

Executive Summary

1 Background

Jalayagnam is the most important and ambitious programme taken up by the Government of Andhra Pradesh, both in terms of budgetary allocation as well as the socio-economic reach envisaged. The programme comprised 86 projects (44 major, 30 medium, 4 flood banks and 8 modernization works) and was estimated to cost ₹1.86 lakh crore. Twelve of these projects were taken up prior to 2004-05 (approved cost: ₹2,139 crore) and were brought under Jalayagnam to expedite their completion. 74 projects were sanctioned between 2004-05 and 2008-09 (approved cost: ₹1,83,470 crore). The programme aimed at developing infrastructure for irrigation, mainly in the backward, parched and drought prone areas of Telangana and Rayalaseema regions of the State, to create an ayacut of 97.46 lakh acres and stabilize the existing ayacut of 22.53 lakh acres. It also envisaged provision of drinking water to about 1/4th of the State's population and generation of 2700 MW of power. Considering that a majority of the State's eight crore population is dependent on agriculture for their livelihood, and the fact that over 50 *per cent* of the cultivated area in the State is rain fed, the priority accorded by the Government to the irrigation sector is extremely timely and laudable.

The Comptroller and Auditor General of India (CAG) has been reviewing a number of irrigation projects in the State every year. During the period 2004-2010, 18 irrigation projects were examined. Almost all these projects formed part of Jalayagnam and are currently under discussion by the Public Accounts Committee of the State Legislature. The issues flagged in the earlier reports with regard to implementation of these projects, *EPC*¹ mode of contracting, and the need for building safeguards in the contracts with regard to variation in scope, specifications, designs etc., have not been addressed by the State Government, on the ground that, these issues are not applicable in fixed price contracts like EPC model. In the earlier reports, concerns have also been expressed by Audit on the impact of non-acquisition of land and pending clearances from *CWC*²/*MoEF*³/*MoTA*⁴ etc., before awarding the contracts, in terms of time and cost overrun. The current Performance Audit is an attempt to review not only the individual irrigation projects taken up by the Government of Andhra Pradesh under the Jalayagnam programme since 2004-05, but also discuss at a macro level, several other issues relevant to the implementation of the programme itself including macro level planning, availability of water and power to operationalise the projects, detailed project level planning, tendering and contract management in respect of multiple packages of these projects, and project execution.

¹ Engineering, Procurement and Construction

² Central Water Commission

³ Ministry of Environment and Forests

⁴ Ministry of Tribal Affairs

The Performance Audit was carried out during June-December 2011 and involved a scrutiny of 26 out of the 74 major and medium irrigation projects taken up by the Government under the programme. Although Jalayagnam envisaged creation of new ayacut, stabilization of existing ayacut, provision of drinking water and generation of power, the focus of this Performance Audit is only on irrigation projects. Some of these projects have been reviewed earlier as individual projects, or as part of a review of AIBP or GWUA⁵ or a thematic audit of mobilisation advances and third party quality control (TPQC) in irrigation projects. None of the earlier audit findings have been repeated in the current report. Significant audit findings that emerged from this Performance Audit are detailed below.

2 Planning

Jalayagnam includes projects which have been in the pipeline for several years; and some taken up ab-initio. Irrespective of the date of their inclusion in the programme, test check of projects revealed that they were taken up without adequate planning. This was especially so, in respect of the projects on river Krishna and Pennar, where, the water required for successful implementation of projects is far above the available quantity. The State Government was conscious of this aspect and therefore, proposed to utilize the surplus/flood water in these two river systems. However, there was no evidence in the records made available to Audit, to indicate that the flood data of these rivers was analysed to assess the average number of days that flood flows are available annually. There was also no uniformity in the number of flood days adopted for designing the projects that use flood flows of Krishna. This was despite the opinion expressed by the Expert Committee constituted by the State Government in July 1997, to examine the feasibility of implementing Galeru Nagari project, that, the number of flood days on river Krishna was only 30 and that too, at only 40 *per cent* dependability. Going by the observations of the Committee, some of the projects taken up on river Krishna are not viable, as the water that can be drawn in 30 flood days would be less than the requirement of these projects. This was corroborated by the CWC in returning the project proposals of Galeru Nagari, Veligonda and Srisailam Left Bank canal projects to the State Government, stating that the latter could not establish clear and firm availability of water on a long term basis for these projects.

(Paragraph 3.1)

Almost all the test checked projects were taken up and contracts awarded without obtaining necessary clearances like investment clearance (24 projects) from Planning Commission, forest clearance (21 projects), environmental clearance (18 projects) from MoEF, in-principle clearance from CWC (16 projects) and R & R clearance from MoTA (14 projects). 11 projects were taken up without preparation of Detailed Project Reports and four projects were taken up without even feasibility studies.

(Paragraph 3.2)

Out of the 74 irrigation projects in Jalayagnam, 31 were lift irrigation schemes (LIS). The power required for these projects, which were taken up essentially on river Godavari and Krishna, works out to nearly 54.43 *per cent* of the total installed

⁵ Godavari Water Utilisation Authority

capacity of the State and around 30.93 *per cent* of the total consumption of the State. Andhra Pradesh being a power deficit State, the average power requirement of the new LIS during the pumping period vis-à-vis the average power consumption of the entire State would leave a shortage of 18.64 MU per day, at current levels. Considering the crippling power shortage in the State during the current year (2012), when the gap between the demand and supply has been 7413 MU, i.e. 15.34 *per cent* of the demand during the period (April to September 2012), and the fact that the State is forced to purchase power at very high rates, providing the required power to operate the lifts and release water for irrigation to the farmers under all the LIS would be a huge challenge for the State Government.

(Paragraph 3.3)

3 Contract Management

Contracts for all the works relating to the projects under Jalayagnam were awarded on turnkey basis through the EPC method. However, the tendering and contracting process lacked transparency and the financial interests of the State were not safeguarded adequately, as detailed below.

- ◆ The EPC model of contracting followed by the Government differed in many respects with the system recommended by “*Federation Internationale des Ingenieurs – Conseils (FIDIC)*” for contracts of this nature.

(Paragraph 4.1)

- ◆ The qualification criteria fixed for empanelment of contractors was less stringent than that followed in conventional tendering system. Some of the contractors garnered most of the works packages, largely through cross-formation of JVs amongst themselves.

(Paragraph 4.2)

- ◆ Contracts for all the works under Jalayagnam were composite contracts, which required the contractors to quote a fixed lumpsum price for conducting detailed survey and investigation, designing the project and executing the works on turnkey basis. For the purpose of cost estimation, the Department prepared internal bench mark (IBM) estimates, to compare with the price bids of the contractors. Government did not frame any guidelines for preparing the estimates with regard to EPC contracts. In the test checked projects, in a number of cases, IBMs were inflated on account of higher quantities, higher costs and inclusion of exempted duties/taxes etc. The total impact of these in increasing the IBM values in the test checked cases was ₹3129.51 crore. This has cost implications, since these increased estimates were used to benchmark the bid prices for award of works packages.

(Paragraph 4.3)

- ◆ In a majority of cases, technical sanction was obtained after receipt and opening of bids. While adequate time was not given for ensuring competitive bidding, there were abnormal delays in opening and acceptance of bids. Several contracts were awarded on single tender basis.

(Paragraph 4.4)

- ◆ There were several instances of variations to specifications/designs during execution. While the EPC agreements entered into by other Departments in the State contain clauses to deal with variations, there was no installed mechanism to deal with such variations in contracts under Jalayagnam. The benefit of reduction in specifications did not accrue to the Government and in some cases, it took upon itself the contractor's costs/responsibilities.

(Paragraph 4.5)

- ◆ Contractors were permitted to prepare the payment schedules to their advantage, by revising the costs of items executable in the initial phases upwards, resulting in front end payments.

(Paragraph 4.5.1)

- ◆ Substantial funds given as mobilization advances were blocked with the contractors, as recovery thereof could not be affected due to poor progress of works. This was especially so in respect of Pranahita Chevella and Dummugudem Nagarjunasagar Tail Pond projects.

(Paragraph 4.6)

4 Project Execution

Jalayagnam was taken up to fast track the irrigation projects languishing for a long time and to complete them in a time bound manner, so as to bring succour to the arid and drought prone areas. Initially, Government identified 26 projects as 'prioritized' to be completed within a span of two (8 projects) to five years (18 projects). Subsequently, this number increased to 86 projects, including 12 Flood Banks and Modernization works. As of September 2012, while four projects (sanctioned in 2008-09) were yet to be initiated, 13 projects have been completed and created an ayacut of 1.37 lakh acres and stabilized 1.89 lakh acres. Apart from the 13 projects that have been operationalised, as and when a project is partially completed, Government has been releasing water to the ayacut. So far (September 2012), it had released water to a new ayacut of 12.74 lakh acres and stabilized 2.07 lakh acres this way.

(Paragraph 5.1)

Delay in completion of the projects, along with changes to the specifications and scope of work pursuant to detailed survey and investigation and designs, pushed up the cost of the projects by ₹52,116 crore (as of September 2012) with reference to the original sanction.

(Paragraph 5.1)

The main reason for the time and cost overrun in these projects was delay in acquiring the required land, clearances, and rehabilitation and resettlement activities. Government could not acquire adequate land required for any of the projects on time although the original agreement periods in respect of several of these projects expired. While 9.19 lakh acres of land was required for executing the envisaged projects, Government could acquire only 5.97 lakh acres as of March 2012. Added to that, non receipt of forest clearance contributed to the delay in taking up construction activities in forest areas. Government could not also co-ordinate effectively with statutory organizations like the Indian Railways and National Highways Authority of India to obtain permissions to execute works in their lands.

(Paragraph 5.2.1)

Rehabilitation and Resettlement (R&R) activities in the projects involving submergence of land have not been planned properly. Government was yet to approve the draft plan for R&R of over 50 *per cent* of the 546 villages, estimated to be affected during the implementation of the projects. Further, provision of houses for the population anticipated to be affected by the projects, was particularly slow, with just about 13 *per cent* progress in constructing houses for the families.

(Paragraph 5.2.2)

5 Recommendations

EPC system of contracting is followed the world over for time bound execution of projects and minimizing risks to the owners. In this mode of contracting, the contractor carries the entire risk of the project for schedule and budget in return for a fixed price. The owner (State Government in this case) has to define clearly, scope and specifications of the project, time frame, quality parameters and cost. The EPC system followed by the Government left too many gaps in this regard due to the following.

Contractors were required to carry out detailed survey and investigation, design the project and execute it. Coupled with this, the bidders were not given adequate time in several packages for carrying out preliminary survey before offering their bids. This entailed changes to project specifications indicated at the time of awarding works, and in some cases, the scope of work has also changed, rendering the IBM estimates superfluous. There was no in built mechanism in the contracts to deal with such variations. Project duration specified by Government was not realistic, since it could not obtain the requisite clearances, acquire necessary land and complete the rehabilitation and resettlement activities within the agreement periods. All these have had a cascading effect on the time and cost budgeted for execution of the projects.

1. Government should consider the desirability of dividing the EPC system of contracting into two stages:
 - a. **Stage-I:** Detailed survey and investigation, approval of alignments and designs, freezing the scope of work, preparation of cost estimates, and initiating the processes of obtaining statutory clearances, land acquisition and R&R activities;
 - b. **Stage-II:** Execution of works.
2. Government should assess the availability of utilizable water in various rivers in the State, especially the duration of availability of flood waters in river Krishna, and rework the feasibility of implementing the projects that are dependent on flood water utilization.
3. Government should undertake a comprehensive review of all the projects taken up under Jalayagnam and prioritize them based on (a) technical viability, (b) present stage of physical progress, (c) immediate possibility of clearing the bottlenecks viz. land acquisition, forest clearance etc., which are hampering their progress, (d) availability of power in case of lift irrigation schemes and (e) the State's capacity to sustain the fund flow. A long and short term scenario should be developed and prioritized projects should be fast tracked for obtaining the requisite clearances, funds, land, R&R etc.

4. The desirability of continuing projects where approvals have been given more than two years back but are yet to be tendered; may be objectively re-assessed by the Government.
5. Government should also streamline the procedures relating to EPC contracts as under.
 - a. Ensure accuracy in estimation of costs; works should be put to tender only after firming up IBM and obtaining technical sanction;
 - b. Ensure transparency in tendering process; empanelled list may be reviewed and updated with inclusion of firms which may have gained eligibility during the last seven years since empanelment. In case the empanelled list is no longer applicable for awarding contracts, it may be considered for scrapping;
 - c. Avoid changes to the specifications in the intervening period after call of tenders and award of work;
 - d. Define the deliverables under the contracts more clearly and accurately; and
 - e. Incorporate appropriate clauses in all the future EPC agreements enabling adjustment of the contract price in case of variation in designs, specifications or scope of work.
6. Government should institute a mechanism for finalization and approval of designs and drawings within a specified timeframe.
7. Coordination with other statutory organizations like Indian Railways, National Highways Authority of India and Oil companies needs to be improved.
8. Payment schedules of all the packages should be reviewed to ensure that payments are not frontloaded to the detriment of State interests.