

The Case of Kurichu in the Indo-Bhutan Context

Transboundary Hydropower Projects and Downstream Flooding

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Description

Hydropower development in Bhutan has gained considerable ground as a sector capable of contributing to the development of the country through the export of power. Some of the major hydropower projects in the region are the Tala, the Kurichu, the Basochu, the Punatsangchu, and the Mangdechu. The Sankosh project – the biggest in Bhutan - is the only multipurpose project. However, these developmental activities are often impacted by natural hazards which are common in this region due to its geography. Owing to Himalayan tectonic movements, Bhutan is prone to natural hazards including landslides. Caused by seismicity and high precipitation, landslides at times lead to the damming of steep narrow valleys of the high rugged mountains of Bhutan, as these valleys are blocked by relatively less material. The breaching of such landslide-dams can cause serious hazards.

The Conflict

In 2004, the artificial landslide-dammed Tsatichu lake (which was formed 30 km upstream of the Kurichu Hydel Project in Bhutan) burst, and water from the reservoir flowed into two tributaries of the Brahmaputra - the Manas and the Beki - spelling disaster for the people downstream. The Kurichu Hydropower Corporation authorities opened the reservoir gates to avoid major destruction to the dam and other casualties. Although the dam was saved without any major destruction, the resulting avulsion in the Manas and Beki flooded the Barpeta and Nalbari districts of Assam in the downstream. According to the Head, Water, Climate and Hazard Programme of Aranyak, the Guwahati based important organization working on environmental issues in the North-East, a significant amount of Manas's landmass and forest cover has already been washed away following excess water release from Kurichu dam.¹

The Conflict Area

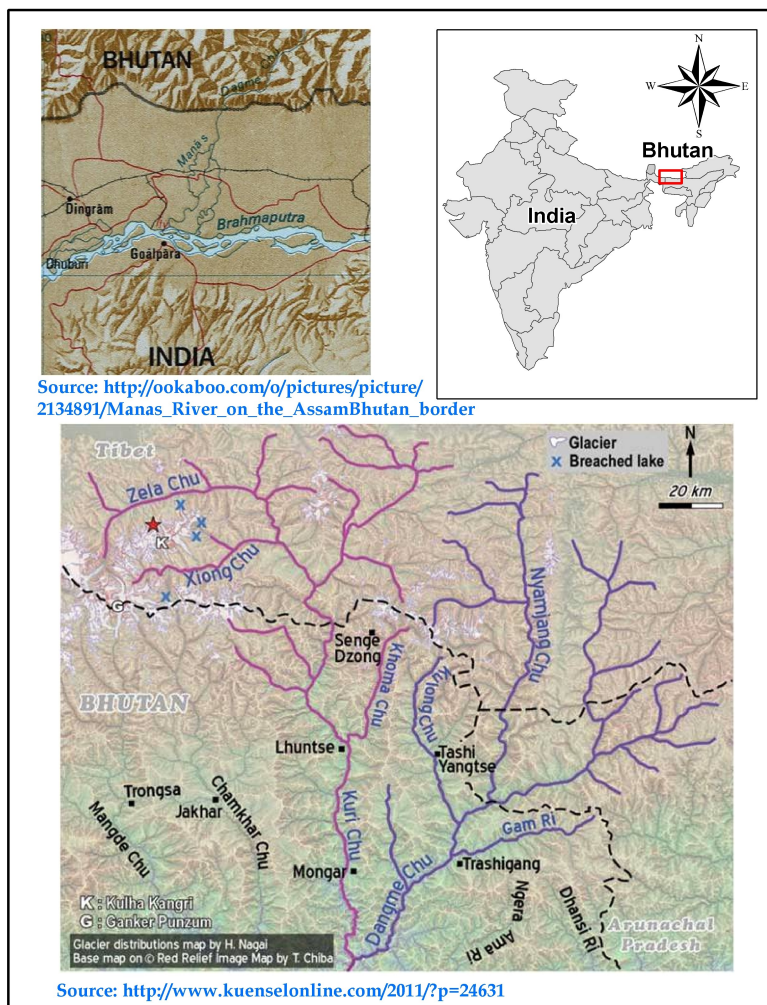


Fig. 1: Location of Kurichu dam

Current Status

The state government has implemented both structural and non-structural mitigation measures to provide reasonable flood protection. Immediate measures include cleaning of the choked mouth of the Manas and Hakua rivers, removal of debris of the damaged boulder dam from the riverbed of the Beki, installation of Roller-compacted concrete (RCC) porcupines, and creating afflux by putting wire-netting cages filled with riverbed material in the diverted channel upstream. Permanent measures costing Rs. 23 crores, including cleaning of the river mouths of Manas, Hakua and Beki with mechanical equipment, construction of a boulder dam at Narayanguri, closing the breach, as well as anti-erosion measures, have been initiated.

However, such measures can only provide a temporary solution. The unprecedented flash flood created by the natural dam breach on the Kurichu river at the Indo- Bhutan border is an international issue, and must be dealt with through international dialogue.

The Opposing Stands

While there is demand for a dialogue with Bhutan to resolve the issue amiably, the Bhutan foreign ministry has clarified through an official statement that the Kurichu Hydropower Project is a run-of-the-river scheme, not a storage scheme. Small diversion dams like Kurichu, according to the ministry, are constructed solely for the purpose of generating electricity and do not store water. While not denying the landslide dam breakage and

consequent flooding of downstream villages in July 2004, government sources reiterated that water levels in dams like Tala, Chukha, and Kurichu were normally kept below the full reservoir level to provide some cushion against a sudden rise in the inflow of water.¹ Bhutan's officials also denied that the 2007 monsoon flood in Assam was caused by excess water in dams in Bhutan, as the Central Water Commission of India had reported.

The managing director of the Druk Green Power Corporation, D. Rinzin, clarified that the waters discharged through the dams of all the hydropower projects in Bhutan are normal discharges from the rivers, and reiterated that in the event of any flushing of the silt and logs that may accumulate behind the dams, and consequent opening of the reservoir gate, prior permission from the Central Water Commission of the Indian government is mandatory. According to Rinzin, the storage capacity of the Kurichu dam is equivalent to about four hours of peaking generation, and as such, release from a reservoir of such limited capacity will have minimal impact on the overall natural river discharge.¹

High Point of the Conflict

The high point of the conflict was the raging flood due to the Kurichu landslide dam breakage, which caused extensive inundation, widespread devastation to standing crops, homestead, life and property, disruption of road and rail communication, public utilities, water supply installations, irrigation structures and flood control structures downstream. The Manas biosphere reserve was also affected. Highways were inundated and bridges collapsed. This was an instance of how water allowed to pass through a reservoir can lead to severe destruction in downstream areas.

Table 1: Chronology of main events

3 September, 2003	An artificial lake formed by a landslide on the Tsatichu, a tributary of the Kurichu river
6 June, 2004	A five-member Indian multi-disciplinary team led by the then Director of the Central Water Commission (CWC) Naresh Kumar visited the landslide dam site and recommended, among other things, to keep the water level of the Kurichu dam at or near the minimum draw down level (MDDL)
10 July, 2004	The bursting of the artificial lake (the Tsatichu landslide dammed lake) and resultant inundation of downstream villages of Assam
10 July, 2004	The channels of the two rivers, Manas and Beki, remained choked due to a breach in the Kurichu dam
1-5 November, 2004	A Joint Group of Experts (JGE) meeting on flood management between India and Bhutan, held in Bhutan (a Joint Technical Team constituted between the two countries)
April, 2005	First meeting of the Joint Technical Team on flood management between the two countries
2005-2006	The state Water Resources Department spent nearly Rs. 2 crores to reactivate the channels of the two rivers
2007	Due to non-reactivation of the choked up Manas and Hakua channel, there was a breach in the Beki embankment (due to water overload), which was already plugged in 2005
26-27 February, 2008	At the second meeting of the JGE in New Delhi, the first report of the Joint Technical Committee (JTT) was evaluated; JTT was reconstituted

13-16 September, 2010	First meeting of the reconstituted Joint Technical Committee
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(Source: <http://www.assamtribune.com/scripts/details.asp?id=jan2508/at05>
<http://www.wrmin.nic.in/index3.asp?subsublinkid=291&langid=1&sslid=373>)

Key Institutions and People

The Central Water Commission is a key Indian institution and is fully involved in the construction of the Kurichu project. The government of India and that of Bhutan have established a Joint Expert Team on Flood Forecasting and Flood Warning, which meets twice a year. According to a decision in the first meeting of the JGE, a Joint Technical Team (JTT) on Flood Management between the two countries was constituted which held its first meeting in April 2005 and submitted its report in January 2006. The JGE reconstituted the JTT with the Chief Engineer, CWC, Shillong as its India team leader. The first meeting of the reconstituted JTT was held in Bhutan on 13-16 September, 2010.¹

Scope for Dialogue

There is an urgent need to study and properly evaluate the persistent threat of flooding and erosion in the Beki river, and explore possible mitigation strategies. Vulnerable zones of flood hazard and erosion will need to be identified in order to ascertain the need for immediate short term interventions, while also seeking long term permanent solutions to the problem. The changed course of the Beki river at the Indo-Bhutan boundary needs to be restored. There is an urgent need to break the Manas-Beki combined flow by restoring the Beki river to its original course. This incident has also called for a dependable flood forecasting system for rivers shared by India and Bhutan, monitored by a joint expert team. According to a report of the hazard appraisal committee in Bhutan, the possibility of a renewed blockage of Kurichu is believed to be small because of the relatively high discharge of Kurichu. However, a breach in the newly blocked Wabrachu lake or Tsatichu lake may once again generate such flood waves downstream. So the need of the hour is to reduce the huge volumes of debris and loose material flow deposited downstream of the Tsatichu confluence, which may lead to another breach in the near future.

Tough Choices

When conflict situations arise due to water infrastructure issues, authentic and effective participation is necessary in an appropriate timeframe when decisions about the project and mitigation of its impacts can be influenced. While initiating dialogue for water conflict resolution issues like the Kurichu dam initiated flash flood, the voices of those directly affected need to be heard, comprehended, and necessary action initiated to counter negative impacts. To allay fear of the destructive impacts of dams being built in Bhutan, study teams need to be dispatched to the dam site to gather first hand information so that a correct evaluation can be made about the need for intervention and a dialogue towards finding solutions.

References

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