; other bridges constructed over the rivers in Bihar need to be braced to the changing rainfall and flood patterns,” he told [indiaclimatedialogue.net](http://indiaclimatedialogue.net).

Sharma says that in his report he advised the state government to immediately strengthen the pillars of both bridges, as strong currents of the Koshi and Bagmati rivers are weakening the pillars of the bridge. Sharma also studied in detail severe erosion caused by the Ganga in Vikramshila. In his research paper, he says that at the point around 3.5 km downstream of Vikramshila Setu, there has been 1,100 metres of erosion between 2003 and 2011. The high rate of erosion makes it probable that the river will weaken the pillars of the bridge. “It needs a further detailed study,” he reiterates. Erosion is also threatening the Bhagalpur College of Engineering and Bihar Agriculture University buildings, national highway 80 and Fatehpur Masjid, his report says. “These are the findings of 2011.

The situation has changed for the worse and the state should immediately take action to control erosion,” Sharma warns. River expert Mishra points out that apart from climate change affecting the flow of rivers, the engineering of BP Mandal and steel bridge were also defective. “First, constructing a bridge at the confluence of rivers itself was a risk. Second, the engineers tried to flow Bagmati through Koshi River,” he explains. Forced confluence The Koshi-Bagmati confluence did not naturally exist at Khagaria, he claims. “Engineers created the confluence. Since Bagmati is at higher level and Koshi at a lower elevation, the former should have been merged with the latter,” he says.

The result of this was that sedimentation increased in the lower Koshi riverbed. It increased water flow in both the rivers, causing stress on the pillars of the bridges. Both Mishra and Sharma accept that bridges over the rivers are important for transportation. But the climate

change and disaster management components need to be taken into consideration to avoid damage and inconvenience. “It’s important that old bridges are readied to meet the unpredictability of rivers,” Sharma cautions. Bihar is constructing a large number of bridges under the Chief Minister’s bridge plan that funds construction of small bridges under the cost of Rs 2.5 million. The state has spent nearly Rs 191.5 billion for construction of a large number of bridges under the scheme.

A majority of these bridges are over rivers. Anil Kumar Sinha, vice chairman of Bihar State Disaster Management Authority, accepts that old bridges constructed over the rivers in the state do not have any preparedness for disasters. “We are also aware of how bridges failed on confluence of Koshi and Bagmati rivers,” he says. Sinha says that in 2014, the planning and development department of the state, keeping in view disaster management and climate change, issued a directive, making it compulsory for every department to ensure the disaster management component is taken into consideration in all works. Bihar has added the climate change component for the proposed Ganga expressway project. Experts are awaiting similar action for old bridges over rivers. Sinha says that efforts are underway to protect the bridges but they will take some time to take effect.

### **Bihar: Chief Minister Nitish pledges to usher in rainbow revolution in Bihar, asks fishermen to adopt new techniques**

<http://indianexpress.com/article/india/india-news-india/fisherman-day-cm-nitish-pledges-to-usher-in-rainbow-revolution-in-bihar-asks-fishermen-to-adopt-new-techniques-2905430/>

Pledging to usher in a rainbow revolution in Bihar, Chief Minister Nitish Kumar on July 10 identified fisheries as a key sector for growth and asked fishermen to adopt new techniques to increase output. Addressing an event on the occasion of ‘Fisherman Day’, he said the state government has launched an agriculture road map to usher in rainbow revolution in Bihar in which animal husbandry, fishery and hatchery have been identified as sectors for growth in addition to traditional farm activities. Fishery in particular has tremendous potential for growth, Kumar said and asked fishermen to employ new techniques to increase production. Bihar used to produce 2.68 lakh metric tonne of fish in 2004-05 which was not adequate to meet the domestic demand and was met by supplies from Andhra Pradesh. “Our fishermen then did not employ new techniques to enhance production of fisheries,” he said adding the state government agriculture road map of 2008 identified fishery as a key sector for growth.

Fishermen were sent for training at the expenditure of the state government to national institutes outside the state, where measures were taken for restoration of ponds and water bodies suited for fish farming. Fish seed was made available to the fishermen to boost production, Kumar said. The fish output has now increased to 5.7 lakh metric tonne. As a result of the state government’s sustained efforts Bihar has broken into the league of top four states in terms of production of

sweetwater fish, he said. The chief minister also urged the fishermen to augment fish production to meet the eight lakh metric-tonne target under the agriculture roadmap 2012-17. He also announced a proposal to set up an animal science university in Patna where fisheries will be a thrust area for study and said animal science colleges will be set up wherever required in addition to research centres. On the welfare of fishermen, Kumar said the state commission for fishermen is being re-organised to redress their problems.