



NIA'S Response Protocols for Overruns of Cyclones, Monsoons and El Niño

NIA has mature response protocols for overruns of cyclones and monsoons for reservoir and diversion irrigation systems observed by stewards on the ground. Cyclones and monsoons bring intense rainfall in watersheds that evolve into torrents in floodplains that generate deluge—both with threats of devastation. Torrents and deluge devastate irrigation infrastructure (e.g. silted reservoirs), agricultural areas (e.g. rotten crops), and habitation areas (e.g. shuttered houses).

In reservoir irrigation systems, keeping the dams safe from crumbling due to overtopping caused by cyclone and monsoon floods is a primary concern. NIA, as the operator on the Pantabangan and Magat Reservoir Dams, execute pre-emptive spill when torrential rainfall is eminent and reservoir stage is critical. This pre-emptive spill intends to decrease reservoir level to avert dam overtopping and to prune spillable flowrates to avert aggravating flooding in the floodplains.

How much and when to spill consider reservoir stage, floodplain situation (river stages), and predicted and real-time flood inflow into the reservoir. A flood forecasting system, composing of telemetered rain gauges in the watershed and staff gauges in the reservoir and flowpoints, supports the decision process. Several hours before executing pre-emptive spills as well as emergency spills, NIA activates the flood warning system to alarm vulnerable communities of the events.


In diversion irrigation systems, protecting the canal network from inadvertent siltation due to incursion of silt-laden flood flow is a foremost concern. Relevance of this concern draws from the fact that conveyance efficiency of irrigation canals declines when sedimentation starts to alter canal shape and profile. That is why irrigation operations policies underscore closing main intake gates and ajarring weir sluice gates ahead of flood buildup, to dispel siltation onslaught.

Another operations policy is suspension of water releases or diversions during and after intense rainfall on-site irrigation areas to avoid intensifying flooding extent. This also conserves water in the reservoirs, which is likewise a concern under pre-emptive spill, to ensure adequate storage for the ensuing dry season cropping. Anticipated rainfall for pre-emptive spill events may not come however—resulting in foregone benefits and water crises for dry season irrigation and domestic uses.


A standard post-disaster action involves assessment and reporting of extent of wind and flood damages within 48 hours after cyclone episode, as bases for reconstruction. NIA's reporting of reconstruction cost includes that for emergency remedial works (classified as Type "A") and for regular permanent works (classified as Type "B"). Besides cyclones and monsoons, NIA sees that El Niño episode has also become a regular threat so it also established standard response on water supply below normal.

NIA already has the procedure for setting up irrigation programmed area during El Niño events, which takes into consideration forecast reduction in rainfall. This intends to minimize exposure to crop damages (area) and losses (yield) vis-à-vis dramatic reduction in rainfall and streamflow, which stretches the dry season period. NIA's long-term intervention on this matter is the putting up of water augmentation systems like drainage reuse, interim reservoir and water pumping facilities.

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