

PREPARING FOR THE FLOODS

Relevant for: Environment & Disaster Management | Topic: Disaster and disaster management

The recent floods in Kerala saw heroic rescues from [raging rivers swollen by unprecedented rains](#) — and the opening of shutters of major dams. There were allegations of ‘human blunders’ while the government said it could have done little else. The truth is that India has not learnt its lessons from recent floods, in Assam, Bihar and Tamil Nadu, and without addressing the underlying causes, history will repeat itself; if not in Kerala, elsewhere.

Three factors stand out.

In Kerala, as elsewhere, more flooding was caused by emergency releases from dams that were full. Despite forecasts of more rain, there were no controlled releases. World Bank analysis while preparing the National Hydrology Project (NHP) in 2015 showed that although weather forecasts are more accurate now, dam managers (especially bureaucrats) are reluctant to authorise advance controlled releases.

Keeping dry: On Kerala floods

This is partly because operating schedules are not based on predicted rainfall. These usually specify that dams must be filled up as soon as possible (because rain is not guaranteed later in the season) and must be full by the end of the monsoon (for the summer). But the world has moved to dynamic reservoir operations based on weather forecasts. While Bhakra dam’s managers switched to this after much persuasion, others in India have not because of the memory of notoriously inaccurate weather forecasts.

The political leadership and the bureaucracy too do not tolerate mistakes. Therefore, dam managers are reluctant to risk their careers and order controlled releases in advance.

The NHP is improving hydro-meteorological and weather forecasting systems across India but unless dam managers feel free to take credible risks, these will not be used for dynamic reservoir operations. A ‘plan B’ is also needed for water scarcities such as basin-scale water modelling and analysis supporting contingency planning (inter-basin transfers, linking canals to intermediate storage structures, and water re-allocation to higher-priority uses). None of these exist in India today.

In the badly-affected Tiruvandoor area of Chengannur in Kerala, none of the 23 small streams (Pravinkoodu to Tiruvandoor area) and a larger stream (*thodu*) called Madanthodu exist today, having been filled-in and encroached. This caused the Pamba river to flow on the roads and wreak havoc. This is the story across Kerala: roads, railway lines and housing colonies being laid and built without regard for natural water ways, but with formal planning permission. The State Department of Inland Waterways focusses on large waterways while district and local panchayats have no mandate or interest in maintaining these to reduce flood risk. The State Disaster Management Agency also ignores them.

Kerala’s trauma

River-basin specific flood inundation modelling with climate change simulations is a necessary first step to understand the full impact of potential unprecedented flooding. This includes worst-case scenarios such as twice the maximum historical rainfall, as was recently done by a Department for International Development, U.K.-supported project for the Mahanadi in

Chhattisgarh. The second is for the local community to co-manage water resources with the government (by planning intermediate storage, drainage and emergency responses). The government cannot do this on its own, being an enormous task, as a seven-year European Union-funded project in Rajasthan on local integrated water resource management found.

There must be massive awareness generation, to ensure that airports are not extended into river floodplains (an example being Chennai airport and the Adyar river), that road culverts let storm water through without hindrance, and that excess water is not blocked but allowed to saturate the soil strata (especially of sloping land) so that it does not cause mudslides (including the *urul pottal* that devastated hillsides in upland Kerala).

Despite India being a signatory to the UN's Sendai Framework for Disaster Risk Reduction, little has changed on the ground. Disaster management has improved and [heroic efforts were made in Kerala to reduce human/animal casualties](#). Information was also shared through social and other media such as precautions to be taken after the flood. But most people were caught unawares by the ferocity of the flooding. Had such information been disseminated and absorbed earlier, disaster risks could have been greatly reduced, and everyone may well have coped better.

Kerala floods: The best of times, the worst of times

Most modern cities have elaborate flood management plans (underground flood basins and spare riverbeds in the Netherlands). But India cannot even protect known flood-plains, tank foreshores and lakes peripheries from encroachment and illegal construction.

Addressing these and other issues mentioned such as deforestation, encroachment and unplanned construction are self-evident priorities when development is viewed using the lens of climate-resilient water management (CRWM). A 2018 paper on an operational CRWM framework for South Asia defines three criteria for this.

We need to use the best-available information for decision-making. This means improved hydromet systems and weather forecasts, robust modelling of catchment water flows with simulations of different climate-related scenarios, international norms for safety factors and building codes.

We must prioritise buffers, flexibility and adaptability. This includes reviewing safety criteria of dams and canals, re-building these with higher safety factors, creating new intermediate storages, and introducing dynamic reservoir management.

Finally, we must reduce the vulnerability of the poor who pay a disproportionately higher cost in calamities.

Kerala has a unique opportunity to plan its future with a renewed awareness of the potential impact of climate-linked events. With more such extreme climate events likely in the future, it is better to be prepared than to be caught unawares — again.

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