

Hindustan Times- 09- October-2023

Sikkim flood toll hits 82 amid slush and debris

Pramod Giri

letters@hindustantimes.com

SILIGURI: Eighty-two people have been confirmed dead in the Sikkim flash floods, with 32 bodies recovered from the hill state, 46 from West Bengal, and four in neighbouring Bangladesh, officials confirmed on Sunday evening, as the toll from the disaster skyrocketed amid protracted and arduous relief operations that involved rescuers combing through river-beds and debris caked in layers of silt.

At least 140 people are still missing and the toll is expected to rise further, warned officials, explaining that the path of the Teesta river — which flows from Sikkim to West Bengal and eventually enters Bangladesh — meant that several bodies are likely to have been washed several hundreds of kilometres downstream.

Inclement weather, however, hampered search operations in a state that has largely been cut



Vehicles buried in the sand along the Teesta river in Rongpo in east Sikkim on Sunday.

AP

off from the rest of the country, as the flash floods washed away parts of the vital NH-10. Efforts within the state were also hamstrung by the widespread destruction of infrastructure, leaving northern Sikkim hemmed off from the south, with rescue teams using choppers to evacuate stranded

people.

Bikash Basnet, press secretary to Sikkim chief minister Prem Singh Tamang, said, "Around 140 people are still missing."

In West Bengal, the bodies were recovered from the Teesta river and its tributaries in Jal-

continued on → 8

Telangana Today- 09- October-2023

Kaddam project likely to see massive revamp

Total reconstruction of project's spillways under consideration

D CHANDRA BHASKAR RAO
HYDERABAD

A plan for total rehabilitation of the Kaddam Narayan Reddy project is under active consideration and its implementation, according to the preliminary estimates, is likely to cost Rs 640 crore to Rs 700 crore, according to top irrigation officials.

The State government is seized of the issue and is considering the rehabilitation of the total project with a sense of urgency, they said. The key component of the rehabilitation programme are the spillways of the project. A proposal for total reconstruction of the spillways is under consideration. The spillways component alone would cost about Rs 600 crore while the rehabilitation of other structures, including the crest gates, is likely to cost nearly Rs 100 crore.

In the first phase, the crest gates will be attended to while continuing the irrigation support to the ayacut. The counterweight technology with which the crest gates were being operated had now become redundant. Only two countries — Germany and Russia, from where the technology originated, had been using it for a long. But they too had stopped using it.

The counterweights of the crest gates would be removed as part of the first phase rehabilitation programme. All the 18 crest gates — nine of Indian technology and nine others of German technology — would be attended to in different spells. Steps would be taken to ensure that the Rabi farmers would not be af-



The reservoir, one of the oldest projects in the State, was constructed across the Kaddam river that originates from the hills of Dedra.

ected in any way. The work on the spillways would be taken up at the end of the season and the government is firm on implementing it in a time-bound manner. Certain investigations have to be undertaken to assess the stability of key structures.

The State Dam Safety review panel headed by former Central Water Commission chairman AB Pandya also inspected the status of the project and submitted its recommendations. The report is before the government for consideration.

The reservoir, one of the oldest projects in the State was constructed across the Kaddam river that originates from the hills of Dedra reserved forest in Adilabad district, is highly prone to flash floods. Taken up in

MAJOR PLANS

According to preliminary estimates, total rehabilitation of the project is likely to cost **Rs 640 cr to Rs 700 cr**

Of the total, spillways component alone to cost **Rs 600 cr** and **Rs 100 cr** for crest gates

- In first phase, crest gates will be attended to while continuing irrigation support to ayacut
- Counterweights of crest gates will be removed
- Redundant German technology to make way for new one
- All 18 crest gates to be attended immediately
- Dam safety authority report in consideration

1949, the construction was completed in 1958. It witnessed an unprecedented flood the same year (August 31, 2058) resulting in the breach of the dam. The flood flow observed was in the

order of over 5.19 lakh cusecs as against the designed capacity of 2.5 lakh cusecs. It was reconstructed with an increased spillway capacity adding nine more floodgates to the existing nine. The

gross storage capacity was also increased by raising the FRL from 212.10 metres to 213.30 metres. Similar flash floods occurred in the Kaddam River in 1995 and again in 2022. Even as the flood flow on both occasions was over 6 lakh cusecs, the project could withstand the flood fury. Again on July 27 this year, the project received unprecedented inflows resulting in operational problems with three spillway gates.

At the behest of Chief Minister K Chandrashekhara Rao, the Dam Safety Authority plunged into action and recommended alternatives for strengthening the project. The rehabilitation work on the project will commence soon, asserted the officials.

The Hindu- 09- October-2023

What caused the flood in Sikkim?

What are Glacier Lake Outburst Floods? How do infrastructure projects like the Chungthang dam affect the fragile ecosystem of the Himalayas? Can such events be predicted and prevented? What damage has the flood done in the State?

EXPLAINER

Jacob Koshy

The story so far:

More than 25 people have been confirmed dead, and many more are missing from a massive flood that resulted from a glacier-lake outburst in Sikkim in the early hours of October 4. The voluminous outflow has destroyed the Chungthang dam, which is critical to the Teesta 3 hydropower project, and rendered several hydropower projects along the river dysfunctional.

What is a glacier lake outburst?

Technically called a Glacier Lake Outburst Flood (GLOF), these are instances of large lakes formed from the melting of glaciers, suddenly breaking free of their moraine — natural dams that are formed from rock, sediment and other debris.

The South Lhonak glacier, located in north Sikkim, is reportedly one of the fastest retreating glaciers. The glacier receded nearly two km in 46 years from 1962 to 2008. It further retreated by ~400 m from 2008 to 2019. There are an estimated 7,500 glaciers in the Himalayas and GLOFs have been associated with major disasters through the years.

A report in the journal *Nature* counts the 1926 Jammu and Kashmir deluge, the 1981 Kinnaur valley floods in Himachal Pradesh and the 2013 Kedarnath outburst in Uttarakhand as examples of GLOF related disasters. Among the Himalayan States in India, Sikkim has about 80 glaciers more than any other State. Over the years climatologists have warned that they could be responsible for lake outbursts.

What triggered the Sikkim GLOF event?

There is uncertainty on this point. Satellite images from the National Remote Sensing Centre, Indian Space Research Organisation suggest around 105 hectares (about 1 square km) of the glacier-fed lake had been drained out. This was on comparing images taken on September 28, when the lake spanned 167 ha and on October 4, the night of the disaster, when it shrunk to 62 ha. On September 17, it was 162 ha. As satellite images don't reveal the depth of the lake, calculating the volume of water in the lake is challenging without physically visiting the place, according to Kalachand Sain, Director, DST-Wadia Institute of Himalayan Geology. However, water-monitoring apparatus maintained by the Central Water Commission (CWC) reports that water levels surged nearly 60 feet above the maximum levels at Sangkalang at 1:30 pm and gushed at nearly 55 kmph. This is, at the very least, thousands of cubic metres of water in a short time and being midnight, gave very little lead time for people downstream to react.

The National Disaster Management Agency reports that "...the primary reason for the sudden surge appears to be a likely combination of excess rainfall and a GLOF event. The lake is at a height of 5,200 metres with a towering ice-capped feature at about 6,800 metres to the north of and in close proximity to the lake." There is speculation that heavy rainfall might have tipped the moraine to collapse and trigger the flood but meteorological records don't reveal any evidence of such heavy rain. "There was heavy rain in south Sikkim but nothing remarkable in the northern region," M. Mohapatra, Director General, India



Heavy loss: Vehicles that got washed away in the flood lie on the sand as machinery is being used to clean mud and sand near the buildings along the Teesta river in Rongpo, Sikkim on October 8. AP

Meteorological Department (IMD) told *The Hindu*. "But on the other hand, we don't really know. At such a height there is no monitoring of rainfall."

There is also a suggestion that a series of earthquakes in Nepal on October 3, in the afternoon (whose tremors jolted several in the Delhi National Capital Region) might have played a role. "There were two tremors in the afternoon and aftershocks until at about 9 pm on the 3rd. The distance (until Lhonak lake) is about 700 km and so it's theoretically possible that this could be a trigger," said Mr. Sain. "But without a deeper study it is all speculation."

The inaccessibility of the terrain makes ground observations that provide conclusive proof difficult, he added.

What was the resulting damage?

The most visible consequence of the flooding was the destruction of the Chungthang dam. Though not a storage dam it directs water to power the Teesta 3 hydropower project. The executive chairman of Sikkim Urja, which runs the project, is quoted as saying the dam was "washed away in 10 mins." Senior officials in the CWC say that the dam is significantly damaged and the quantity of silt and water present made it difficult to estimate the extent of damage.

On Thursday, Pankaj Agrawal, Secretary, Ministry of Power, convened an "emergency meeting" to ascertain damage to projects operated by the National Hydropower Corporation (NHPC). All bridges downstream to the Teesta-V hydropower station were submerged or washed out, disrupting

communication. "The floodwater overtopped the dam of the Teesta V power station [510 MW]. All connecting roads to the project sites as well as parts of the residential colony have been severely damaged," the Power Ministry said in a statement, "Presently the power station is shut and not generating any electricity." The Teesta 3 power project is not operated by the NHPC.

One NHPC employee at the Teesta V power station lost his life. All of the organisation's other personnel at the site were safe. Works on the under-construction Teesta VI (500 MW) of the NHPC were disrupted with water entering into the powerhouse and transformer cavern. Dams and hydropower projects in downstream West Bengal were not significantly affected but were kept shut from heavy siltation that resulted from the floodwaters.

The State government has set up 26 relief camps in the four affected districts, the Sikkim State Disaster Management Authority (SSDMA) said on Thursday, with at least 1,025 people taking shelter in the eight relief camps in Gangtok district.

The flood destroyed 11 bridges in the State, with eight bridges getting washed away in the Mangan district alone. Two bridges were destroyed in Namchi and one in Gangtok.

Water pipelines, sewage lines and 277 houses have been destroyed in the four most affected districts of Mangan, Gangtok, Pakyong and Namchi.

Are such events likely in the future?

Several studies have over the years warned of the risk from GLOF events

from the Himalayas.

"Both the frequency and severity of such events are going to increase exponentially in the future. The Himalayan ecosystem is the most fragile in the world and any disruption in the way we are managing these resources will have a problematic outcome for the people of the region. Rising temperatures are leading to a wetter future and contributing to climate change led extreme events, but it is also disturbing the fragility of the Himalayan ecosystem through hydropower and other dams. GLOF is an outcome of warming of the region and this has been a major risk for the region. Once it is formed, you never know what triggers its outburst. Sikkim is an example of this," said Anjal Prakash, IPCC author and with the Bharti Institute of Public Policy, Indian School of Business.

While the Teesta river is a source of hydropower generation for several power projects, the risk of GLOF like events requires greater care in planning and executing dam and other infrastructure projects, which account for the huge amount of water that can potentially gush through the mountains.

Early warning systems are implementable, said Dr. Sain but require a coordinated approach such as multiple agencies promptly sharing satellite images (that are trained towards the Himalayas) and a network of sensors to provide adequate warning. "Unlike an earthquake, that is relatively sudden, GLOF events can be anticipated as we can monitor changes in the size of lakes. But this requires greater coordination."

THE GIST

More than 25 people have been confirmed dead from a massive flood that resulted from a glacier-lake outburst in Sikkim in the early hours of October 4.

Glacier Lake Outburst Floods (GLOF) are instances of large lakes formed from the melting of glaciers, suddenly breaking free of their moraine — natural dams that are formed from rock, sediment and other debris.

Water pipelines, sewage lines and 277 houses have been destroyed in the four most affected districts of Mangan, Gangtok, Pakyong and Namchi.

The Indian Express- 09- October-2023

Ken-Betwa river linking: Push helps clear project in time for elections

JAY MAZOOMDAR
NEW DELHI, OCTOBER 8

IT TOOK government push over the last few weeks for the Rs 44,605-crore Ken-Betwa Link Project (KBLP) to secure the final forest clearance, six years after it got the provisional nod, and just in time for the upcoming Assembly elections in Madhya Pradesh.

However, the project's wildlife clearance is under examination at the Supreme Court and it may still require a fresh environmental clearance before work can take off. Two key forest clearance conditions require KBLP to realign its canal and shift the proposed powerhouses from diverted forest land.

Facing strong anti-incumbency in OBC-dominated Bundelkhand, where Congress chief Mallikarjun Kharge kicked off his pre-election campaign this August promising a caste census, the BJP is hoping to cash in on the mega irrigation project, touted to end the water shortage in the drought-prone region.

What makes the party doubly hopeful, say insiders, is that the Congress cannot claim any "legacy credit" as the project is associated with former prime minister AB Vajpayee, who set it rolling in 1999.

Underlining that KBLP will irrigate 10.6 lakh hectares of land besides providing drinking water to 62 lakh people in Bundelkhand, Chief Minister Shivraj Singh Chouhan said in a video message on Wednesday: "The Congress did nothing for this region... They only stalled the project."

In 2011, the UPA-II government had rejected KBLP for its high environmental cost. But it was revived and granted wildlife, environmental and in-principle forest clearances in 2016-2017, under the Modi government.

Even as it struggled to meet preconditions for the final forest clearance, the Union Cabinet approved the project in December 2021, with an eight-year deadline.

As recently as July 24, records show, KBLP reiterated its plea for partial exemption from meeting

a key condition for the final forest clearance: compensation for the diversion of 60.17 sq km of forest land, by adding an equal extent of revenue or private land to the Panna Tiger Reserve (PTR).

This position has been repeated several times since July 2018, when the Ministry of Jal Shakti told the Environment Ministry that Madhya Pradesh could identify only 42.06 sq km of revenue land, and that it may consider "double of the remaining 18.11 sq km, i.e. 36.22 sq km, of degraded forest land" to meet the 60.17 sq km commitment.

By the end of July, say sources in the Ministry of Jal Shakti and the Madhya Pradesh Forest Department, "a message was conveyed" and a "hard deadline" was set, "given the limited window" available before the state went to polls.

On September 22, noting that "the transfer and mutation of only 3,414.757 ha non-forest land" was done against the requirement of 6017 ha, the Environment Ministry sought clarifications from the state on the remaining 2,792.662 ha.



A view of the Betwa river. File

On September 29, the state Forest Department replied that a "total 6,809 ha non-forest land has been identified" with a "cushion of around 792 ha... for future requirement". In addition to 3,414.757 ha, it said, 1,486.513 ha of government non-forest land has been allotted and mutated in favour of PTR on September 28.

Further, the Forest Department said, 1,298 ha of private land in the Chhatarpur and

Panna districts has been awarded by the Collector, and payment of compensation to the landowners and mutation in favour of PTR was under process. Of the 18 villages where such private land will be acquired, records show, 10 were finalised on September 22.

On October 3, the Environment Ministry issued the final forest clearance. It was a lucky day for Madhya Pradesh and Bundelkhand, said the CM

in his video message.

Conceived to divert water from the Ken basin to the Betwa basin for meeting irrigation needs and providing drinking water, KBLP requires a total 60.17 sq km of forest land, including 41.41 sq km of PTR. The total loss of 105 sq km of wildlife habitat to submergence and fragmentation will particularly impact endangered vultures, ghanals and tigers.

H S Mohanta, Additional Principal Chief Conservator of Forests (Land Management) of Madhya Pradesh, told The Indian Express: "This (selection of villages) was in the works since 2018 but everything came together in the last few weeks. The process of compensating the land owners and transferring the land will be handled by the Revenue Department, along with the project proponent, and should not take too long."

Mohanta said the project work could commence, adding that the forest clearance conditions bar "closure of dam gates and impounding of water" until all the revenue villages are relocated.

KBLP has given an undertaking that "the state government and the user agency shall ensure that the canal should be realigned to minimise the use of forest land for construction", under a forest clearance condition.

Stopping short of a similar undertaking on the condition regarding the proposed power plants, KBLP has "agreed" that the powerhouses, "which have the capacity of 78 MW, shall not be constructed in the forest area to be diverted, to avoid constant disturbance in PTR".

The red flags

These changes, experts say, amount to a change of scope of the project and will require a fresh environment clearance. "A general environment clearance condition requires any major change in the scope of a project to be reported to the ministry and approved afresh," said a former member of one of the Expert Appraisal Committees of the Environment Ministry.

"Power is a minor component (of the project) and the powerhouses concerned are not

part of the immediate scope of (project) work. I believe the canal is already aligned in a way that uses minimal forest land, but we will look into it for the best possible option," Bhopal Singh, Director General of the National Water Development Agency under the Jal Shakti Ministry, said, when contacted.

Incidentally, the Supreme Court is yet to decide on its Central Empowered Committee's 2019 report that sought thorough studies on the impact of KBLP, saying it "poses a serious challenge" to the very objective of wildlife and forest laws.

But, a state forest official argues, there is no stay order against the project either.

The Madhya Pradesh government is also supposed to carry out a fresh enumeration of trees to be felled for KBLP because the original estimation of 23 lakh trees excluded those with girth between 10 cm and 20 cm, even though most would grow to above 20-cm diameter class by the time they would be felled in seven-eight years. That recount is pending.

Millennium Post- 09- October-2023

NINE ARMYMEN AMONG DEAD

Toll rises to 33 in Sikkim flash flood, search on for missing ones

OUR CORRESPONDENT

GANGTOK/JALPAIGURI: Thirty-three bodies, including those of nine Armymen, have been recovered so far from the slush and debris of the flash flood in Teesta river that devastated Sikkim, while the search continued for the over 105 people who are still missing, officials said on Sunday.

Meanwhile, the Jalpaiguri district administration in West Bengal has said they have so far recovered 40 bodies from the downstream of the Teesta river. Officials said 10 bodies have so far been identified.

Since bodies are still being found from the slush and debris left behind by the river in both the states, the exact casualty count will be clear in the next few days after collating the details, officials said.

The flash flood, which was triggered by a cloudburst in the



Search and rescue operation underway following flash floods in Sikkim PTI

early hours of Wednesday, has affected 60,870 people. So far, 2,563 people have been rescued from different areas of the state, most of which have been cut off from the rest of the country, according to the Sikkim State Disaster Management Authority (SSDMA).

Search was underway for

105 people who are still missing. Sixty-three people are missing in Pakyong district, 20 in Gangtok district, 16 in Mangan and six in Namchi, it said.

Special radars, drones and Army dogs have been deployed for the search operations, officials said. So far, 21 bodies have been recovered in Pakyong, six

Highlights

- » Search was underway for 105 people who are still missing
- » 'Sixty-three people are missing in Pakyong district, 20 in Gangtok district, 16 in Mangan and six in Namchi'
- » 'Special radars, drones and Army dogs have been deployed for the search operations'
- » 'So far, 21 bodies have been recovered in Pakyong, six in Gangtok, four in Mangan and one in Namchi'
- » - 'Alternative routes to the state capital Gangtok are open via the East Sikkim district. However, in North Sikkim, roads beyond Mangan are cut off'

in Gangtok, four in Mangan and two in Namchi, they said.

National Highway 10, the lifeline of Sikkim, has been rendered unusable due to damage to the road surface and many bridges across the Teesta river. The opening and widening process of the stretch between Rangpo and Singtam is in progress, they added.

Alternative routes to the state capital Gangtok are open via the East Sikkim district. However, in North Sikkim, roads beyond Mangan are cut off, officials said.

The ITBP said that 56 people were rescued in North Sikkim's Chungthang, one of the worst affected areas in the flash flood.