

The monsoon Mess in Melamchi

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Photo: NDRRMA

The debris flood on the Melamchi River has been continuous since the start of the monsoon on 15 June. Since then, more than 20 people have been killed, more than 100 homes washed away and 400 households displaced. Six highway bridges and 12 suspension footbridges have been swept away. The \$700 million Melamchi Water Supply Project has been damaged even before it came into full operation, and will need expensive and extensive repairs.

Basanta Adhikari, Associate Professor of Engineering Geology has just returned from an inspection visit and spoke to Nepali Times.

Nepali Times: From your trip, what appears to be the main cause of this continuing flood?

Basanta Adhikari: Due to the weather we could not fly to the headwaters, but looking at videos, it seems that there was always a large amount of glacial and fluvial debris accumulated at a place called Bhremathang. Since the muddy flood is continuous, I am certain it cannot only be attributed to the landslide on 15 June that blocked the river. All that debris that had accumulated is being constantly washed down.

How much debris are we talking about? And what is it made of?

That calls for more study. But there seem to be multiple thick layers of sand, mud, and boulders that have been brought down from the mountains and collected in a relatively flat area. It is also possible that thousands of years ago, a landslide blocked the Melamchi, leading to an accumulation of sediment in what is now a dried-up lake bed. Besides this, this could also be part of a glacier that has receded. These are all just possibilities, nothing can be said for sure until further research is done.

How long will there be a risk of more floods threatening the Melamchi project headworks and downstream valleys?

Looking at the debris field there, it is likely that the effect will be quite long-term. Every time there is heavy rain, the loose boulders and sand will keep being washed down. The debris accumulation has to be thoroughly studied before we can say anything about its long-term effects. Only after studying the volume of the debris field can we predict how long it will affect downstream areas. Research is also needed to design mitigation efforts.

Is there a way to stop the flood upstream so it does not threaten the Melamchi project?

We cannot stop the flow where the debris field is currently located. However, if we build a series of check dams, the danger from floods can be reduced. There is sufficient technology and manpower to do so, but it all depends on whether the government has the political will and the funding to carry it out. If preventive measures are taken in time, threats of future catastrophes can be minimized.

What lessons can we learn from the Melamchi flood?

We must thoroughly analyze what lies upstream before we design any infrastructure or settlements. What are the potential dangers? What can be done to safeguard against future disasters? When planning large-scale projects like Melamchi, we should model the potential for natural disasters, and engineer them accordingly. The Melamchi flood has reminded us of the importance of researching an expensive project like that.

The extensive damage caused by the natural disasters is a reminder that we should not take Himalayan geology for granted, and formulate policies accordingly.