

## **Bihar's flood of fury: End of Kosi civilisation?**

The quantum of the severity of this flood of fury is yet to completely seep in. Most of the areas under Kosi's new, course may now never resurface

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Over one lakh people in 102 relief camps, about 2.5 lakh houses destroyed, crops in 1.06 lakh hectare wiped off, and while the government claims it has so far evacuated nearly three lakh people, the total number of population affected has swelled to 1.2 crore.

This is day thirteen of the catastrophe that hit Bihar on August 18. And while relief measures and funds have started flowing in, it seems the quantum of the severity of this flood of fury is yet to completely seep in, even though the overflowing Kosi—the sorrow of Bihar—has been sinking most of the human habitat that has come on the way of its new, changed course.

A close look at the history of this North Bihar river, and one realises that the worst is yet not over.

According to experts and the data of rainfall and water discharged from the Bhimnagar Kosi barrage every year, an additional 2.1 lakh cusecs of water is likely to flood in from Nepal between September and October.

And what does that mean? Experts suggest that it is just the beginning of the problem, for one, the changed course of the river has swallowed millions of hectares of land and which are hardly going to resurface even after the water recedes.

Two, these inundated areas are technically in the river bed, thereby completely uprooting those living in these areas—not to talk about the loss of agriculture land, houses, livestock, ponds, wells and above all their dreams.

Three, the devastation of this magnitude is unheard in modern civilisation, with the entire Kosi civilisation on the verge of eclipse.

### **The Genesis of Disaster**

Like many other rivers of North Bihar, Kosi gathers water from Himalayas in Nepal. However, it is a trans-boundary river and flows between Nepal and India.

Kosi is also one of the largest tributaries of Ganga and after flowing through nearly 70,000 sq kilometres confluences into Ganga near Kursaila in Katihar district of Bihar.

In Nepal, this river lies to the west of Himalayan peak, the Kanchanjanga and has seven major tributaries namely Sun Kosi, Tama Kosi, Dhudh Kosi, Indravati, Likhu, Arun and Tamar. That is why it is known as 'Sapta Kosi' in Nepal.

This river has earned notoriety since time immemorial due to its unruly, turbulent and unpredictable behaviour.

On an average, it carries 70-80 million tons of silt every year and it is perhaps due to this feature, it tends to change its course after a definite period of time. This is also one of the most important differences between Himalayan rivers and rivers of Europe or America.

Many experts are therefore, of the opinion that viability of high dams on any Himalayan river is very bleak, because the heavy siltation makes barrages useless after a period of time.

Kosi has an average discharge of 55,000 cusecs of water that increases by as much as twenty times during the monsoon or flood season, thereby assuming dangerous proportions.

The speed and velocity of the river's flow is also very high, causing devastation that is most often unthinkable. As the river is relatively new, experts suggest that it has not matured enough to settle a definite course.

### **Mapping the old course**

The first attempt to map the meandering of this swift, fast and turbulent river was made by British surveyor C C English way back 1779.

According to district gazetteer of Saharsa, he tracked the course of Kosi since 1731 and the maps prepared by him suggest that the 18th century Kosi that flowed near Purnea moved westwards in the ensuing 300 years—shifting its course from from Purnea to Supaul.

On the basis of this inference, it is being said that the Kosi has come back to its 18th century course. According experts, the river that had shifted 120 kilometres from east to west in over 250 years has suddenly again reversed its course.

### **Kosi, Floods and Devastation**

Kosi and floods in Bihar have inseparable history, with the river being responsible for some of the most devastating floods caused in the state—from the one in 1954 to those in 1963, 1971, 1984, 1987, 1991, 1995 and the present flood in 2008.

According to the records available with Water Resources Department (WRD), overall 850,000 cusecs of water was discharged from the river during the 1954 flood. It was under these unprecedented circumstances that the Government of India (GoI) decided to look for a long lasting solution to the problem.

The initiative to tame this mighty and uproarious river saw India sign the historic 'Kosi Agreement' with Nepal on April 25, 1954. While Gulzari Lal Nanda signed the agreement on behalf of the GOI, Nepal was represented by Bir Shumeshwar.

The agreement envisaged setting up of a barrage by GOI. The barrage was to be located about eight miles upstream of Hanuman Nagar town; the barrage was built at Bhimnagar and it took over seven years (1956-63) to complete the work.

The terms and conditions of the agreement, however, stipulated that India would be responsible for any the repair and maintenance of the barrage. The Government of Nepal also handed over the

project area land was on lease for 193 years.

Other than the barrage, a 39 Kilometre long embankment from barrage site to Chatra in Nepal was also built to 'jacket' and tame the turbulence of this river. The 'jacketing' directed the flow of the river to the barrage and swift and fast Kosi was brought to control to a great extent.

Spurs—a diagonal structure to check the speed of current and protect embankment—were also constructed along the eastward embankment to prevent the erosion or breach in embankment.  
The August 18 Breach

While the jacketing of this river upstream barrage did prove successful in guiding and controlling the direction of the flow over the last 45 years, it was also moving towards becoming disastrous because of heavy siltation.

As this river carries heavy silt with it, in due course of time the bed of the river rose above the field itself and this, in fact, has been the typical reason of flood every year in this area.

Unfortunately enough, while all previous floods in Kosi always happened due to breach in embankments downstream the barrage, the present flood has been caused due to breach in the embankment near Kusaha which is located upstream the barrage.

According to reports available with sections of media, the signs of breach in this eastward upstream embankment were perceptible in the very first week of August itself.

The current started eroding and damaging the embankment between 12.10 and 12.90 kilometres. The officials of WRD say that the law and order situation in Nepal has under gone a change and they were not getting required amount of co-operation from the Nepalese authorities.

They justified their alleged inaction by saying that when the team of engineers visited the site at Kusaha, they were not allowed to work and were forced to flee from the site.

Gradually, the spurs near Kusaha also got damaged and finally breached on August 18, 2008 at 12.80 kilometre point. This site was about 12 kilometres away from the barrage, therefore within few hours waters flowed into the Indian territory.

With the river flowing in full swing, the surging water took no time in widening the breach by up to two kilometres the same day. With the water gushing out through the breach, the situation had worsened and within 24 hours the entire Kosi barrage was almost empty.

Although engineers tried to lessen the damage and control the discharge of water through the breach by opening 54 out of 56 sluice gates of the barrage, the current had by that time adopted a different course, making the attempt to prevent the disaster futile.

The roaring Kosi took eastward course from here and entered into Bihar through Birpur. Within hours, the water inundated Birpur, Belwa Bazar (native village of former Chief Minister Dr Jagarnath Mishra), Chatarpur, Pratapganj, Raghapur and Triveniganj of Supaul district.

The surging water moved further east southwards and engulfed areas like Farbisganj and Narpatganj of Araria district. The direction of the flow was such, that its entry into Purnea district was easily forecasted. This was exactly the route that Kosi had been flowing through in the 18th century.

As the river found no natural course in east-south downward direction, it got divided into many branches and entered into different areas inundating and marooning them.

Within a week, the water inundated Narpatganj, Ghurna, Bela, Basmatia and Bhargama Blocks of Araria District, Pratappganj, Udampur, Raghapur, Triveniganj and Chatarpur of Supaul district. Some areas of Kisanganj district were also affected.

District like Madhepura also came in the way of this river. Firstly Kumarkhand, Udakisanganj, Bihariganj, Alamnagar, Murliganj, Purni, Gwalpara, Singheshwarsthan and Sankerpur blocks of Madhepura got badly affected and people got trapped in the flood.

On August 27, flood water entered the Madhepura town itself.

Situation in these areas are fast deteriorating and condition is becoming precarious. While official figure indicates nearly 50 causalities so far, unconfirmed sources suggest that the number of deaths would be much more than what anybody would guess.

In Purnea district, blocks like Bikothi, Banmankhi, Rupauli, Dhamdaha and Amaur are either partially or totally affected by this catastrophe.

While moving east west downward direction, areas like Sonbarsha, Sourbazar, Pataghat, Banganwan and Simribakhtiarapur of Saharsha district also witnessed the fury of flood. People have lost lives, properties, homes and perhaps everything.

Kosi confluences into Ganga near Kursaila in Katihar district, therefore red alert have also been sounded to evacuate areas like Kursaila, Barari and Korha. Sources suggest that water can enter these any moment now and cause further destruction.

### **Magnitude of the Problem**

With over 20 blocks of six districts in the state badly in the grip of the ferocious flowing Kosi water, the magnitude of problem is not difficult to estimate. About 15 lakh people are trapped in different places, and there is an urgent need to evacuate them, or else the state might lose them forever.

Even if all such persons are rescued, huge numbers of relief camps are required to be set up. A rough calculation of the displaced based on the number of blocks and villages affected suggest that the state government would need to chalk out plans for rehabilitating over 1.2 crore affected population.

Rescuing the marooned population, providing relief and arranging rehabilitation is a herculean job, because almost entire infrastructure has been destroyed. Worse, the state government has neither the manpower nor the resources to meet this unprecedented situation.

The immediate question, however, is to find out enough space to set up relief camps and make arrangements for the basic needs, including adequate food, for supporting over 15 lakh people.

Carrying the entire population and shifting them to distant and safer places has never been an easy task, not to talk about running the relief camps on such a large scale and for a long time; experts in WRD suggest that the situation is likely to remain unaltered till October.

And while Prime Minister Manmohan Singh has declared it as a national calamity and aids have been flowing in—from Rs 1,000-crore package central government assistance to free rail services and relief material being supplied by the Indian Railways and financial assistance announced by the governments of Maharashtra, Delhi, the United State, Britain and Unicef—the distribution of the relief on such large scale is a huge challenge in itself.

The changed course of the river has swallowed millions of hectares of land that are hardly going to resurface even after the water recedes, posing a massive challenge of shifting and rehabilitating a huge population.

It is not hard to guess the cost of this rehabilitation programme, both in terms of money and time. And while experts say that it would be possible to bring back Kosi to its original course, what if they fail to reverse the situation?

While the failure to do so will mean that there would be sand dunes everywhere in the old course, it also means that the state and its people will permanently lose their properties, fertile lands, infrastructure, and all.

This also means that unless the situation is handled with precision care of a surgeon doing an open heart surgery, Bihar will witness a pre-1963 like situation when the Kosi belt was known for drought and famine.

The impact of this catastrophe is also manifold—the pace of development of Bihar is certainly going to come to a grinding halt, or may even get reversed.

Many would agree that history is going to repeat itself. The irony is that the international community is sitting quite and except for few announcements there has been no initiative as such to help the nation and the state tide over the disaster that is fast turning severe than the recent Tsunami.

The magnitude of devastation and destruction is such that no government will be able to tackle it single handedly. The job is enormous and response so far has been cold.

This is the time to fight back; Bihar is looking for help from all corners, all agencies and many nations. And while Chief Minister Nitish Kumar and the entire state machinery are struggling hard, so are the denizens of entire North Bihar.

Let helping hands come out and take Bihar out of this 'national calamity'.