Pakistan: Root causes of floods

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THE flood inquiry commission formed in the wake of the 2010 floods, under the Supreme Court's directive, has unveiled that a major cause of the devastating breach of Tori dyke was brazen negligence by the irrigation department.

The report acknowledges that most embankments are not being maintained properly under standard operating procedures.

Earlier inquiries revealed that senior officials responsible for flood management had not even read the manual. Likewise, the president's parliamentary committee on the monitoring of repair and rehabilitation of Sindh's irrigation works conceded that the dykes damaged by last year's floods cannot be fully repaired by the targeted timeline.

The work was initially delayed due to relief operations and later because of procedural delays in the approval of schemes.

The provincial government proposed 76 schemes costing an estimated Rs14bn to repair various dykes. However, the federal government provided only Rs5bn. Resultantly, the province was constrained to repair 41 high-priority sites to avert further disaster. Such is the bureaucratic procedure that only 17 per cent of the targeted work has been completed so far.

The fact that needs to be considered is that the repair and upgradation of dykes will not in itself guarantee full safety against even floods of lower intensity. Historical data of floods in Sindh indicates that last year's floods were not unprecedented in terms of their magnitude; however, the scale of the disaster was.

The Indus witnessed floods on a similar scale in 1973, 1975, 1976, 1978, 1986, 1988 and 1992. Clearly, the breaches of the dykes were not the sole cause of the devastation. In fact, the root cause of last year's catastrophe was the irreversibly altered regime of the river. The sustained flow of 1.1 million cusecs of water for 11 days at three Sindh barrages corroborates the fact that the obliteration of the river's regime has altered the flood pattern.

If the real causes are not addressed, the treatment of the physical infrastructure will leave the problem only half-solved.

That is not to deny that the repair of the crumbled infrastructure should be the top priority, yet failing to contemplate other dimensions would amount to lack of prescience.

Three key factors would determine the scale of future floods in the Indus river basin — climate change, deforestation in watershed areas and flood plains, and tampering with the river's regime. If these long-term issues are not addressed, the Indus river basin will remain under the perennial peril of disasters, oscillating between drought and flood cycles. The unpredictability of weather is an attribute of climate change. Considering that the problem has no localised solutions, adaptation is the only option. This involves a mixture of biological, social and technical responses. Alterations in

flood plains through climatically insensitive engineering works have introduced an irreversible distortion in the river regime to which floods are a sequel.

In the years before Tarbela Dam was built, Sindh would receive a flood of 300,000 cusecs almost every year — and 500,000 cusecs in a number of years. This flood pattern shaped the river regime over the decades and all social and administrative systems were developed in consonance with it.

However, in the post-Tarbela years, high- or medium-level floods became a rare phenomenon. This exposed vast swathes of katcha land for human settlements and agriculture. According to some estimates, approximately 500,000 acres of katcha land is under human settlement in Sindh. The population bulge in settled areas, coupled with a toothless administrative apparatus, has resulted in massive encroachments on the flood plains. Other structures such as bridges and barrages have choked flood plains with obstacles, interfering with the natural stream. Illegal local dykes to protect agricultural activity on the flood plains has also disturbed the river and caused it to swell with high waves near flood-protection embankments.

Since flood disasters are seldom examined from these aspects, most of the discourse is confined to administrative failures, cloaking the fundamental causes of the cataclysm. Before embarking on further engineering solutions such as big dams, the impact of existing engineering structures should be studied. Climate change can potentially render most engineering solutions antediluvian very soon. The conventional approach of solving problems through complicated solutions will only aggravate the situation. Prudence is required.

Pakistan’s once enviably well-managed watershed apparatus is now in ruins. Unbridled deforestation in the upper reaches and in the plains of Sindh and Punjab has deprived the river of its wave-absorbing shield. Pakistan is amongst those countries that have the lowest levels of forest cover. According to some estimates, the country loses some 66,718 acres of forest cover annually. Approximately 5,683 acres of riverine forest is lost every year. Riverine forests not only retard the momentum of floods, they also stabilise the riverbed and river banks.

In recent decades, these forests have been erased by the timber mafia in hilly areas and by land grabbers in the plains. In Sindh and Punjab, forests were systematically chopped down to clear land for agriculture and new settlements. Any serious effort to regenerate the lost forest does not seem afoot either. Yet a flood plain bereft of forest cover will remain susceptible to floods.

While taking the short-term steps, the government ought to mull over long-term remedies too. The Himalayan glacial ecosystem is negotiating its way through a climatic onslaught and increased melting is likely to generate even more ferocious floods in the catchments of Pakistan, India, Bangladesh and Nepal. This merits the consideration of integrated solutions.

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