

Executive Summary

Flood is one of the natural calamities that India faces almost every year in varying degree of magnitude. The frequent occurrence of flood can be attributed to various factors, including wide variation in rainfall over time and space and inadequate carrying capacity of rivers. As per Working Group on Flood Control Management Programme for the XI Five Year Plan (2007-2012), the total flood prone area worked out to 45.64 million hectare (m ha).

Government of India has set up various Committees for management of flood like Rashtriya Barh Ayog (राष्ट्रीय बाढ़ आयोग), Task Force 2004 and Working Group on Water Resources for XI Plan. Government has also framed National Water Policy 2002 and 2012 to govern the planning and development of water resources and their optimum utilization. The reports of the above committees/policies gave certain recommendations for management of flood in time bound manner. To achieve the above recommendations, schemes for flood control viz. Flood Management Programme, Flood Forecasting, River Management Activities and Works related to Border Areas and Emergency Action Plan for Dam were implemented.

The Performance Audit on “Schemes for Flood Control and Flood Forecasting” examined whether schemes for flood control and flood forecasting were efficient and effective; and whether the review and oversight mechanisms were effective.

We sampled 206 Flood Management Programme projects, 38 flood forecasting stations, 49 River Management Activities and works related to Border Area projects and 68 large Dams, in 17 selected States/UT during 2007-08 to 2015-16.

Financial Management of Flood Management Programme (FMP)

There were inordinate delays in 48 projects of four States ranging between two to 21 months in releasing first instalment of Central assistance to State Governments after approval of Empowered Committee.

(Paragraph 2.4)

An amount of ₹ 600.92 crore along with interest of ₹ 18.30 crore recoverable as loan from the State Governments for not releasing the Central assistance within 15 days to the executing agencies, was not recovered by the Central Government.

(Paragraph 2.5)

Funds amounting to ₹ 171.28 crore in six projects of five States were not utilised and remained parked for the period ranging between 15 months to more than 60 months. Funds amounting to ₹ 36.57 crore in three States were diverted by the implementing agencies for works not approved in the Detailed Project Reports.

(Paragraphs 2.7 and 2.8)

An expenditure amounting to ₹ 18.12 crore incurred in the previous financial year before its approval by Empowered Committee was included in the cost of project in contravention of clause 4.10.3 of Flood Management Programme guidelines. Further, an amount of ₹ 19.99 crore was released in excess in two projects in Bihar and Uttarakhand.

(Paragraph 2.9)

State Governments did not ensure submission of audited statements of expenditure and Utilisation Certificates within stipulated time before releasing Central assistance.

(Paragraph 2.11 and 2.12)

Execution of Flood Management Programme

In eight out of 17 States/UT the flood management works were not taken up in an integrated manner covering entire river/tributary or a major segment of rivers/tributaries and the Preliminary Project Reports/Detailed Project Reports (DPRs) were not prepared in accordance with the scheme guidelines. There were huge delays in completion of FMP works which ranged from 10 months to 13 years due to delay in approval of DPRs by Empowered Committee/Inter-Ministerial Committee, leading to technical designs becoming irrelevant at the time of actual funding.

(Paragraph 3.2)

There were delays in completion of FMP projects due to non-release/timely release of funds (Central share/State share) and due to non-acquisition of required land.

(Paragraph 3.3)

Deficiencies were noticed in contract management viz. execution of work without call of tender, award of contract to large number of contractors, splitting of works, etc.

(Paragraph 3.4)

In four projects at Arunachal Pradesh and Uttar Pradesh, the actual quantity of work executed was below the approved scope of work. In four projects expenditure of ₹ 9.78 crore was incurred without the approval of the Competent Authority. GI wires valuing ₹ 25.40 crore remained unutilised in one project of Himachal Pradesh. Irregular grant of mobilization advance amounting to ₹ 80.36 crore in three States resulted in loss of interest of ₹ 15.84 crore. An expenditure of ₹ 34.51 crore was incurred on jeep track/inspection roads with Water Bound Macadam (WBM)/Bitumen (BT) surface over the flood embankment which was ineligible under FMP.

(Paragraph 3.5)

No programme for upkeep and maintenance of the completed projects, with separate budget provision as envisaged in the FMP guidelines was framed.

(Paragraph 3.6)

Central Water Commission (CWC) did not identify any drainage system, which needed immediate rehabilitation and adopt measures for its repair and restoration.

(Paragraph 3.7)

Flood Forecasting

Against a target for the XII Plan for installation of 219 telemetry stations, 310 base stations and 100 flood forecasting stations, only 56 telemetry stations had been installed as of August 2016.

(Paragraph 4.2)

Out of 375 telemetry stations, 222 number of telemetry stations were non-functional after installation and thus real time data was not available for the corresponding periods.

Flood forecasting data was used in formulation of flood forecast only after comparing the telemetry data with manually observed data; and in the case of mismatch between the two sets of data, manual data was adopted. Thus, CWC did not depend on telemetry data and relied on manual data even after investing in modernisation of telemetry station network for nearly 20 years. This defeated the purpose of establishment of telemetry equipment for meeting the requirement of real time data collection, its transmission and flood forecast formulation.

(Paragraph 4.4)

No flood forecasting stations have been established in Tamil Nadu. In XII Plan, action plan for installation of 41 telemetry stations in Tamil Nadu was prepared (July 2016) but tenders remained to be finalised.

(Paragraph 4.5)

In Odisha, non-maintenance of water level in Hirakud dam as per the rule curve and simultaneous opening later on of 50 flood gates caused heavy discharge of water resulting in flooding in downstream areas. In Uttarakhand, the flood forecasting could not be issued in time due to incorrect fixation of warning and danger levels.

(Paragraphs 4.8 and 4.9)

Other Schemes for Flood Control

There were huge delays in completion of River Management Activities and Works related to Border Areas projects which were long term solutions for the flood problems of Assam, North Bihar and Eastern Uttar Pradesh. There were discrepancies in execution of works like irregular award of work, splitting of tenders, payment at higher rates.

(Paragraph 5.2)

Out of 4,862 Large Dams, Emergency Action Plans/Disaster Management Plans of only 349 (seven *per cent*) large dams had been prepared (March 2016). Further, only 231 (five *per cent*) large dams evolved operating procedure/manuals. Out of 17 States/UT only two States

had fully carried out the pre and post monsoon inspection of the dams, three States had carried out the inspections partially and remaining 12 States had not carried out these inspections. Dam Safety Legislation initiated in 2010 has not been enacted till August 2016. Programme for maintenance of dams were not prepared and adequate funds were not provided to carry out structural/repair works.

(Paragraph 5.3)

Implementation of the recommendations of Review and oversight Committee for Flood Control Measures

The recommendations of Rashtriya Barh Ayog with regard to identification of area affected by flood in country remained unfulfilled. Scientific assessment of flood prone areas had not been completed in any of the 17 States/UT.

(Paragraphs 6.2 and 6.5)

Only Bihar and Odisha out of 17 States/UT had prepared Frequency Based Flood Inundation maps for the flood affected areas.

(Paragraph 6.6)

Morphological studies, with a view to achieve better results in building, renovating and maintaining revetments, spurs and embankments to control and mitigate disasters caused by floods, were not completed by any of the 17 States/UT.

(Paragraph 6.7)

Ten States had not prepared Comprehensive Master Plan for flood management and prepared their flood management projects on selective basis.

(Paragraph 6.8)

Three States had enacted Flood Plain Zoning Act, but demarcation of flood zones was yet to be done.

(Paragraph 6.9)

Monitoring and Evaluation

No performance evaluation was conducted for the projects in five States (Bihar, Haryana, Himachal Pradesh, Jharkhand and Odisha). Three State Governments (Manipur, Sikkim and West Bengal) did not take any action for rectification of the deficiencies pointed out during the performance evaluation of 26 completed projects under Flood Management Programme. Concurrent evaluation of projects under Flood Management Programme was not conducted in accordance with schemes guidelines in nine projects under Flood Management Programme in three States (Assam, Himachal Pradesh and West Bengal).

Remote Sensing was not used in the monitoring of projects under Flood Management Programme.

(Paragraphs 7.3, 7.4 and 7.5)

During site visits carried out in the 17 States/UT, various deficiencies were noticed in the structures created under 14 projects under Flood Management Programme in 11 States. In 23 dams of six States deficiencies relating to spillway gates, check Dams, weed growth and encroachment in downstream and low lying areas of Dams, seepages, etc. were also noticed.

(Paragraph 7.7)

Recommendations

Based on the audit findings, following recommendations are made:

- i. *Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR) may release adequate funds/reimburse funds in timely manner as per FMP guidelines and may impress upon State Governments to release funds to executing agencies in time bound manner.*
- ii. *MoWR,RD&GR may keep strict vigilance on utilisation of funds by State Government and executing agencies so as to avoid parking and diversion of funds.*
- iii. *MoWR,RD&GR may release/reimburse the funds to the State Governments only after ensuring receipt of audited statements of expenditure, Utilization Certificates and other requisite documents.*
- iv. *MoWR,RD&GR may approve the projects under FMP after ensuring that the projects are formulated in an integrated manner covering entire river/tributary or a major segment of rivers/tributaries.*
- v. *MoWR,RD&GR may approve the projects under FMP after ensuring that the Benefit Cost Ratio is worked out correctly as per guidelines in this regard.*
- vi. *MoWR,RD&GR may advise the State Governments to make efforts for early completion of delayed projects and completion of new projects in stipulated time.*
- vii. *MoWR,RD&GR may take adequate steps to release the funds after ensuring acquisition of required land.*
- viii. *Central Water Commission (CWC) may devise a time bound action plan to speed up the formulation of flood forecast on real time data communication network by making all the telemetry stations operational and take suitable steps to install all the targeted telemetry stations.*
- ix. *CWC may ensure that the warning and danger levels have been fixed at appropriate level so that flood forecasting could be made correctly and timely.*
- x. *MoWR,RD&GR may prepare a time bound action plan to accelerate the completion of all the long term River Management Activities and Works related to Border Areas (RMABA) projects to facilitate the long term solution to the flood problem of Assam, North Bihar and Eastern Uttar Pradesh from annual floods.*
- xi. *MoWR,RD&GR may, in consultation with State Governments, devise a time bound action plan for preparation and implementation of Emergency Action Plans including preparation of inundation maps and hydrological studies for all the large dams in the country.*

- xii. *MoWR, RD&GR may advise the State Governments to prepare Standard Operating Procedures for dams and carry out the prescribed pre and post monsoon inspection of the dams.*
- xiii. *MoWR, RD&GR may persuade the State Governments to prepare a time bound action plan to comply with the recommendations made by Rashtriya Barh Ayog, Task Force 2004, Parliamentary Standing Committee on Water Resources and National Water Policy 2002 and 2012, and factor these recommendations in the release of funds in the various schemes of Central Government.*
- xiv. *MoWR, RD&GR may take up with the States to enact the Flood Plain Zoning Bill and implement it in a time bound manner.*
- xv. *MoWR, RD&GR may conduct performance evaluation and concurrent evaluation of all FMP projects as per FMP guidelines.*
- xvi. *MoWR, RD&GR may consider increasing the use of Remote Sensing Technology in the monitoring of FMP.*
- xvii. *CWC/Ganga Flood Control Commission may ensure quality tests on the quality of construction materials and works during field visits.*
- xviii. *MoWR, RD&GR may persuade the State Governments to immediately review the issues relating to damages/washing out of already constructed structures and take appropriate action for construction works not taken up.*

