

Executive Summary

Maharashtra with a geographical area of 308 lakh hectare (ha) is the second largest State in the Union of India in terms of population as well as area. Approximately, 60 *per cent* of the State's population lives in rural areas and depends largely on agriculture for their livelihood. Maharashtra is a water stressed State and depends heavily on rainfall and the vagaries of monsoon cause frequent drought in many areas of the State. Irrigation projects are important as they store rainwater for use throughout the year. The Water Resources Department, Government of Maharashtra deals with construction and management of irrigation projects in the State. Water of the irrigation projects is used for drinking, irrigation and industrial purposes.

The Government of Maharashtra formed five Irrigation Development Corporations during 1996-98 to accelerate the execution of irrigation projects. As of June 2013, there were 601 ongoing irrigation projects being implemented by the five Irrigation Development Corporations. Maharashtra has carried out a number of reforms in the management of water and is the first State to initiate water audit and benchmarking of irrigation projects. The issue of the State Water Policy 2003, the enactment of the Maharashtra Water Resources Regulatory Authority Act, 2005 and Maharashtra Management of Irrigation Systems by Farmers Act, 2005 were other water reforms initiated by Government of Maharashtra. As of June 2011, irrigation potential of 48.26 lakh hectare has been created by the Water Resources Department through 3,712 completed and ongoing projects.

The Water Resources Department projected an irrigation potential creation of 66.14 lakh ha as of June 2011 against which, irrigation potential of 48.26 lakh ha has been created through 3,712 completed/ongoing projects in the State (98 major, 259 medium and 3,355 State sector minor irrigation projects). As against the irrigation potential of 48.26 lakh ha created in the State sector, the irrigation potential utilised as on June 2012 was only 32.51 lakh ha *i.e.* 67.36 *per cent*.

During the period from 2001-02 to 2011-12, seven performance audits and 101 draft paragraphs on the Water Resources Department were incorporated in the Audit Reports of the Comptroller and Auditor General of India. The key issues highlighted by audit were absence of long term plans, non-prioritisation of projects, delays in completion of projects, commencement of work without forest and environment clearances *etc.* The present performance audit on "Management of Irrigation Projects" covering a period 2007-13 is an attempt to review not only the individual irrigation projects selected in the sample but also discuss in sufficient detail the project level planning, tendering and contract management and project implementation. The performance audit also discuss at the macro level, implementation of the Governor's directives on backlog removal, granting of approvals to projects by the Irrigation Development Corporations, the role of Maharashtra Water Resources Regulatory Authority as a regulator, maintenance and safety aspects of the dams, levy and collection of water charges *etc.* The key findings are highlighted below.

Chapter 2 Planning and Financial Management

The State Water Policy of 2003 envisaged formation of River Basin Agency for each river basin which was to have the responsibility and authority for preparation of integrated river basin plans. Based on the plans of respective River Basin Agencies, the State was to prepare a State Water Resource Plan. However, the State Water Resource Plan was not prepared for development and management of water resources in the State. Maharashtra Water Resources Regulatory Authority cleared 189 projects during 2007-2013 though the State Water Resource Plan, based on which the projects were required to be cleared, was not prepared.

(Paragraph 2.2)

The need for prioritising the completion of ongoing projects was stressed from time to time through Governor's Directives, High Power Committee and Planning Commission recommendations. It was also expected that the backlog in physical terms would be liquidated as a result of enhanced allocation to the backlog districts. However, lack of prioritisation of projects as also new projects taken up in non-backlog districts resulted in thin spreading of the resources and consequently, the Water Resources Department was saddled with 601 projects which were under execution as on June 2013 with an estimated balance cost of ₹ 82,609.64 crore. The balance cost was nine times the capital grant of the Water Resources Department for the year 2012-13. Also, there was a physical backlog of 2.34 lakh ha in four districts of Akola, Amravati, Buldhana and Washim in the Vidarbha region as of April 2012.

(Paragraphs 2.4 and 2.5)

The implementation of Vishnupuri major irrigation project, initially approved in May 1979 at a cost of ₹ 32.24 crore, was hampered by frequent changes in the scope of work. The Water Resources Department accorded four Revised Administrative Approvals increasing/decreasing the scope (construction of barrages, length of canals, pumps for lifting water etc.) resulting in delays and increase in the cost of the project by ₹ 2,419.76 crore and shifting the water from the command areas of Vishnupuri project (downstream) to the command area of Jayakwadi project (upstream of Vishnupuri project). Further, environment clearance necessitated by an increase in the irrigation potential due to construction of 13 additional barrages, was not obtained from the Ministry of Environment and Forest.

(Paragraph 2.5.1)

Chapter 3 Project Execution and Contract Management

In 37 out of 87 test-checked projects on which an expenditure of ₹ 9,078.58 crore had been incurred, complete land (forest and civil) was not acquired before commencement of works thereby depriving the users of the benefits of the projects.

(Paragraph 3.2.3)

Estimates for irrigation projects were prepared without proper survey of dam sites leading to changes in the original design after issue of work orders. In 15 out of 87 test-checked projects, improper survey before commencement of

works resulted in an increase in cost of these projects by ₹ 209.79 crore, besides delaying their completion.

(Paragraph 3.2.4)

There was no well defined system of granting administrative approvals and revised administrative approvals to the irrigation projects by the Irrigation Development Corporations. Three Irrigation Development Corporations granted administrative approvals to 63 projects amounting to ₹ 2,467.94 crore in the non-backlog districts in violation of delegation of powers and the Governor's directives.

(Paragraph 3.2.5)

Of the 601 ongoing projects, 225 projects were under execution for more than 15 years of which, 77 projects were under execution for more than 30 years. In the test-checked projects, 16 projects were under execution for more than 30 years. Further, of the 601 ongoing projects, there was a cost overrun of ₹ 47,427.10 crore in 363 ongoing projects, while in 83 out of 87 test-checked projects, the cost overrun was to the extent of ₹ 12,807.64 crore.

(Paragraph 3.2.6)

The Irrigation Development Corporations violated the provisions of the Maharashtra Public Works Manual. Of the total 601 ongoing projects, in 21 ongoing projects an expenditure of ₹ 133.42 crore over and above 10 per cent of the administrative approvals amount was incurred, while in 100 ongoing projects an expenditure of ₹ 2,367.28 crore was incurred over and above the revised administrative approvals, without the approval of the competent authority. The Government incurred a financial liability of ₹ 90.04 crore in execution of Kondhane minor irrigation project, which was taken up without regulatory permissions and other mandatory clearances. The selection of contractor was not transparent and the award of work for increased height of the dam within 33 days of the initial award was irregular.

(Paragraphs 3.2.7 and 3.2.7.1)

The estimates for the projects were not prepared in sufficient detail. In 19 projects, 24 individual items of works like construction of tunnel work, ring road, Irrigation-Cum-Power-Outlet, canal work etc. amounting to ₹ 424.56 crore were attached irregularly to the respective original works without inviting tenders, in violation of the Maharashtra Public Works Manual. In five test-checked projects, extra items valuing ₹ 28.53 crore were irregularly sanctioned to the contractors.

(Paragraphs 3.3.1 and 3.3.2)

In 37 contracts, mobilisation advance of ₹ 478.95 crore was paid to the contractors though the contract conditions did not provide for such advance. There was short/non-recovery of royalty charges and insurance premium from the contractors to the extent of ₹ 9.82 crore.

(Paragraphs 3.3.3 to 3.3.5)

The monitoring and internal controls in the Water Resources Department were weak. Regular monthly meetings of the Governing Councils were not held by the Irrigation Development Corporations, in violation of the provisions of the Irrigation Development Corporation Acts. The State Level

Technical Advisory Committee established in October 2010, for scrutinising project proposals valuing ₹ 25 crore and above, did not have a member from the Central Water Commission for almost one year. In the absence of any Rules/Manuals, the State Level Technical Advisory Committee conducted the scrutiny of the proposals without any prescribed guidelines and time limits for clearance of projects were not adhered to. The Management Information System was poor due to discrepancies in various reports prepared by the Water Resources Department. The Maharashtra Water Resources Regulatory Authority also failed to perform its role as a regulator as envisaged in the Maharashtra Water Resources Regulatory Authority Act, 2005.

(Paragraph 3.4)

Chapter 4 Dam Safety and Quality Control

The Dam Safety Organisation did not follow the criteria for selection of dams for periodic inspections. At the end of March 2013, 348 large dams remained un-inspected for more than 10 years. The compliance to deficiencies pointed out in the health status reports of the dams was significantly low and ranged between less than one per cent and 43.81 per cent during 2007-12.

(Paragraphs 4.2.1 and 4.2.2)

Officers of the Quality Control Circles inspect the dam construction sites and issue 'Red Inspection Slips' in case of serious deficiencies are noticed during such inspections. Works should not resume unless the deficiencies pointed out in 'Red Inspection Slips' are rectified. However, execution of 30 out of 81 dam works, wherein 'Red Inspection Slips' were issued by the Quality Control Circles, were continued without obtaining OK cards.

(Paragraph 4.4.2)

While the Manual stipulating the inspection schedule was not prepared by the Nagpur and Aurangabad Quality Control Circles, there were shortfalls in inspections conducted by the Executive Engineers (6.25 per cent to 33.33 per cent), Sub-Divisional Engineers (3.33 per cent to 86.66 per cent), Assistant Engineers (1.5 per cent to 91.33 per cent) under the Quality Control Circle, Pune. Compliance to inspection notes of the Quality Control Organisation on the construction works was poor. Of the 5,991 inspection notes issued during 2009-13, forty per cent of the inspection notes (2,411) were outstanding.

(Paragraphs 4.4.3 and 4.4.4)

Chapter 5 Project performance

The irrigation potential created in the State Sector was 48.26 lakh ha as of June 2011 while that utilised as of June 2012 was 32.51 lakh ha i.e. 67.36 per cent of the irrigation potential created. While as against irrigation potential of 32.44 lakh ha created as of June 2013 from the projects handed over by the Government of Maharashtra to the five Irrigation Development Corporations and the projects subsequently taken up by them, the irrigation potential utilised as of June 2012 was 17.04 lakh ha (52.53 per cent).

(Paragraph 5.2.1)

The evaporation loss of live storage from dams increased from 17.58 per cent (2007-08) to 19.67 per cent (2011-12). Analysis of the Water Audit Reports

revealed that evaporation loss in 17 projects was more than 200 per cent of the live storage indicating incorrect assessment/compilation of data on evaporation losses.

(Paragraph 5.2.3)

Repairs and maintenance to dams and canals were poor due to insufficient allocation of funds or delay in taking up repair works. In two major projects (Khadakwasla and Kukadi) and two medium projects (Rajnala and Wadiwale), the irrigation potential utilisation was very low due to substantial leakages of water from Left Bank Canal/Right Bank Canal and delay in taking up concrete lining work for want of funds. In two major projects (Bhatsa and Ujjani) and in Hetawane medium project, there was loss of water due to leakages in the dams, sluice gates and damage to the rubber seal of emergency gates.

(Paragraph 5.2.4)

Any change in reservation of water by more than 25 per cent for non-irrigation purpose (domestic and industrial use) was subject to recovery of restoration charges. However, in two irrigation projects (Gangapur-Darna and Pawna) there was short/non-recovery of restoration charges amounting to ₹ 95.75 crore. In Hetawane project, in the absence of any specific time frame for the recovery of restoration charges, the reservation of water to four entities continued for three years without recovery of any charges and execution of agreements.

(Paragraphs 5.2.6, 5.2.6.1, 5.2.6.2 and 5.2.6.3)

The benchmark for average irrigation system performance was considered by the Water Resources Department at 130 hectare per million cubic metre of water. The Benchmarking Report prepared by the Water Resources Department revealed that in 2009-10, 30 out of 50 major projects and 78 out of 166 medium projects were less than the benchmark while in 2010-11 in 34 out of 50 major projects and 88 out of 171 medium projects, the area irrigated was less than the benchmark. The average canal conveyance efficiency of main canals in five regions during 2007-11 ranged between 8.68 per cent (Amravati) and 77.24 per cent (Aurangabad).

(Paragraphs 5.2.7 and 5.2.7.1)

Chapter 6 Levy and Recovery of Water Charges

The arrears of water charges for irrigation and non-irrigation purposes increased from ₹ 748.90 crore in March 2008 to ₹ 1,275.31 crore in March 2013 (70.29 per cent). During 2007-13, the arrears of water charges for irrigation purpose increased by 30.63 per cent while for non-irrigation purpose the increase was 138.56 per cent.

(Paragraph 6.2)

There was a short-recovery of water charges amounting to ₹ 10.42 crore from bulk users due to incorrect application of rates of which, an amount of ₹ 1.80 crore was recovered at the instance of Audit.

(Paragraph 6.3.1)