From New Delhi by Ramtanu Maitra

Floods hit Pakistan: a lesson to learn

Punjab's well-constructed water control system was simply not enough to deal with September's torrential rains.

The massive flood that has devastated the plains of Punjab and the upper parts of Sindh, is a grim reminder that dams and canals alone do not serve as an effective flood control mechanism. While Pakistan is reeling from the first salvo, the coming days will pose new challenges.

The flood has already killed thousands, and at least 2 million acres of cropland had been damaged by Sept. 15. More than 50% of Pakistan's cotton crop, which still accounts for about 75% of its annual exports, has been wiped out. Damage to infrastructure and crops in Punjab is estimated at $700 million. In Kashmir to the north, the flooded region is still inaccessible, so there is not yet even an assessment of damage. At least 1 million people have been evacuated, but hundreds and hundreds of villages have been inundated and many swept away.

In the Indian subcontinent, the floods invariably occur in September, the fag end of the monsoon season. The reason is not hard to understand. Any sustained heavy rain in September leads to large runoffs—the water that flows into rivers and gulleys. Heavier rain in the earlier part of the monsoon season, in July or August, seldom does as much damage, because the ground water level, following the dry season, remains low and the ground soaks up the falling water quickly. Heavy rain in September, as occurred in the upper reaches of the Chenub River, which flows into the Indus River system, caused swelling of rivers and eventual spillover.

Under normal conditions, embankments will direct the onrushing water to a safe passage to the sea. But when the volume of water rises suddenly, because of heavy runoff, the embankments give in, causing widespread flooding.

In the case of the recent floods in Punjab, the runoff came into the rivers which were draining into the reservoir associated with the Mangla Dam. The dam, in turn, was connected to barrages and headworks feeding the irrigation canal system. However, as often happens at the end of monsoon, the reservoirs were nearly full and barrages were already carrying the maximum water they can carry. The additional load put pressure on these manmade structures, raising the fear of collapse with unprecedented consequences. This condition exists for a brief period, perhaps less than four or five weeks out of the entire year.

But this is exactly what happened when Pakistan's Water and Power Development Authority (WAPDA), fearing that massive Mangla Dam would collapse, released about 900,000 cubic feet/second of water, primarily to protect the dam. The release, coupled with continuing heavy rains in the upper reaches of the Indus River system and an inadequate warning system, resulted in massive floods in the downstream areas.

At this point, the embankments acted as impediments. The large volume of water, much more than the barrages could handle, came sweeping down the rivers and canals in the form of tidal waves. Such rushing waters not only threatened the Trimmu headworks but began to cause breaches in the embankments, endangering population centers. Efforts were made to breach the canals at points where the flooding would cause no damage. But, by and large, such efforts failed because of inadequate warning time and lack of preparation.

The Punjab floods are only apparently similar to Bangladesh floods. In Bangladesh, the rivers are not controlled, they are generally much wider, and they are more shallow, resembling saucers due to topography and heavy silting. When the upper reaches of the Bangladeshi rivers receive sustained torrential rains, these rivers spill water all across the plains of Bangladesh.

In Pakistan, however, there exists a very well-constructed water control system, which works fine when the monsoon rains are distributed somewhat evenly. But, in case of freak events like heavy rains in September, the water control system almost appears as a disadvantage.

To prevent a repeat of these disastrous floods, the WAPDA will have to develop floodplains where huge amounts of water can be stored to replenish the water table and channel the rain in a beneficial way. This will entail constructing lockgates along the embankments of the floodplains.

Meanwhile, residents of Punjab, most of whom are poor, are now trying to pick up the pieces, to make do with what is left, and begin again. In the coming days, the floodwaters will recede, but the country will face the problem of contaminated water which invariably leads to large-scale epidemics.

Reports from Pakistan also indicate that the existing foodstocks are vanishing fast and a famine-like situation is about to develop. The problem is compounded by the fact that the land will not be tillable as soon as the floodwaters recede. A drying period will be necessary before the land becomes arable again.