Project Execution

Jalayagnam was taken up to fast track the irrigation projects languishing for a long time and to complete them in a timebound manner, so as to bring succour to the parched and drought prone areas, especially in Telangana and Rayalaseema regions of the State. Audit review of the extent of achievement of this objective and the status of the test checked projects is given in this chapter.

5.1 Creation of Irrigation potential

5.1.1 Target vs. Achievement

Initially, the Government identified 26 projects as 'prioritized' and subsequently, this number increased to 86 projects, including 4 Flood Banks and 8 Modernization works. Government sanction for these projects has been accorded over a period of time as indicated below:

Table-5.1

Financial year	No. of projects sanctioned	Original administrative sanction (₹ in crore)
Prior to 2003-04	8	785.15
2003-04	4	1353.89
2004-05	36	71727.14
2005-06	6	2397.16
2006-07	3	4643.68
2007-08	10	11313.17
2008-09	19	93389.17
Total	**86**	**1,85,609.36**

Source: PMU of I&CAD Department

The 26 projects prioritized by Government were to be completed within a span of two (8 projects) to five years (18 projects). As of September 2012, while four (out of 86) projects[1] (sanctioned in 2008-09) were yet to be initiated, 13[2] out of the remaining 82 projects have been completed at a cost of ₹1,538 crore, as against the approved cost of ₹1,441 crore and have achieved the envisaged objectives. Out of these, nine are medium irrigation projects, which involved creation of 1.14 lakh acres of ayacut and stabilization of 23,921 acres. The remaining four are major irrigation projects, which involved creation of 22,846 acres of ayacut and stabilization of 1.65 lakh acres.

Apart from the 13 projects that have been operationalized, as and when a project is partially completed, Government has been releasing water to the ayacut. As of September 2012, Government released water to a new ayacut of 12.74 lakh acres besides stabilizing existing ayacut of 2.07 lakh acres. Audit noted that:

[1] (i) Kanthanapally (ii)Uttarandhra Sujala Sravanti (iii) Modernisation of Nagavali System (iv) Modernisation of Yeleru Delta System

[2] **Major:** Chagalnadu, Ramatheertham balancing reservoir, Alisagar, Guthpa
Medium: Peddagadda reservoir, Madduvalasa Stage I, Pedderu reservoir, Surampalem, Kovvada kalva, Swarnamukhi barrage, Veligallu, Ralivagu and Gaddena Suddhavagu

- Out of the total 413 packages awarded under Jalayagnam (excluding modernization and flood banks), 369 packages were scheduled to be completed by September 2012.
- 51 packages (14 %) have been completed as of September 2012 and 318 (86 %) were in progress.
- Eight (16 %) packages were completed within the stipulated time and there was a delay of 2 to 72 months in completion of the remaining 43 packages.

The ayacut contemplated in the initially prioritized 26 projects and the status of achievement as of September 2012 are given below.

Table-5.2

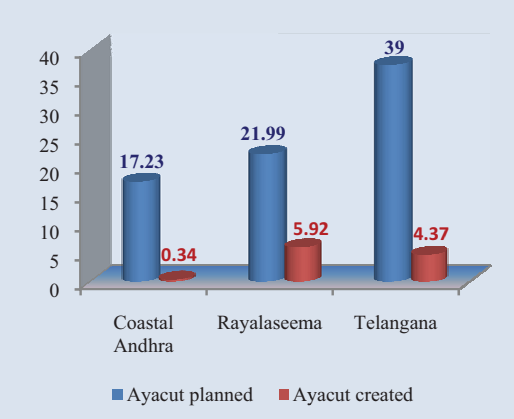
(in acres)

Sl. No.	Details	Contemplated Ayacut	IP created in completed projects[3]	Stabilization
1	Eight projects were to be completed in 2 years	1108866	0	92584
2	Eighteen projects were to be completed in 5 years	5017134	0	72874
	Total	**6126000**	**----**	**179679**

Source: Jalayagnam book and records of I & CAD Department (PPMU)

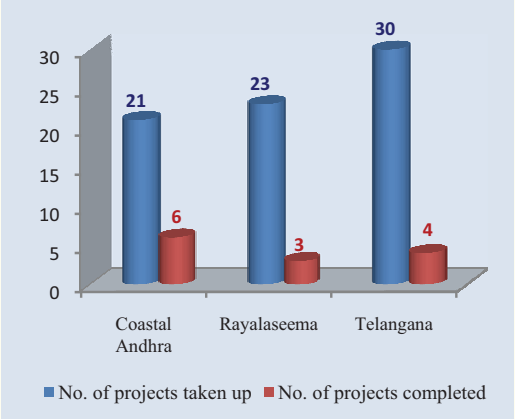
The region wise ayacut created vis-à-vis target in the test checked projects (Chart-5.1) and the overall status of projects taken up and completed (Chart-5.2), as of September 2012 are given below:

Chart-5.1 (Ayacut in lakh acres)



Source: Records of I & CAD Department

Chart-5.2



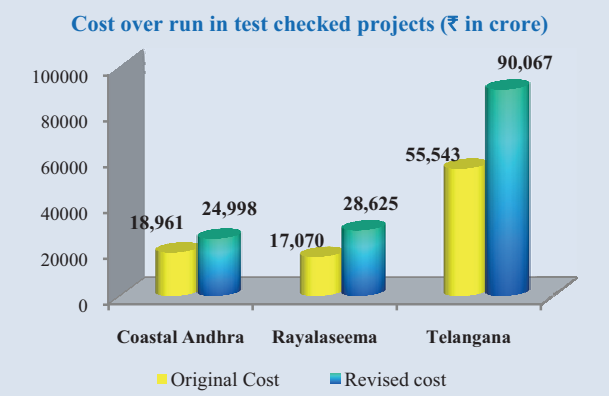
Source: Records of I & CAD Department

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 a whopping ₹52,116 crore (as of September 2012) with reference to the original sanction. The region wise break up of cost over run in the 26 test checked projects, as per the records of I&CAD Department, is given below.

[3] The 26 prioritized projects include only 3 projects in the 13 completed. These 3 involve stabilization of ayacut

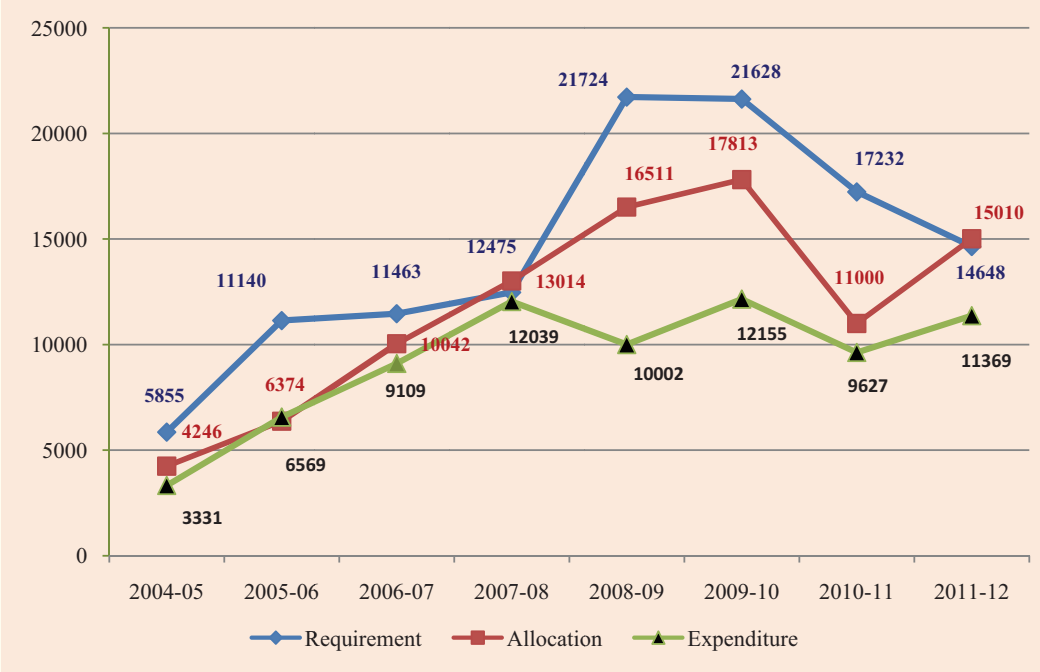
Since execution of several projects was taken up simultaneously, it was imperative to assess the availability of funds, prioritize the projects based on their importance to the needs of the targeted area, and ensure allocation of adequate resources for their completion.

Chart-5.3



As of March 2012, ₹61,498 crore was expended on the programme. However, adequate funds were not provided for the programme commensurate with the requirement in any of the years during the period 2004-12. Expenditure kept pace with budget allocation during 2004-08, but fell short of the outlay during 2008-11, before picking up again in 2011-12 as can be seen below.

Chart-5.4 **(₹ in crore)**



Note:

(i) Requirement is as per the approved administrative sanctions spread over the agreement period

(ii) Budget allocation and expenditure figures are for Major and Medium irrigation projects as furnished by I&CAD Department

(iii) Expenditure includes ₹12,703 crore in respect of non-Jalayagnam Major and Medium irrigation projects

The Department replied (July 2012) that there was some uncertainty during 2008-09 and 2009-10 due to general decline in the State economy, and that, it has been prioritizing projects since 2009. It was further pointed out that despite constraints, the allocations have not come down. The reply is not borne out by facts, since there was a dip in budgetary allocation after 2009-10, and fluctuation in spending.

5.2 Reasons for non-completion of projects

The main reasons for non-completion of projects were as follows.

- Delay in acquisition of land;
- Delay in obtaining clearances;
- Non-finalization of R&R activities.

The Department confirmed these factors as the reason for the delays and stated that it expects to complete most of the projects by 2017-18. While the delay due to not obtaining clearances was discussed in Chapter 3, the other reasons are discussed below.

5.2.1 Land Acquisition

The overall status of land acquisition as of March 2012 is given below region-wise.

Table-5.3

(in acres)

Region	Required	Requisitioned	Acquired	Balance
Coastal	253089	204528	142677	110412
Rayalaseema	295891	294591	255465	40426
Telangana	370431	276603	198960	171471
Total	**919411**	**775722**	**597102**	**322309**

Source: Records of I & CAD Department

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. The Department replied (July 2012) that for speedy completion of land acquisition in various projects, 5 posts of Special Collector, and 44 posts of Special Deputy Collector were created, and that, it had acquired about 6 lakh acres (as of March 2012) despite shortage of staff. It was further stated that, there were litigations relating to land, and due to taking up too many projects simultaneously, the sequential activities in land acquisition process like survey, Draft Notification and Draft Declaration could not be taken up simultaneouly in respect of all the projects with the available revenue staff.

As these factors were forseeable and critical, these should have been addressed appropriately by the Government.

5.2.2 Rehabilitation and Resettlement (R&R)

The status of R&R in Jalayagnam projects as of March 2012 is as follows:

Table-5.4

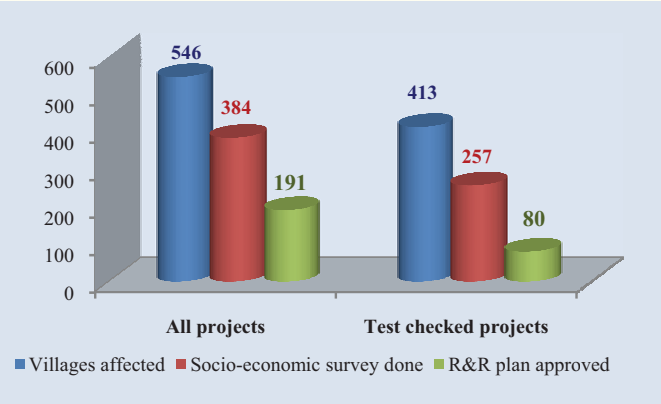
	No. of Districts	No. of projects	Villages affected	R & R centers	PAFs[4]	PDFs[5]	BPL[6] Households
Overall	17	37	546	500	132135	129739	121004
Test checked projects	14	14	413	365	87608	86047	80893

Source: Commissionerate of R&R

[4] Project affected families
[5] Project displaced families
[6] Below poverty line

i. As against the 546 villages estimated by the Government to be affected during the implementation of the projects, draft plan is yet to be approved for more than 50 *per cent* villages, as can be seen from the charts given below. Out of the 281 villages for which the draft R&R plan is yet to be submitted, 206 villages pertain to Polavaram project.

Chart -5.5

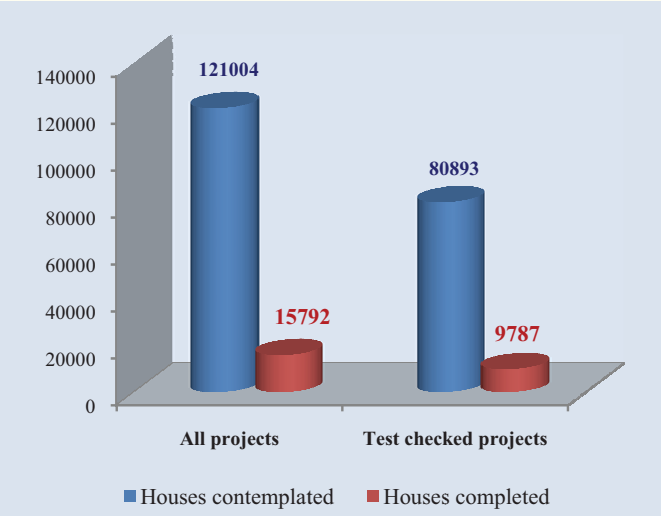


Source: Commissionerate of R&R

The Commissioner (R&R) stated (July 2012) that the Government had prioritized 191 villages in different irrigation projects as of March 2012, and all the activities in this regard have to be completed within the next two to three years. It was further stated that R&R plan was already approved in respect of 189 villages.

The reply confirms that Government is unable to complete even the planning process, despite expiry of the original agreement periods, for a majority of the projects.

Chart-5.6



Source: Commissionerate of R&R

ii. Provision of houses for the project affected families was particularly slow, as can be seen from the Chart given alongside. With just about 13 *per cent* progress in constructing houses for the families, clearly, the Government has not displayed the required urgency in ensuring R&R activities of a majority of the project affected families.

iii. In respect of nine[7] projects, as against 23,166 houses contemplated, not a single house was completed as of March 2012.

iv. In two projects, involving five districts, the progress of completion of houses was only marginal, as illustrated below.

[7] Pulichintala (11580), Veligonda (4013), Bheema (3587), Nettempadu (2471), Tarakarama Thirtha sagar (616), Neelwai (371), Kalwakurthy (242), Handri Neeva (204), and Devadula (82)

Table-5.5

Sl. No.	Project	District	Houses contemplated	Houses completed
1	Polavaram	Khammam	31552	Nil
2		East Godavari	4421	**483**
3		West Godavari	4139	**352**
4	Yellampally	Karimnagar	6816	**788**
5		Adilabad	4413	Nil

Source: Commissionerate of R&R

The Commissioner stated (July 2012) that prioritization is being done with reference to the stage of the project, and that, the overall progress of construction of houses in respect of priority projects was 32 *per cent*.

v. Apart from the construction of houses, progress in providing infrastructure facilities in the contemplated R&R centers is still in the early stages, as detailed in the table below.

Table-5.6

	Total R&R centers contemplated	Land acquired for (No. of centres)	Road facilities provided for (No. of centres)	Water facilities provided for (No. of centres)	Electricity facilities provided for (No. of centres)
Over all	500	222	147	150	142
Test checked projects	**365**	**104**	**63**	**64**	**57**

Source: Commissionerate of R&R

vi. Delay in R&R activity is visible above all in Polavaram project, which involved submergence of 277 villages, affecting 42,712 PAFs with 1,31,045 persons in 3 districts[8] of Andhra Pradesh, apart from 4 villages, affecting 2335 PAFs with 11,766 persons in Chattisgarh, and 8 villages, affecting 1002 PAFs with 6316 persons in Odisha. The GoAP accorded administrative approval (May 2005) towards R&R package for ₹2051 crore and the GoI granted clearances for the R&R plan in April 2007.

- At the time of awarding the Spillway (March 2005) and ECRF Dam works (August 2006) of Polavaram project, socio-economic survey of the submergence area was not conducted and the PAFs were not identified.
- The first phase of R&R activity, which was due for completion by June 2008, was not completed even as of March 2012.
- Shifting of 6 out of 7 villages in West Godavari district and 3 out of 4 villages in East Godavari district situated in the vicinity of the dam was also not completed yet.
- Only 277 families comprising 1136 persons were rehabilitated so far despite spending ₹108 crore. The progress in this aspect was a mere five *per cent* during the last seven years.

[8] Khammam, East Godavari and West Godavari

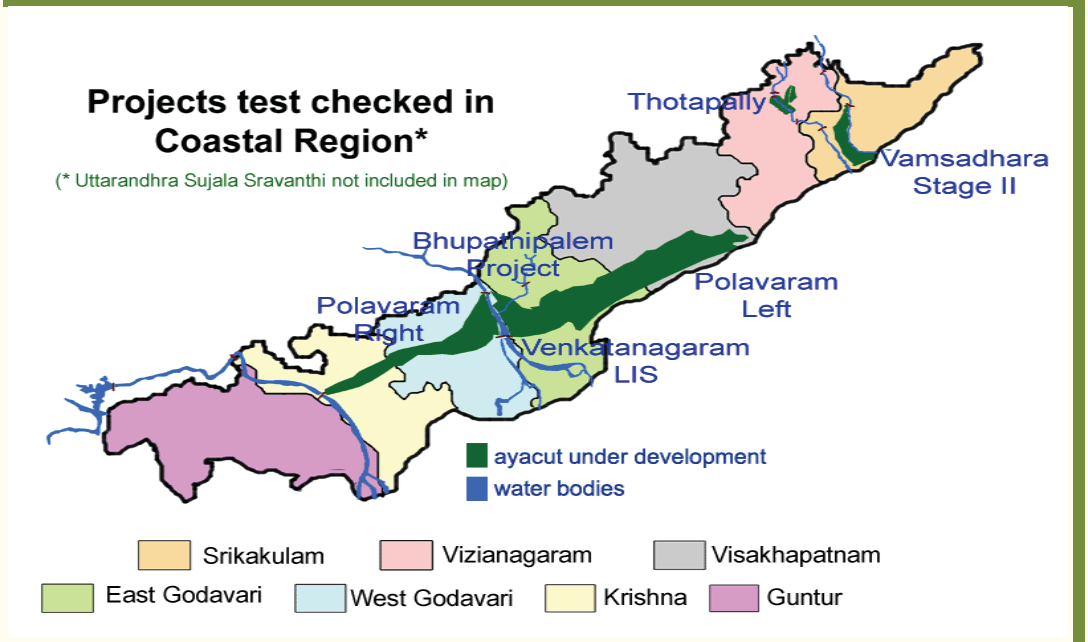
- Further, non-sorting out submergence issue with Chattisgarh and Odisha led to prolonged litigations with these two States.

The Commissioner, R&R replied (July 2012) that R&R activity is planned in a phased manner with reference to the progress of the project and that, all the villages in Khammam have been categorized under phase 3 and 4, and therefore, R&R in these villages would be completed one year before the actual submersion takes place. Further, the I&CAD Department cited (July 2012) the inter-state Agreement of 1980 and GWDT[9] Award to support its contention that there was no submergence issue with Chattisgarh and Odisha. However, the fact remained that, while according clearance for Polavaram project, the MoTA observed (17 April 2007) that there has been a consistent opposition to the project from the Governments of Chattisgarh and Odisha and there has also been no consultation with the affected Gram sabhas in those States. The clearance of MoTA was subject to fulfillment of the conditions that (i) there would be no submergence and displacement in the territories of these two states and (ii) the people of these two states are not adversely affected in any manner.

5.3 Project execution

The status of execution of the test checked projects and the key issues involved therein, are given below region-wise. Package wise time over-run of these projects is given in ***Appendix-5.1.***

Coastal Andhra



The ayacut created in the six test checked projects in the Coastal region as of September 2012 was **0.34** lakh acres as against **17.23** lakh acres contemplated. All these projects are at various stages of execution, except for Uttarandhra Sujala Sravanthi, where the works are yet to be awarded.

[9] Godavari Water Disputes Tribunal

Table-5.7

Sl No.	Project	Ayacut contemplated (in lakh acres)	Ayacut created	Due date of completion	Delay
1	Polavaram	7.21	Nil	October 2006 - July 2010	26-71 months
2	Vamsadhara Stage II ph II	0.45	20000 acres.	March 2007 - March 2008	54-60 months
3	Thotapally Barrage	New: 1.20 Stab: 0.64	New: Nil 64000 acres stabilized	September 2005 - December 2012	0-59 months
4	Venkatanagaram Pumping Scheme	New: 0.23 Stab: 0.10	New: Nil 4250 acres stabilised	September 2006	72 months
5	Bhupathipalem Reservoir	0.14	14028 acres	August 2006 - September 2007	10-61 months
6	Uttarandhra Sujala Sravanthi	8.00	Yet to award works		

Source: Records of I & CAD Department

The key issues relating to each of the test checked projects in the Coastal region are given below.

5.3.1 Indirasagar Polavaram Project (Polavaram)

5.3.1.1 Project profile

Irrigation potential envisaged	*7.21 lakh acres[10] in East Godavari, West Godavari, Krishna and Visakhapatnam districts*
Other purposes	• *Stabilize 10.13 lakh acres of Godavari and 13 lakh acres of Krishna delta* • *Interlinking river project proposing to divert 80 TMC to River Krishna* • *23.44 TMC to industries in Visakhapatnam* • *Domestic water to 28.50 lakh population in 540 villages* • *Generation of 960 MW hydel power*
Source of water	*307.96 TMC from Godavari*
Other information	• *A multipurpose terminal reservoir project, earlier known as Ramapadasagar project, under contemplation since 1943 on river Godavari near Ramaiahpet village of Polavaram mandal* • *Sharing of 5 TMC and 1.5 TMC water with Orissa and Chattisgarh states respectively*
Components	*(i) 2454 meters of earth cum rock fill dam, (ii)1128 meters spill way, (iii) 181.50 KM of left main canal to serve 4 lakh acres,(iv)174 KM of right main canal to serve 3.2 lakh acres*
Project Cost	*Original Cost: ₹10151 crore (December 2007);* *Revised : ₹16010.45 crore (October 2010)*
Expenditure	*₹4354.95 crore*
Land	*Required:166672.21 acres, Acquired:69589.13 acres*
R & R Houses	*Contemplated:42705, Completed:899[11]*

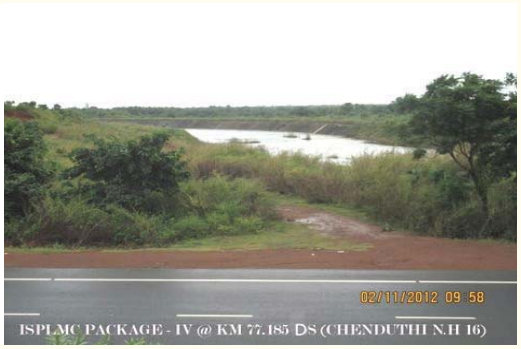
[10] Visakhapatnam (1.5 lakh acres), East Godavari (2.5 lakh acres), West Godavari (2.58 lakh acres) and Krishna (0.62 lakh acres)

[11] Figures here differ from those in Table 5.5 as these are updated to September 2012

5.3.1.2 Key Issues

i. ***Status of works:*** Polavaram project was divided in to 23 packages and the works were awarded during October 2004 to July 2007. All the 23 packages were reviewed in audit. The delay in completion of packages ranged from two years to more than five years.

- Progress in 21 package works (Head works connectivities - 6, LMC - 8 and RMC – 7) was limited mainly to earth work excavation only, as structures were not completed in the connectivities even after seven years since the entrustment of works (March 2005). The physical status of two of the canal packages as of 2nd November 2012 is given below.



NH 16 Crossing @77.185 KM of ISLMC (Package 4)

Untackled portion of ISRMC due to HPCL-GAIL crossing (Package 2)

- Sri Sathyasai Drinking water pipelines were to be shifted before taking up Saddle dam "KL" in Package 66 and package 67. Since this was not done, there was a delay in completing the saddle dam, and consequently, the related works in these packages.
- Completion of right and left main canals was also held up due to land acquisition problems, delay in R & R, shifting of various utility pipelines, delay in obtaining permissions for crossing railway and national highway lines etc.
- As per the GWDT Award, the design parameters of Polavaram dam and its operation schedule should be decided by CWC. However, GoAP awarded (March 2005 and August 2006), spillway and earth cum rock fill dam works with a flood discharge of 36 lakh cusecs without the approval of CWC. The CWC, after review of the DPR and further hydrological studies, later recommended (September 2006) a design discharge of 50 lakh cusecs at spillway. Ultimately, both the contracts had to be closed prematurely in August 2009, on the request of the contractor, *inter-alia,* due to the change in the discharge from 36 lakh cusecs to 50 lakh cusecs and were yet to be re-entrusted (September 2012).
- Government took three years to pre-close (August 2009) the contracts from the date of decision of increasing the discharge capacity by CWC (September 2006). The impact of delay in this regard was about ₹1049 crore, being the cost difference between SSRs of 2007-08 to 2010-11.

The Department stated that pre-closure of the contract was not solely on account of change in the design and there were other reasons, some of which were attributable to the contractor. The fact remains that the State had lost about six working seasons from September 2006 due to this pre-closure, and failed to reap any benefits from this prioritized project till date (September 2012). Further, it had to admit the contractors' claims of ₹19.39 crore[12] on this account.

The Department replied that most of the claims pertain to infrastructure works like approach roads, procurement of dumping areas, amounts deposited with AP Transco and hence can be made use by the new contracting agencies. The reply is not acceptable as (i) formation of the approach roads was contingent to the scope of work and paid as an integral part through payment schedules and (ii) the claims did not include amounts towards dumping areas and amounts deposited with AP Transco, but included an amount of ₹6.39 crore towards insurance, whereas, no work was executed under the agreements and only survey, investigation, designing and earth work excavation was carried out, which did not have any risk factor to be covered under insurance.

ii. ***Approval of designs***: Designs were yet to be approved in respect of **303** out of the total **717** structures as of July 2012. The Department replied that out of the 303 structures, 129 were returned at different stages with major remarks for want of further field data and were pending with the contractor for re-submission, and that, for 159 structures, the designs were yet to be submitted by the contractor. The Department did not specify whether any action was taken against the contractor.

5.3.2 Boddepalli Rajagopala Rao Vamsadhara Project - Stage II (Vamsadhara Project Stage II)

5.3.2.1 Project profile

Irrigation potential envisaged:	*45000 acres in Srikakulam district*
Source of water	*9.417 TMC from River Vamsadhara*
Phase I	
Components	*Head regulator 750M upstream of Gotta barrage on right flank, Right main canal for 59 KM* ***(before Jalayagnam)***
Administrative Sanction	*Original Cost: ₹123.94 crore* *Revised : ₹209 crore*
Expenditure	*₹132.8 crore (September 2012)*
Lifts	*8*
Land	*Required:1458 acres, Acquired : 1399.77 acres*
Phase II	
Components	*Side weir of 300M at 2 KM upstream of Neradi barrage* *Gravity flood flow canal for 34 KM* ***(under Jalayagnam)***
Administrative Sanction	*₹933.9 crore (February 2005)*
Total expenditure	*₹671.89 crore*
Land	*Required:12257.96 acres, Acquired : 11732.43 acres*
R & R Houses	*Contemplated:7104, Completed:968*

[12] ECRF ₹12.43 crore and Spillway ₹6.96 crore

5.3.2.2 Key Issues

i. ***Inter-State issues***: Stage-II of Vamsadhara project involved construction of a barrage across the river at Neradi (on the AP-Odisha border) to irrigate an ayacut of 82,280 acres. However, Government of Odisha (GoO) objected to the construction of Neradi Barrage and since 1979, the Stage-II of the project was not cleared by CWC. In view of the delay in sorting out the issue with the GoO, the GoAP modified the Stage-II of the project and took it up in two phases. Phase-I was cleared by CWC and construction, taken up in 2002, is nearing completion.

Phase-II, taken up under Jalayagnam, envisaged creation of an ayacut of 45,000 acres and involved construction of a side weir near Katragada village in AP, two kilometres upstream of the Neradi barrage. The GoAP accorded administrative approval to the project in February 2005 and awarded the works in March 2005 without either consulting the GoO or obtaining clearance from CWC. Subsequently, (February 2006), based on a writ petition from the GoO, the Supreme Court ordered (February 2009) maintenance of 'status quo' in respect of construction of the side channel weir and the flood flow canal.

The contractors of two packages[13] suspended (June/July 2008) the works midway and as of September 2012, these works, on which an expenditure of ₹47.43 crore was incurred, remain incomplete. Suspension of work led to locking up of substantial investment of ₹671.89 crore, with the structures remaining in semi-finished stage and exposed to the vagaries of nature for more than three years, as depicted in the photographs given below (July 2012).

Incomplete bridge at Km 13.062 of FFC (Package-87)

Incomplete bridge at Km 24.284 of FFC (Package-88)

The Department justified taking up the Phase-II of Stage-II of the project stating that it proposes to utilize the equitable and judicious share of AP, and that, the project neither involves any submergence nor affects any territory of Odisha and as such, its concurrence was not necessary. The reply is not acceptable, as this project is on inter-State river and on common border, and the Government should have kept in mind the experience earlier with suspension of work relating to Neradi barrage.

[13]Packages 87 (progress : 39%) and Package 88 (progress : 31.13%)

ii. ***Delay in approvals:*** There was a delay of over two years in approval of hydraulic particulars and commencement of civil works. The Department stated that the proposals submitted by the contractors will be scrutinized and approved based on survey & investigation work.

5.3.3 Thotapally Barrage Project

5.3.3.1 Project profile

Irrigation potential envisaged:	♦ *New ayacut of 1.2 lakh acres on right side of river Nagavali* ♦ *Stabilization of existing ayacut of 64000 acres*
Source of water	*15.895 TMC from river Nagavali*
Components	*(i) construction of spillway, (ii) formation of earthdam, (iii) formation bank connections, (iv) construction of left and right head sluices, (v) right main canal for 107 KM*
Administrative Sanction	*Thotapally: ₹450.23crore* *Gajapathinagaram: ₹76.99crore*
Expenditure	*Thotapally: ₹485.67 crore* *Gajapathinagaram: ₹7.08 crore*
Land	*Thotapally:Required:11680.52 acres and acquired : 10370.47 acres* *Gajapathinagaram:Required:590 acres and acquired : 66.35 acres*
R & R Houses	*Contemplated:5915, Completed: 2134*

5.3.3.2 Key Issues

i. ***Delay in execution*****:** The works relating to spillway and formation of earth dam were awarded in March/June 2004 before Jalayagnam and the remaining works were awarded (October 2004) under Jalayagnam. While the three non-EPC works were completed, the two EPC packages were yet to be completed even after 8 years of award of works. The Department replied that progress has been hampered severely due to land acquisition and R&R problems.

ii. ***Additional ayacut***: In July 2008, GoAP decided to create an additional ayacut of 15,000 acres by excavating the Gajapathinagaram Branch Canal (GBC) for about 25 KMs starting at km 97.00 of the right main canal (RMC) of Thotapally Barrage. However, the revised project proposals were not submitted to the CWC.

The Department replied that the GBC is only an extension of the right main canal of Thotapalli Barrage project, which was already cleared by CWC and thus fresh approval of CWC might not be required for GBC. The reply is not acceptable since the CWC guidelines[14] stipulate that even in case of the projects already approved by the Planning Commission, the revised project reports with updated cost estimates have to be submitted to CWC for examination, if there is change in the ayacut.

iii. ***Undue favour to contractor***: In package II, the IBM value of ₹178.56 crore, which was used to evaluate the bids, included ₹1.78 crore towards cost of executing railway crossing structures. However, the Department took on the responsibility of making payment of an amount of ₹2 crore to the railway authorities, which should have been borne by the contractor, by modifying the relevant contractual clause.

[14] Guidelines on 'Submission, Appraisal and Clearance of Irrigation and Multipurpose Projects issued by CWC in 1989, 2002 and 2010)

When the issue of undue benefit to the contractor was pointed out in Audit, the Department replied that the addendum issued at the time of concluding the agreement (October 2004) was appropriate in view of the Government Memo (February 2006), which authorized the competent authority to regularize any inconsistencies by concluding necessary supplementary agreements.

The reply is not acceptable because, (i) the Department, while issuing the addendum, ignored the fact that the IBM value, with which tenders were compared, and the scope of work also include the cost towards railway bridges (ii) the Government memo quoted by the Department authorizes it to remove inconsistencies in the agreement already concluded, and, is not a blanket permission to support irregular modifications from tender to agreement. Moreover, the memo cannot be applied to the present case, as the event of modification / addendum (October 2004) precedes the memo (February 2006).

5.3.4 Venkatanagaram Pumping Scheme

5.3.4.1 Project profile

Irrigation potential envisaged:	*36000[15] acres in 5 mandals* *Drinking water facilities to 1.2 lakh population in 31 villages*
Source of water	*3.6 TMC of water.from river Godavari*
Components	*(i) construction of three pump houses* *(ii) four delivery cisterns* *(iii) excavation of main canal, distributaries and filed channels*
Administrative Sanction	*Original: ₹58.43 crore (August 2004)* *Revised: ₹124.18 crore (March 2008)*
Expenditure	*₹84.02crore*
Power required	*10.45 MW*
Land	*Required:621.02 acres and Acquired:341.57 acres*

5.3.4.2 Key Issues

i. ***Clearance by CWC***: The Venkatanagaram Pumping Scheme (VPS) is an existing minor irrigation scheme, serving an ayacut of 4,250 acres. Under Jalayagnam, improvements to this scheme were taken up to increase the ayacut to 36,000 acres (creation of new ayacut of 31,750 acres and stabilization of the already existing ayacut of 4,250 acres). Consequently, the scheme became a major irrigation project and required clearance from the CWC. The project proposals were not sent to CWC at any stage.

The Department replied that the ayacut under VPS was covered in Polavaram project, for which, the CWC has already given hydrological clearance and hence no separate clearance for this scheme was required.The **reply is incorrect, since the CWC cleared the Polavaram project in January 2009 whereas the expansion of VPS was taken up nearly four years earlier in March 2005**. Further, there was no mention in the DPR of Polavaram that the ayacut and the project cost of VPS was included in it.

[15] This differs from the figure in Table 5.7 due to changes as of September 2012

ii. ***Administrative approvals***: Initially, administrative approval for the project was accorded in August 2004 for an amount of ₹58.43 crore to irrigate an ayacut of 30,000 acres. Later (March 2008), a revised administrative approval was accorded for ₹124.18 crore by increasing the proposed ayacut to 36,000 acres. However, tenders were invited and the works were awarded in March 2005 for an agreed value of ₹85.57 crore, i.e., three years before according the revised administrative approval.

iii. ***Status of works:*** All the works relating to this project were awarded through one package. Stage I and Stage II pump houses, pressure mains and civil works of Stage III pump house were completed. However, due to non-completion of distributory network, these could not be commissioned. The length of the main canal was reduced from 7.885 KMs to 6.60 KM and two distributories (1 R and 3 R) could not be taken up due to objections from farmers.

Thus, only the old ayacut (4250 acres) could be served despite spending nearly ₹84 crore on the Venkatanagaram pumping scheme during the last seven years due to lack of proper planning. The Department accepted the above facts, and attributed these to court cases, objections of ayacutdars and dispute relating to land compensation.

5.3.5 Bhupathipalem Reservoir Project

5.3.5.1 Project profile

Irrigation potential envisaged:	*23086 acres (revised to 14028 acres) and drinking water for 45 tribal villages of East Godavari*
Source of water	*1.151 TMC from Sithapalli vagu, a tributary of Godavari river*
Components	*(i) formation of an earth dam* *(ii) construction of spillway* *(iii) head sluice* *(iv) formation of diversion road* *(v) excavation of main canal and distributory system*
Administrative Sanction	*Original : ₹76.77 crore* *Revised : ₹187.91 crore*
Expenditure	*₹160.07 crore*
R & R Houses	*Contemplated:149, Completed:149*

5.3.5.2 Key Issues

i. ***Status of works***: This is a medium irrigation project with an original target of creating an ayacut of 12,100 acres. The CWC approved (December 2000) an ayacut of 13,370 acres at an estimated cost of ₹47 crore. Subsequently, the proposed ayacut was increased to 23,086 acres and administrative approval was accorded (October 2003) for ₹76.77 crore.

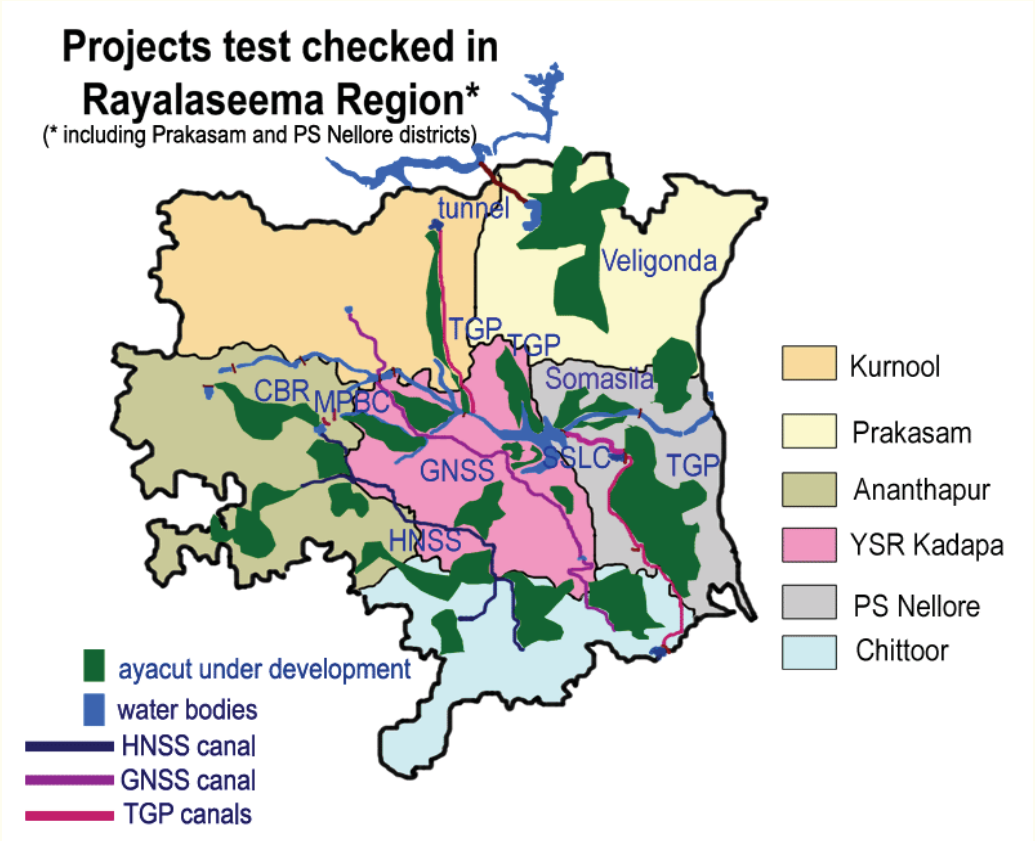
By the time Jalayagnam was taken up, the reservoir work was already in progress. Under Jalayagnam, the works relating to the main canal and distributary network were entrusted (September 2005) under EPC turnkey system. All the works were completed by 2011 and water was released in Kharif 2011. However, the Government has not yet (September 2012) declared this project as complete.

ii. ***Ayacut creation***: During execution of the project, ayacut to an extent of only 14,028 acres was developed and it was found that the balance ayacut of 9,058 acres was not available for this project as it was covered under another medium irrigation project (Musurumilli) adjacent to this.

iii. The Bhupathipalem reservoir and the main canal were designed to serve the full ayacut of 23,086 acres, though the ayacut finally developed was only 14,028 acres. Thus, the project on which an expenditure of ₹160.07 crore was incurred, has finally achieved only partial benefits, indicating poor planning while taking up two proximate projects. Incidentally, the same contractor has executed the canal and distributory works of both the projects.

The Department replied that the scope of the project was increased to 23,086 acres based on the demands from local ryots, but after the field investigations, the final ayacut was found to be only 14,028 acres.

Rayalaseema



The ayacut created in the nine test checked projects in this region as of September 2012 was **5.92** lakh acres as against **21.99** lakh acres contemplated. All nine test checked projects were at various stages of execution as of September 2012. The detailed status of ayacut created in this region vis-à-vis that envisaged, is given below.

Table-5.8

Sl. No	Project	Ayacut contemplated (in lakh acres)	Ayacut created	Due date of completion	Delay
1	Galeru Nagari	Original:3.25 Revised:2.60	Nil	Ph I February 2007-October 2009 Ph II June 2011 - November 2011	35-67 months 10-15 months
2	Handri Neeva	6.02	Nil	Ph I February 2007 – December 2009 Ph II November 2009-September 2011	33-67 months 12-34 months
3	Veligonda	4.47	Nil	August 2007 – August 2013	0-61 months
4	Telugu Ganga	5.23	4.36 lakh acres	February 2007 - April 2012	5-66 months
5	CBR-Lingala	0.59	Nil	August 2007 – May 2009	40-61 months
6	Gandikota-CBR Lift	0.57	Nil	May 2009 - October 2009	35-40 months
7	Modernization of PBC	New: 0.37 Stab: 0.60	New: Nil 45000 acres stabilised	July 2007 - December 2009	33-62 months
8	Somasila	New: 1.79 Stab: 3.34	New:1.56 lakh acres 2.75 lakh acres stabilised	March 2007 - June 2011	15-66 months
9	Somasila-Swarnamukhi Link canal	New: 0.35 Stab: 0.88	Nil	May 2010 - January 2011	20-28 months

Source: Records of I & CAD Department

The key issues relating to these projects are given below.

5.3.6 Sri Krishnadevaraya Galeru Nagari Sujala Sravanthi (Galeru Nagari)

5.3.6.1 Project profile

Irrigation potential envisaged:	*3.25 (later revised to 2.6) lakh acres in Chittoor, Kadapa and Nellore districts*
Drinking water facilities	*Villages enroute*
Source of water	*42 (revised to 38) TMC of flood water of river Krishna from foreshore of Srisailam reservoir*
Phase I: ***Administrative Sanction :*** ***Expenditure :*** ***Villages affected:*** ***Houses contemplated:*** ***Houses completed:***	 *₹4690.24 crore (June 2004 to March 2008)* *₹3630.30 crore* *25* *5665* *2252*
Phase II: ***Administrative Sanction :*** ***Expenditure:***	 *₹2525.91 crore* *₹306.69 crore*
Land	*Required: 55764.77 acres, Acquired:44708.59 acres*

5.3.6.2 Key Issues

i. Source of water: In December 1995 an Expert Committee was constituted to examine various alternatives relating to availability of water for this project, as mentioned in Chapter - 3. The Committee felt that the flood days on river Krishna

was only **30** and that the flow would be available in only 40 *per cent* of the years. Government, however, disregarded this observation and awarded the project works to draw 38 TMC of flood waters in **45** days. Later, the canal system was redesigned (November 2006) to discharge 20,000 cusecs instead of the originally envisaged 10,000 cusecs from Gorakallu Balancing Reservoir to Owk Reservoir, to facilitate drawal of 38 TMC in 30 days. Further, water required for Galeru Nagari can be drawn from Srisailam reservoir only if the discharge capacities of Pothireddipadu Head Regulator, Right Main Canal and the Right Branch Canal of Srisailam Project are increased. However, these works were not included in the Galeru Nagari project works awarded initially, indicating lack of planning in taking up this project.

ii. Reduction in Ayacut: Government initially contemplated creation of an ayacut of 3.25 lakh acres, which was reduced to 2.6 lakh acres (October 2005) through the conventional canal irrigation system, besides providing drinking water to villages enroute. Several changes were made in the allocation of water under the project as shown below:

Table-5.9

Sl. No.	Allocation (in TMC)	DPR 1990	DPR 1994	Initial allocation (2006-07)	Revised allocation (2010-11)
1	Irrigation and drinking water supply	28.00	30	26.45	17.33
2	Evaporation, seepage and transmission losses	13.76	8	7.55	3.67
3	Supplementation of PBC ayacut by 88,500 acres through GKLI	---	---	4.00	6.00
4	Pilot Micro irrigation system through lift from Gandikota reservoir to CBR for 1,26,000 acres (1,06,000 + 20,000)	---	---	---	8.83
5	M/s Brahmani Steel Ltd. at Jammalamadugu	---	---	---	2.00
6	M/s SJK Steel Plant at Tadipatri	---	---	---	0.30
7	M/s Raghuram Cement Industries	---	---	---	0.09
8	Drinking water to Tadipatri town in Anantapur district	---	---	---	0.60
	Total	**42**	**38**	**38**	**38.820**

Source: Records of I & CAD Department

- After commencement of works, 14.83 TMC of water was allocated to Chitravathi Balancing Reservoir (CBR) and Pulivendula Branch Canal (PBC) alone and 2.39 TMC was allocated to three private industries. These allocations were not contemplated at the time of commencement of the project.
- There is no uniformity in computing evaporation, transmission and seepage losses. The Department had earlier assessed (2006-07) these losses at 7.55 TMC, whereas, in November 2010, these were projected at only 3.67 TMC. If the losses which were assessed earlier are also considered, the water available for irrigation would be only 13.45 TMC, which will be sufficient to meet only part of the 2.6 lakh acres of ayacut proposed under the project.

The Department replied that the crop water requirement under Galeru Nagari project was reduced by adopting micro irrigation system and that the saved water was allocated to the CBR and PBC projects. It was also stated that the allocations to private industries was as per Government's policy to allocate 10 *per cent* storage in reservoirs to promote industrialization. The reply is not acceptable, since micro irrigation was neither contemplated in the original project proposals nor has been taken up so far. Besides, adoption of micro irrigation for 2.6 lakh acres under the project requires huge additional investments of atleast ₹880 crore[16] and drastically increases the project cost.

As regards downward revision of evaporation, transmission and seepage losses in the revised allocation, Department replied that these losses depend on the design of the canal system and soil conditions etc. and therefore may vary. The reply did not address the issue of reduction in losses by more than half between 2006-07 and 2010-11 when obviously the soil conditions would not have changed. In fact, the discharge capacity of the canal system was subsequently increased, which, in fact, would lead to increase in the evaporation and seepage losses.

The Department stated that the reduction in ayacut was due to overlap of 90,000 acres of ayacut under Somasila Swarnamukhi Link Canal (SSLC) scheme in Chittoor and Nellore districts, and that, an additional ayacut of 25,000 acres was identified in Kadapa district. **The reply is not correct, since the SSLC was taken up in May 2006 while the ayacut of Galeru Nagari was reduced in October 2005 itself**. Further, Audit observed that, under SSLC, only 34,818 acres of new ayacut is being developed and 88,182 acres of existing ayacut is being stabilized. This indicates that the ayacut originally included under Galeru Nagari and stated to be transferred to SSLC later, is, in fact, not entirely new, but is a part of the existing ayacut.

iii. Status of works: Out of the 28 Packages in Galeru Nagari, not even one package was completed as of September 2012. In as many as 17[17] packages, the slow progress of work was due to non-acquisition of land, including land to be obtained from the forest department. In view of this, the contractors executing packages 4, 7 and 28 requested to close their contracts. The progress in respect of the remaining packages was negligible.

- Package 12/06 was stopped due to agitation from the land owners who lost their lands due to the project works.
- Work on package 14 was suspended from March 2011 to October 2011 due to several reasons including non-payment of bills. The Department stated that the agreement period was over and extension of time was granted, and that, it is pursuing with the contractor to complete the balance work.

[16] As per the contracts entered into (February 2009) by the irrigation department under Gandikota LIS, Pulivendula Branch Canal and CBR-Lingala Canal, the cost of providing micro-irrigation was ₹3.385 crore per 1000 acres. At this rate, it would cost atleast ₹880 crore to provide micro-irrigation to the total ayacut of 2.6 lakh acres under Galeru Nagari

[17] Packages Nos 26 to 29 and 2 to 14

- In package 30, the initial proposal of a single tunnel with 16 meter dia at Owk was changed (November 2008) after entrustment of work, to twin tunnels with 11 meters dia. While approving the alternative design criteria, Government stipulated (December 2009) the bed lining thickness as 600mm based on the advice of the technical committee, as against the initial proposal of 500 mm. The work was suspended (December 2010), since the contractor found it difficult to execute the revised specification.
- Gandikota reservoir (package 1) was nearing completion. However, unless the works in the head reaches are completed, the reservoir would remain idle. None of the packages taken up during 2005-2007 was completed, even after granting extension of time for 3 years.

The Department confirmed that the slow progress in completion was due to non-acquisition of the required land and lack of forest clearance. It however, expressed confidence that there would be inflows into Gandikota dam and from catchment of Pennar during the monsoon period, which can be utilized for irrigation, as previous records indicated considerable inflows into Pennar River.

5.3.7 Anantha Venkata Ramireddy Handri Neeva Sujala Sravanthi (Handri Neeva)

5.3.7.1 Project profile

Irrigation potential envisaged:	*6.03 lakh acres in Ananthapur (3.45 lakh acres), Chittoor (1.40 lakh acres), Kadapa (0.38 lakh acres) and Kurnool (0.80 lakh acres) districts*
Drinking water facilities	*To 33 lakh population in four districts*
Source of water	*40 TMC of Krishna water; (14 TMC for phase I and 26 TMC for Phase II)*
Phase I:	
Administrative Sanction :	*₹2774 crore (January 2007)*
Expenditure:	*₹2708.61 crore (September 2012)*
Power required :	*453.19 MW*
Phase II:	
Administrative Sanction :	*₹4076 crore (January 2007)*
Expenditure:	*₹3244.94 crore (September 2012)*
Power required :	*199.68 MW*
Land	*Required: 46190 acres, Acquired: 40955 acres*
R & R houses	*Contemplated:204, Completed: Nil*

5.3.7.2 Key Issues

i. ***Changes to scope***: As per the DPR, the water required for the project was to be drawn from river Krishna (at Malyal village near Nandikotkur) by excavating a 3.4 km long approach channel with a carrying capacity of 109.02 cumecs up to Stage-I pump house. The off take point of the approach channel was fixed considering the levels of Srisailam reservoir (above which the flood waters of Krishna was proposed to be drawn). Subsequently, additional arrangements[18] for

[18] (i) an approach channel of 6.20 km from Siddeswaram, (ii) a new pump house near Mutchumarri and (iii) a 21.75 km long link channel from the new pump house which again joins the Malyal approach channel

drawal of water from a lower location viz., Siddeswaram in the foreshore of Srisailam reservoir were specified and agreements were concluded (December 2007 and June 2008) for an aggregate value of ₹250.66 crore.

The Department justified these additional works citing the design of Malyal channel to draw water at +250m level, and stated that, the additional intake arrangements at Siddeswaram have been planned to draw water at +240m, when the water level of Srisailam dam falls below +250m, for supplying drinking water during summer.

The reply is not acceptable, as the crest level of the spillway of Srisailam reservoir is +252.98 m. The fact that the original intake at Malyal was kept at +250 m indicates that the Government initially contemplated drawing flood waters from below the crest level of Srisailam dam whereas, the alternate intake arrangements are now being made at a far lower level of +240m near Siddeswaram, which leads to the conclusion that water is now proposed to be drawn from the carryover storage of Srisailam reservoir, which was meant to serve the already existing projects during the deficit years.

ii. Entrustment of works: As per the NIT, the contractors who were involved in fraudulent practices should not be awarded any contract. There were however, two firms, *viz*. Backbone Projects Ltd and LASA-VAS[19], which indulged in fraudulent practices[20] and as such should have been black-listed. However, both the firms were awarded further contracts worth **₹152.84 crore** (3 packages) and **₹8.10 crore** (one package) respectively.

iii. Status of works: Out of the 70 packages in Handri Neeva project, only one package (Jeedipalli reservoir) was completed as of September 2012. All the remaining packages were delayed by 2-3 years.

The Department attributed the delay in completion to (i) objections from local farmers to canal excavation, (ii) issue of exgratia to C category lands to be solved by Revenue authorities, (iii) implementation of control blasting at certain places, and (iv) insistence of crop, land and house damage compensation by farmers.

- The Phase I works, taken up in 2004-05, were not completed before taking up the Phase II works in 2007. Even the Phase II works, stipulated to be completed by 2011, were not completed as of September 2012.

The Department replied that the Phase-I works were awarded in 2004-05, duly keeping the completion time as 2 years, and after 2 years only, the Phase-II works were called for.

- Due to non-completion of lifts at all the stretches, the canals already excavated are getting silted up/ filled up with bushes/mud slides/rockslides etc. as can be seen from the photographs relating to packages 33 and 30 of Phase I given below (July 2012).

[19] Third Party Quality Control Agency

[20] (i) Not following agreement clauses and claiming excess payments ₹5.88 crore (ii) Claiming payments for work not executed ₹2.28 crore


5.3.8 Poola Subbiah Veligonda Project (Veligonda)

5.3.8.1 Project profile

Irrigation potential envisaged	*4.47 lakh acres and drinking water to 15.25 lakh population in Prakasam, Kadapa and Nellore districts*
Source of water	*43.5 TMC Krishna flood waters from Srisailam reservoir during monsoon (July to October)*
Administrative sanction	*₹4785.82 crore (March 2008)*
Expenditure	*₹3127.82 crore*
Land	*Required: 29645 acres; Acquired:21363 acres*
Villages affected	*11*
Number of Housing units	*Contemplated 4148; completed : Nil*
Power required	*14.70 MW*

5.3.8.2 Key Issues

i. ***Administrative approvals***: The DPR was prepared in 1994 and the GOAP accorded 8 administrative approvals and 11 technical sanctions in a piecemeal manner for 7 works. For instance, administrative approval for Tunnel-I was given for ₹400 crore whereas the technical sanction was accorded for ₹699.93 crore and the agreement was concluded for ₹624.60 crore.

ii. ***Changes to scope of project***: As per the DPR, the project was designed to draw 43.50 TMC of Krishna water from Srisailam reservoir in 45 days during the flood season through a tunnel of 11.34m diameter to irrigate 4.38 lakh acres in Prakasam, Kadapa and Nellore districts. However, when the project was taken up under Jalayagnam, the scope of the project was reduced and under stage-1, it was proposed to draw only 10.7 TMC of water in 45 days using a tunnel with a lesser diameter of 7.0m and irrigate 1.19 lakh acres. Tenders were invited and the works relating to tunnel, reservoirs, canals, etc., were awarded (November 2004 – August 2005). However, subsequently, stage-2 works were also awarded through supplemental agreements (June 2007 – August 2009) and some portions of work already executed had to be redone, resulting in an extra expenditure of ₹2.88 crore.

It was further noted:

- While deciding to take up the project in two stages, the Department did not devise any action plan for phasing the stage-1 and stage-2 works.

- Tunnel-1, feeder canal, three non-overflow dams and link canal were designed with a reduced capacity to draw only 10.7 TMC of water as against the requirement of 43.5 TMC and works were awarded.
- The Committee of Experts constituted for finalizing the designs relating to tunnel-II of this project suggested (December 2005) that the exact number of flood days have to be scientifically arrived at, duly considering all inflows and drawls of existing, ongoing and proposed projects from Srisailam reservoir. However, no such studies have been conducted and water availability for the project is not yet established (September 2012).
- As per the DPR, 43.5 TMC of water was to be drawn **in 45 days** through a single tunnel with a discharge capacity of 328 cumecs. This was later revised to be drawn **in 30 days** using twin tunnels, as shown below:

Table-5.10

	Tunnel description	Total discharge of the tunnel(s)	No. of days of drawl of water	Quantum of water proposed to be drawn	Ayacut proposed
As per the DPR	One tunnel of 11.34m dia	328 cumecs	45 days	43.5 TMC	4.38 lakh acres
As per the works initially awarded	One tunnel of 7m dia	85 cumecs	45 days	10.7 TMC	1.19 lakh acres
As being executed now	Two tunnels T 1 : 7m dia T 2 : 9.2m dia	483.31 cumecs	30 days	43.5 TMC	4.47 lakh acres

Source: Records of I & CAD Department

The total area of the tunnel proposed in the DPR (with 11.34m dia) and the twin tunnels now being executed (with 7m dia and 9.2m dia) works out approximately the same. Thus, the quantum of water these tunnels can draw in a specific duration should also be the same. However, as per the designs approved now, it is proposed to draw 43.5 TMC of water in just 30 days as against 45 days contemplated in the DPR.

The Department replied that a plan was prepared to take up the works in two stages but later it was decided to start Stage-II works based on various representations from the people and public representatives. It was also stated that though the 7 meter dia tunnel taken up originally could have been increased to 11.34 meters to draw the ultimate discharge, since the flood days are limited at that level, it was decided to have two tunnels, so that water can be drawn in more than 30 days.

iii. IBM estimates vs. execution: The Department estimated the IBM value of the tunnel-1 package as ₹693 crore (SSR 2004-05) based on certain assumptions. However, during execution, there were changes to the specifications, which involved an amount of ₹172.06 crore, as can be seen below.

Table-5.11

Sl. No	Assumptions made while preparing the estimate	Amount provided in IBM (₹ in crore)	As per execution	Cost of the actual requirement (₹ in crore)	Excess provision loaded in IBM (₹ in crore)
1	Two tunnel boring machines (TBMs) were proposed to be used for in tunnel excavation	210.00	Only one TBM is being used	105.00	105.00
2	An adit was proposed for the tunnel	22.00	No adit is executed as only one TBM was used	-	22.00
3	Scrap value not contemplated in the estimate	-	If 10% of the value of the TBM is taken as scrap value.	10.50	10.50
4	Lining of 500 MM thick with M20 grade concrete	90.14	Lining of 300mm thick with M 35 grade concrete	55.58	34.56
				Total	**172.06**

Source: Records of I & CAD Department

The Department stated that while preparing the estimates, some assumptions were made in the absence of practical data and that the IBM value was uploaded in the e-procurement platform only after the closing date of bid submission and no bidder had taken advantage of these assumptions. The basis of computing IBM not being firm, using it to compare the price quoted by the bidder led to awarding the contract at ₹172.06 crore in excess of the actual requirement.

iv. Status of works: The project is divided in to seven packages and all seven were reviewed in Audit.

- Boring activity of tunnel was held up due to encountering loose soil with gush of water in December 2009. The Department confirmed (July 2012) that for 16 months, the boring activity was held up due to encountering loose soil and that, the work is now progressing briskly.
- There was slow progress in tunnel excavation and the feeder canal was not completed as per the scheduled time line. The status of some of the works is given below (July 2012).

Non completion of CM &CD[21] works (Aqueduct)

Eastern Main Canal at Km 6.00 to 10.00 delayed due to non acquisition of Forest Land

[21] Cross masonry and cross drainage works

5.3.9 Chitravathi Balancing Reservoir (CBR) Right Canal (Lingala Canal) and Lift Irrigation Scheme

5.3.9.1 Project profile

Irrigation potential envisaged:	*59400 acres (25000 acres in Phase I; 34400 acres in Phase II)*
Source of water	*3.6 TMC of water from Chitravathi Balancing Reservoir*
Other benefits	*Drinking water facilities to 50000 population*
Components	*Canal for a length of 53 KM*
Administrative Sanction	*Original: ₹32 crore (June 2004)* *Revised: ₹626.82 crore (October 2006-November 2008)*
Expenditure	*₹300.57 crore*
Power requirement	*14.21 MW*
Land	*Required:2856 acres, Acquired:1923 acres*

5.3.9.2 Key Issues

i. Assessment of availability of dependable water resources: When the CBR was not able to provide water to even 25 *per cent* of the ayacut already existing under it, proposing another project on this reservoir was not appropriate. The chances of success of Lingala canal system, being constructed at a cost of ₹626.82 crore, are thus dependent on providing an alternative source.

ii. Changes to scope of project: The Chitravathi Balancing Reservoir (CBR) was constructed as part of the Tungabhadra Project High Level Canal scheme, with a storage capacity of 10 TMC to stabilize an ayacut of 59,500 acres under the Pulivendula Branch Canal (PBC) system. The total water requirement for PBC system was 6.40 TMC.

Government decided to take up excavation of a 64 KM long right canal (called Lingala Canal) from the CBR to provide irrigation facilities to 25,000 acres and drinking water to the population of Lingala and the adjoining mandals of Pulivendula constituency by utilizing the 3.60 TMC of balance water of CBR and accorded (June 2004) administrative approval for ₹32 crore. Tender notice for the work was issued on 18 August 2004. Immediately thereafter, in the same month, the CE sanctioned (August 2004) a revised estimate for ₹150.43 crore with an increased scope of project by proposing (i) increase in the carrying capacity of the canal from 28.30 cumecs to 34.00 cumecs, (ii) excavation of a new link canal, (iii) improvements to 4 No. of tanks, (iv) provision of four lifts to feed these tanks and (v) increase the capacity and the number of structures. However, there was no increase in the ayacut. The length of the canal was reduced in the revised scope of work to 53 KM as against the originally contemplated length of 64 KM. Further, even this revised scope of work was not adhered to.There were frequent changes in the project including adoption of micro-irrigation system and increase in the contemplated ayacut to 59,400 acres. In all, five administrative approvals were accorded for the project. After concluding the initial agreement, four supplemental agreements were concluded with the same agency for the additional scope of work. The total value of works entrusted was ₹336.20 crore as against the original agreement value of ₹148.05 crore. Clearly, the scope of the project was not determined before award of works. Further, although the entire ayacut of 59,400 acres was to be developed through micro-irrigation as per the revised proposals, agreements were concluded only for 5000 acres.

The Department replied that the frequent changes made in the project have to be seen in the context of the need to provide irrigation and drinking water to upland areas which could never hope to get these facilities.

5.3.10 Modernization and Micro Irrigation of Pulivendula Branch Canal (PBC)

5.3.10.1 Project profile

Irrigation potential envisaged:	*Additional ayacut of 36900 acres; Stabilization of 60000 acres in Pulivendula constituency*
Source of water	*6.4 TMC (4.4 TMC from Tungabhadra dam and 2 TMC from catchment through Chitravathi river)*
Administrative Sanction	*₹657.43 crore*
Expenditure	*₹200.17 crore*
Power requirement	*5.06 MW*
Land	*Required : 2385.41 acres Acquired : 1491.07 acres*

5.3.10.2 Key Issues

i. Changes to scope of project: The Pulivendula Branch Canal (PBC) was an existing canal scheme taken up (1973) under the Tungabhadra Project High Level Canal Scheme. Modernization of the PBC system was initially taken up in 2005 to stabilize the existing ayacut at a cost of ₹118.23 crore. Later, the GoAP decided (December 2006) to create a new ayacut of 36,900 acres through micro irrigation at a cost of ₹156 crore. Subsequently, it was decided (November 2008) to implement micro irrigation system at a cost of ₹360 crore to the entire ayacut under PBC.

During the execution of works, the GoAP decided (May 2008) to increase the carrying capacity of the system by 400 cusecs to supplement Mylavaram reservoir, but due to the refusal of the contractor, the portion relating to excavation of Tumpera deep cut and bypass channel were deleted from the scope of the original contractor and entrusted to another agency in November 2007. Taking up modernization works initially with lower discharge and subsequently increasing the carrying capacity of the system indicates lack of planning in formulation of the project.

The Department replied that the changes made to the scope of the project during execution were the result of representations from people and public representatives. The reply is not acceptable, as projects of this magnitude, while addressing the needs of the people, should also have sound engineering/technical basis.

ii. Status of works: All the eight packages are at various stages of completion and not one of them has been completed as of September 2012. The Department had procured electro-mechanical components required for lift irrigation at a cost of ₹31.87 crore between September 2008 to August 2009, which have not yet been put to use.

The Department replied that due to delay in land acquisition, non availability of water and power for testing & commissioning of electro-mechanical equipment etc., the project could not be completed on time.

5.3.11 Somasila Swarnamukhi Link Canal (SSLC)

5.3.11.1 Project profile

Irrigation potential envisaged:	*Create a new ayacut of 34818 acres* *Stabilize 88182 acres of 316 tanks in Nellore and Chittoor districts*
Source of water	*Proposes to utilize 4.45 TMC of Pennar flood water*
Other benefits	*Provides for drinking water facilities to 2.5 lakh population with 0.2 TMC*
Components	*Takes off at KM 12.52 of Somasila-Kandaleru Flood flow canal and runs for a length of 100.06 KM*
Administrative Sanction	*₹437.42crore*
Expenditure	*₹97.66 crore*
Land	*Required : 5870 acres Acquired : 2668 acres*

5.3.11.2 Key Issues

i. ***Technical sanction***: Tenders for the works relating to SSLC were invited before according the technical sanction to the estimates. In fact the estimates were approved after more than seven months from the date of issue of tender notices. The Department in its reply, accepted the audit observation and stated that tenders being called before getting technical sanction was a procedural lapse due to heavy rush of work under Jalayagnam.

ii. ***Delay in approval of designs***: In all the three packages, which were entrusted from May to September 2007, there was a delay in approval of designs. Out of the total 145 designs to be got approved, the contractor submitted designs for 23 structures, out of which, only 14 designs were approved by the Department. The Department has taken more than four and half years for approval of 14 designs, which led to time over run in the project. The Department replied that works in package 17 are under progress and that, work in package 15 is held up because forest land was yet to be handed over. Work in package 16 was stated to be held up because of delay in handing over of forest land & Wild Life Sanctuary clearance.

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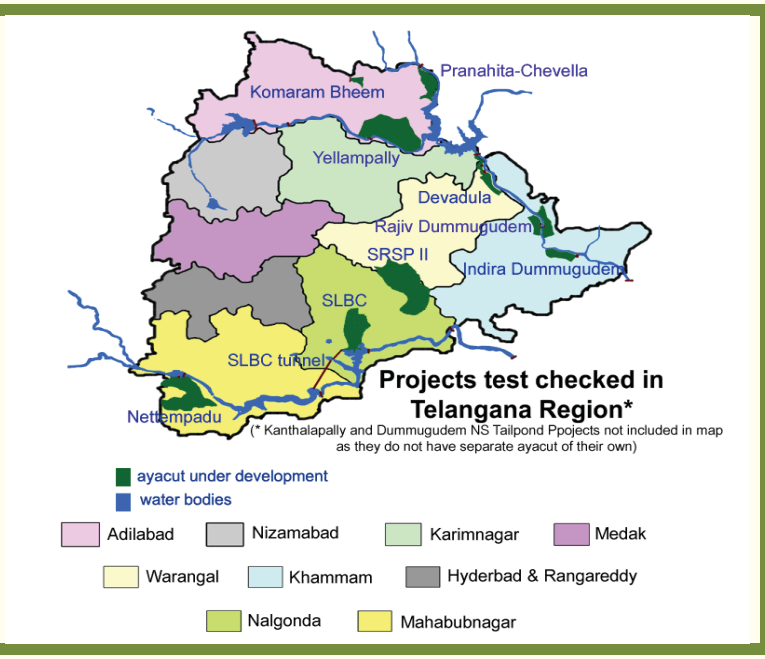


The ayacut created in the eleven test checked projects in the Telangana region as of September 2012 was **4.37** lakh acres against **39** lakh acres contemplated. All the test checked projects were at various stages of execution as of September 2012. The details of ayacut created vis-à-vis envisaged, in respect of these projects is given below.

Table-5.12

Sl. No	Project	Ayacut contemplated (in lakh acres)	Ayacut created	Due date of completion	Delay
1	Devadula	6.21	45000 acres	July 2005 - August 2014	0-60 months
2	Nettempadu	2.00	Nil.	August 2007 - July 2009	38-61 months
3	Indira Dummugudem	2.00	Nil	Jan 2012 - March 2012	6-8 months
4	Rajiv Dummugudem	2.00	Nil	February 2012 - February 2013	0-7 months
5	Dummugudem NS Tail pond	Stab: 14.13	----	Nov 2011 - April 2014	0-10 months
6	SLBC tunnel	3.70	2.13 lakh acres.	March 2008 - February 2012	7-54 months
7	Yellampally	New: 2.20 Stab: 0.30	Nil	Oct 2006 - Nov 2011	10-71 months
8	Pranahita – Chevella	New:16.40	Nil.	Nov 2010 – April 2013	0-22 months
9	Komaram Bheem	0.45	14000 acres	March 2007	66 months
10	SRSP Stage II	4.04	1.65 lakh acres.	March 2007 – May 2010	28-66 months
11	Kanthanapally	Stab: 7.5	Not awarded works as yet		

Source: Records of I & CAD Department

The key issues relating to these projects are given below.

5.3.12 J. Chokka Rao Godavari Lift Irrigation Scheme (Devadula)

5.3.12.1 Project profile

Irrigation potential envisaged:	*6.47 lakh acres (later revised to 6.21 lakh acres) in Warangal, Nalgonda and Karimnagar districts*
Source of water	*38.182 TMC from river Godavari and 8.2 TMC from self catchment area*
Components	*Construction of pumping stations, laying of pipelines, inter-conneting 12 irrigation system tanks, excavation of canals and distributaries*
Administrative Sanction	*₹9178.78 crore (Phase I : June 2003, Phase II: April 2005, Phase III: October 2007)*
Expenditure	*₹6351.77 crore*
Lifts	*Number : 3, Height : 1246 meters*
Power requirement	*484 MW*
Land	*Required : 20089 acres and Acquired : 13840 acres*
R & R Houses	*Contemplated : 83, Completed : Nil*

5.3.12.2 Key Issues

i. ***Scope variation***: The task of preparation of DPR for the project was entrusted to a consultant in February 2002 at a cost of ₹4.15 crore, for completion in nine months. The DPR was however, submitted in October 2003 and was cleared by the CWC in March 2007. However, administrative approvals of phase-I and phase-II were awarded in June 2003 and April 2005 respectively, and works were also entrusted in January 2004 and April 2005 respectively, *i.e.,* prior to approval of DPR.

The Department replied that the works were awarded on EPC basis on the instructions from the Government. The decision to award the works without obtaining clearance from CWC and even before submission of DPR by the consultant proved costly, since the scope of works and demarcation of ayacut underwent several changes, as detailed below.

- The Department adopted (April 2008) an FRL of + 202.97 M for Ramappa Tank based on the levels furnished by the EE of the Mulugu Division, as against the FRL of + 209.38M stated in the DPR. The discrepancy in the levels later led to confusion and it took more than seven months for the Department to finally confirm the actual levels (which were correctly stipulated in the DPR) after physical verification of the site. This ultimately contributed to delays in execution of works.

The Department, while confirming the error, stated that only fixation of minimum water level of the surgepool was delayed and not the entire execution.

ii. Overlap of ayacut: As per the DPR, Devadula initially proposed to irrigate 6.47 lakh acres of ayacut which included 0.77 lakh acres under the already existing tanks in four districts[22] of Telangana region. However, during execution, the contemplated ayacut was changed as indicated below.

Table-5.13

(in acres)

	Warangal	Karimnagar	Nalgonda	Medak	Total
Ayacut as per DPR	4,44,081	14,833	1,49,459	38,197	**6,46,570**
Ayacut as per execution	5,61,229	14,100	45,671	Nil	**6,21,000**

Source: Records of I & CAD Department

The Department, while accepting that there was an overlap of ayacut, stated that owing to technical considerations and public representations, these adjustments were made, and that, the overall quantum of ayacut contemplated under Devadula remained in tact. The reply does not explain the reasons for the overall reduction of ayacut by 25,570 acres. Considering that the works are awarded on a fixed price based on several parameters like topography of the area, length of canals etc., changing the contours of the ayacut mid-way, would have financial implications.

iii. Impractical Agreement period: In most of the EPC agreements under this project, the completion period fixed ranged from 18 to 36 months[23]. Within this period, a host of activities, including detailed survey and investigation and submission of alignment proposals (by the contractor), their approval (by the Department), identification of forest lands (jointly), processing the proposals and obtaining approvals, clearances and execution of the works were to be completed. While on one hand, the Department has attributed these aspects as causes of delay, in this background, the agreement periods drawn up are not realistic.

[22] Warangal, Karimnagar, Nalgonda and Medak. The CA in Medak district was later deleted during execution

[23] Except in packages-V, VI, VII and VIII of phase-III where the contract period stipulated was 57, 42, 48 and 48 months respectively

iv. ***Design of canals****:* Some of the canals in Devadula were not designed properly, as detailed below.

- In the DPR, the south main canal (SMC) of Dharmasagar tank was designed with a discharge of 220 acres/cusec[24]. However, after commencement of the project works, the GoAP ordered to adopt a duty of 150 acres per cusec. Thus, there is a mismatch between the design of the main canal and its distributary.

The Department, while accepting the change in design, contended that the discharge capacity of the SMC would be sufficient. The reply is not acceptable, since the total ayacut fed by SMC has been reduced by 57,575 acres of ayacut to accommodate this change in design.

- The Right Main Canal of Ashwaraopally Tank was being executed to provide irrigation to 0.93 lakh acres while the distributary network was being excavated to create an ayacut of only 0.43 lakh acres in Phase-II. The remaining ayacut of 0.5 lakh acres was transferred to another project viz., Pranahita Chevella.
- Similarly, while the Right Flank Main Canal of R.S.Ghanpur Reservoir was designed and being executed for providing irrigation to 1.51 lakh acres, the distributary canals were being executed for 1.33 lakh acres only. The remaining ayacut of 0.18 lakh acres was transferred to Pranahita Chevella Sujala Sravanthi Project.

The Department replied that the higher design can be used to supply water during peak demand. The reply is not justified since the canals under irrigation projects are invariably designed keeping in view the peak water demand only (i.e. the maximum of the fortnightly water demand during the crop period)

v. ***Status of works***: Devadula project comprises three phases. Execution of Phase I with three packages commenced in January 2004. Work on Phase II with five packages commenced in April 2005 and Phase III with eight packages was taken up in December 2008.The project was divided in to 16 packages and 15 packages have been reviewed in audit.

- Out of the three packages in the first phase, the canal and distributory system under packages 45 and 46 was yet to be completed and execution of field channel system which was separately awarded to non EPC contractors in July 2010, was also not completed.
- The progress of the works in the remaining packages was very slow due to non-acquisition of land to the extent required.
- Due to slow progress of work and delay in land acquisition in D8 of package 46, ayacut of 47119 acres could not be brought to irrigation.
- The work of seventeen minors and sub minors under D9 has not started despite handing over site.

[24] to irrigate 220 acres of ayacut, the canals have to be designed with a discharge capacity of one cusec

- Only 12054 acres could be irrigated under South Main Canal during Kharif 2011.
- In Phase I, package 46, construction of field channels for an ayacut of 19643 acres was not completed on the ground of standing crops.

5.3.13 Jawahar Nettempadu Lift Irrigation Scheme (Nettempadu)

5.3.13.1 Project profile

Irrigation potential envisaged	*2 lakh acres in 148 villages of Mahabubnagar*
Source of water	*21.425 TMC of water from foreshore of Jurala reservoir on river Krishna*
Components	*Two lifts with two balancing reservoirs supported by eight online balancing reservoirs*
Lift	*Height :139 meters*
Power	*119 MW*
Project Cost	*₹1428 crore (June 2005)*
Expenditure	*₹1429.74 crore*
Land	*Required:25412 acres Acquired:20503 acres*
R & R Housing units	*Contemplated:2575, completed: nil*

5.3.13.2 Key Issues

i. Deviations from DPR: The DPR for the project was first prepared in July 2004. It was revised later (November 2005) and the project works commenced with two major deviations *viz*., (i) increase in power requirement of the pumps and motors from 62 MW to 119 MW; and (ii) increase in storage capacity of reservoirs from 3.35 TMC to 5.19 TMC. As the extent of targeted ayacut has not increased with these revisions, initial planning of the scheme was, thus, not in order. In the original DPR, the storage capacities of the two balancing reservoirs viz., Gudemdoddi Balancing Reservoir and Relampadu Balancing Reservoir were worked out as 1.04 TMC and 2.31 TMC respectively, and were later increased to 1.19 TMC and 4.0 TMC respectively, to serve only the contemplated ayacut. In addition to the above two balancing reservoirs, the project also contemplated formation of eight online reservoirs with a total storage capacity of 6.73 TMC for additional storage. However, even after the lapse of more than six years since award (August 2005 – March 2006) of works, the feeder channels through which these reservoirs are to be linked with the main canals has not been finalized. The Department has also not firmed up the location of these online reservoirs.

The Department replied that the number and capacity of the pumps was modified after consultation with the APGENCO and that the capacity of the online reservoirs was increased after detailed investigations by the EPC agencies. As regards the feeder channels linking the online reservoirs, it was stated that tenders had now been invited to take up these works.

ii. Identification of targeted ayacut: The project contemplates providing irrigation to two lakh acres in 148 villages. While preparing the DPR, although the 148 villages were identified, the names of only 29 villages were indicated in the six agreements involving development of distributary network. The Department stated that these would be finalized only after completion of detailed investigations by

the contracting agencies. It was further stated that, the villages falling in the alignment of the main canals only were mentioned in the agreements, and that, the distributory network will cover the adjacent villages enroute and that the contemplated ayacut of two lakh acres is achievable.

iii. ***Status of works***: Review of all 14 packages of Nettempadu LIS revealed time over run in project execution ranging from 38 to 61 months.

- Progress of works was very slow in all the packages, except package No. 102, where the work was completed.
- In package 98, the need for construction of Head Regulator and Cross Regulator was identified after entrustment of works. The Department stated that they were entrusted to the same agency as additional work.
- In package 99 the hydraulic particulars of ending reach of Right Main Canal were not approved.
- Only **726** designs were approved out of the total **3658** designs required to be approved. The contractors were yet to submit **2847** designs.

iv. ***Synchronization of activities***: In any lift irrigation project, the balancing reservoirs would become functional only when the lift works are completed. Similarly, canals would be useful when the reservoirs can release water in to them. However, in Nettempadu, works were entrusted to firms stipulating the completion of canals and balancing reservoirs by October 2007 whereas lift works were given time for completion up to July 2009 resulting in blocking of funds on canal works.

The Department replied that the working period given for **canal works was 24 months on par with commissioning of first pump of the lift works, which had to be commissioned in 24 months**. The reply is not tenable since operation of one pump will not be able to cater to the needs of even Stage-I and unless more than two pumps are commissioned in Stage-I lift, water cannot reach Stage-II after meeting the water requirements of Stage-I ayacut.

5.3.14 Indirasagar Dummugudem Lift Irrigation Scheme

5.3.14.1 Project profile

Irrigation potential envisaged:	*2 lakh acres in Khammam, Krishna and West Godavari districts*
Source of water	*16.5 TMC from river Godavari at the foreshore of Indirasagar Polavaram Project*
Administrative Sanction	*₹1824 crore (December 2005)*
Expenditure	*₹933.14 crore*
Lift Information	*Number : 3*
Power requirement	*229 MW*
Land	*Required : 3815 acres; Acquired : 1033 acres*

5.3.14.2 Key Issues

i. ***Changes to scope of work***: This project proposes to lift 16.50 TMC of water from river Godavari during monsoon period (flood season from July to September) from the foreshore of Polavaram Project.

- During the actual execution of project works, there have been a number of changes in the location of pump houses and scope of works which resulted in delay in execution of works. Further, non-identification of the contemplated ayacut before award of works has also contributed to non-commencement of works in packages 50 & 51 despite the agreement period nearing completion.

The Department replied that the changes to the scope of works during execution was on account of technical considerations, and that, the work was delayed due to land acquisition and finalization of initial reaches of parent canal of the distributary network.

- During execution of works, the contractors reported that it was not possible to create an ayacut beyond 1.43 lakh acres due to non-availability of ayacut under packages 50 and 51. Thus, there is a shortfall of 0.57 lakh acres of ayacut.

The Department replied that the Mandal wise and Village wise aycut was identified by the consultant which was made available to the EPC agencies. It was also stated that as per departmental data the ayacut was available and the agencies of packages 50 and 51 had been asked to resurvey in detail and submit revised proposals for the total ayacut of 1.81 lakh acres. The reply does not explain as to why the EPC agencies were unable to find the ayacut when it was already established in the DPR and was made available to them.

ii. ***Status of work***: Major portion of laying pipelines was completed except pump houses and distributory network.

- Progress of all three pump houses was poor despite completion of agreement period. Government replied that pump houses 1 and 2 are in progress (July 2012) and pump house 3 would be started soon, as it received clearance from MoEF
- Contractors of packages 50 and 51 could only complete survey and investigation for formation of distributory network during the agreement period of 56 months without any real execution in physical terms.
- Even in packages (Nos 21, 22 and 31) where manufacturing and laying of pipelines has progressed well, other items like earth work excavation for approach channel, formation of tanks, outfall regulators etc., were either not commenced or were still in the initial stages. The Department stated that the land acquisition is now complete and forest clearance was obtained.
- In package 49, excavation of Left Main Canal was completed only in 7.88 km, as against 90 KM, as of July 2012.

5.3.15 Rajiv Dummugudem Lift Irrigation Scheme

5.3.15.1 Project profile

Irrigation potential envisaged:	*2 lakh acres in Khammam & Warangal districts*
Source of water	*Proposes to lift 16.5 TMC from river Godavari in monsoon at Pamulapally of Aswapuram mandal in Khammam district*
Components	*seven stage lifting apart from six balancing tanks*
Administrative sanction	*₹1681 crore (December 2005)*
Expenditure	*₹699.82 crore*
Land	*Required:4042 acres Acquired:737 acres*
Power	*Required:120MW*

5.3.15.2 Key Issues

i. ***Status of works***: The project, proposed to be completed within three years with seven packages, was not on course as indicated below.

- One contractor firm (package 67) has not completed survey and investigation work till date (September 2012) and the instructions (August 2009) of the Secretary to Government for deletion of the work, in view of non-commencement of survey and investigation to create an irrigation potential (IP) of 90000 acres, have not been implemented.
- Acquisition of forest land for about 1503 acres was one of the main hindrances for completion of the scheme and the works were in intial stages.

5.3.16 Jyothirao Phule Dummugudem Nagarjunasagar Sujala Sravanthi (Dummugudem Nagarjunasagar Tail Pond)

5.3.16.1 Project Profile

Irrigation potential envisaged:	*No original ayacut of its own; Purely interlinking of rivers; Intends to stabilize 14.13 lakh acres of Nagarjunasagar*
Source of water	*165 TMC of river Godavari water to river Krishna through river Halia*
Components	*Main canal of 244 KM including twin tunnel 38.325KM*
Administrative Sanction	*Original ₹8930 crore (May 2007); Revised : ₹19521 crore (February 2009)*
Expenditure	*₹547.21 crore (September 2012) No expenditure during the last one and half a year*
Lifts	*Number : 6*
Power requirement	*1136 MW*
Land	*Required : 10225 acres, Acquired : Nil*

5.3.16.2 Key Issues

i. ***Feasibility of the project***: This project involves inter-linking of rivers and does not envisage creation of new ayacut. The objective is to supplement the Nagarjunasagar Project (NSP) with 165 TMC of water, by diverting water from river Godavari to Nagarjunasagar tail pond and stabilize the already existing ayacut of 14.13 lakh acres under NSP during the Kharif season.

The task of preparation of feasibility report and DPR was entrusted to M/s WAPCOS in July 2006 with a stipulation to submit the report within six months. The agency submitted the DPR in October 2010, i.e. after a delay of nearly four years.

- A Committee constituted by the Government to examine the DPR of this project felt (December 2008) that the Nagarjunasagar Tail Pond would not be able to absorb the inflows diverted from Godavari and suggested diverting/lift the water directly into the Nagarjunasagar reservoir instead of into the tail pond. However, this recommendation has not been taken into account in the latest DPR prepared for the project and the works are continuing as per the original proposals.
- More importantly, in July 2009, the CWC questioned the viability of this project, raising a fundamental issue that the project proposes to divert Godavari water into Nagarjunasagar during monsoon when it would already be receiving a lot of water. The CWC had returned the proposals in February 2012. The State Government has not responded to the CWC's comment till date (September 2012).

ii. ***Financial viability of the project:*** In May 2007, when the project proposals were submitted for approval, the Finance Department expressed concern over the cost of the project in view of a number of ongoing projects worth ₹60,000 crore and outlay on already committed projects and schemes. Despite this, the Government accorded administrative sanction for this project for ₹8,930 crore (May 2007) and in February 2009, further enhanced it to ₹19,521.42 crore, as against which, the expenditure up to September 2012 was only ₹547.21 crore.

iii. ***Inadequate competition***: Works relating to this project were awarded before preparation of the DPR. With regard to bidding and award of works, there was inadequate competition in this project. Two (Packages 1 and 4) out of the ten packages were entrusted to single bidders. In seven packages, the competition was low with only two bids in each. Five bids were received in respect of the remaining Package (2). The Department accepted that competition among the bidders was poor and attributed it to the condition of 15 years of operation and maintenance incorporated in the tenders for the first time in India.

- Out of the three bids received for package 3, the lowest bid was for ₹124.65 crore, against the IBM of ₹140 crore. The bids were valid up to 28 January 2008 but due to delay in acceptance of bid up to March 2008, the lowest bidder expressed his inability to extend bid validity. The tender was, therefore, cancelled. When bids were re-invited in July 2008, the response was poor. Non-acceptance of the bid in the first call within the validity period resulted in extra burden on the Government due to revision of estimate from ₹140 crore to ₹252.72 crore including new items. The work was finally awarded in May 2009 for ₹265.30 crore. The extra burden on account of revision of SSRs, excluding new items was ₹ 43.02 crore.
- Execution of the project has not started as of September 2012. Investigation was completed in respect of seven out of ten packages and approvals of designs for these packages are at various stages.

5.3.17 Alimineti Madhava Reddy Project (Srisailam Left Bank Canal Tunnel Scheme or SLBC)

5.3.17.1 Project profile

Irrigation potential envisaged	*3.7 lakh acres in Nalgonda district*
Source of water	*30 TMC from river Krishna*
Components	*43.70 KM gravity tunnel to carry 4000 cusecs from Srisailam reservoir to Dindi balancing reservoir* *Formation of Dindi balancing reservoir* *7.25 KM second tunnel to SLBC main canal and open canal for 25 KM to feed existing AMRP canal*
Administrative sanction	*₹2813 crore (August 2005)*
Expenditure	*₹1479.99 crore*
Land	*Requisitioned :5566 acres, Acquired : 1566 acres*
Villages affected	*9*
Number of Housing units	*Contemplated : 2154 and Completed:995*

5.3.17.2 Key Issues

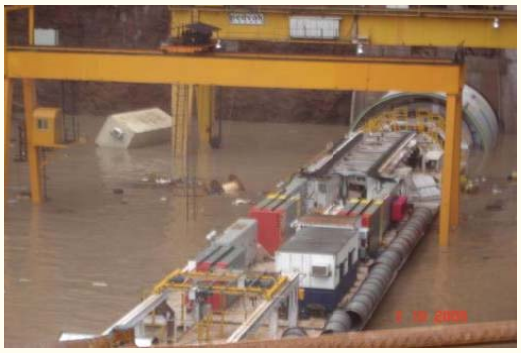
i. ***Detailed Project Report***: Government commissioned (1979) a study to ascertain the feasibility of a High Level Canal and Lift canal from the foreshore of Nagarjuna Sagar reservoir for providing irrigation facilities in Nalgonda, not coming under the purview of the Nagarjunasagar (NSP) left canal. Accordingly a report was submitted (1980) with two feasible alternatives - i) Lift canal from Nagarjunasagar reservoir; and ii) Gravity canal from Srisailam reservoir. Government ordered (1981) a detailed investigation on the second alternative. In 1983 it decided to expedite the investigation of a tunnel from Srisailam reservoir. Since the 39 KM long tunnel scheme involved application of advanced technology, besides obtaining forest clearance, to derive early benefits, GoAP decided to take up the lift canal scheme from NSP, which involved relatively low capital investment of ₹801 crore (1994-95). However, even while the lift scheme from NSP was still under execution, in 2005 the GoAP took up the second alternative i.e. tunnel scheme under Jalayagnam at an estimated cost of ₹2813 crore. The DPR for Tunnel scheme was submitted to CWC for approval earlier in the year 1985. The CWC returned the DPR stating that unless the availability of 30 TMC water is firmly and clearly established, the examination of the project cannot be taken up. The DPR for the other alternative – Lift scheme from NSP was not considered by the CWC for the same reason. Though the project cost has increased substantially, revised DPR has not been prepared by Government with the updated cost. CWC has not approved either alternatives of the SLBC, *viz*., gravity tunnel scheme from Srisailam reservoir and lift irrigation scheme from Nagarjunasagar reservoir due to lack of firm and clear availability of 30 TMC of water.

ii. ***Status of works***: SLBC tunnel scheme involved four packages, out of which, two packages relating to Tunnel I - Tunnel II and Formation of Dindi Balancing Reservoir were reviewed in Audit and it was noted that:

- There was a delay of seven months in indenting for the Tunnel Boring Machines (TBMs) (May 2006) after payment of TBM advance (November

2005). The TBMs were received from March to November 2007. Thus 2 out of the targeted 5 years elapsed in importing TBMs itself. The Department replied that the TBMs were ordered after detailed investigation and collecting geological information.

- Assembling of Tunnel Boring Machine (TBM) at the outlet face of Tunnel-1 was commenced in December 2007 and boring started from May 2008.
- There was a delay in assembling the second TBM at inlet face of Tunnel-1, which commenced only in June 2009 i.e. after 18 months of receipt of the TBM (November 2007). The Department replied that the delay in assembling second machine was due to clearance from the Forest department, and that, the site for intake was changed due to geological conditions.
- The process of procurement and assembling, to be completed in 16 months by the contractor took more than 3 years.
- Within three months, the second TBM was inundated by floods (October 2009) as can be seen from the photographs given below. The entire TBM was refurbished after 18 months and commenced operation in June 2011. Thus, the boring did not commence at the inlet face during the agreement period.



A length of 14.10 KM including lining was completed as of September 2012 out of 43.93 KM in Tunnel - I. The average boring rate targeted for both the TBMs put together was more than 1KM per month, while the achieved rate was only 210.45 meters due to power grid failure, non-availability of spares and frequent change of cutters of TBM.

The Department replied that the geological conditions could not be assessed in depth due to the restrictions of survey work in the Wild Life sanctuary area, and in the event of any problem in the machine, it has to be got repaired there itself. It was further stated that the second machine is progressing well with about 400m per month which is likely to touch 500 meters.

- The civil works of Dindi balancing reservoir have not commenced even after completion of 30 months of the contract period. Works pertaining to open canal for 25 KM were yet to be entrusted as of July 2012. The Department attributed the delay to problems in land acquisition and added that the estimates for open canal are under preparation.

5.3.18 Sripadasagar Yellampally Project (Yellampally)

5.3.18.1 Project profile

Irrigation potential envisaged:	*Original: 4.5 lakh acres of Karimnagar, Adilabad and Medak districts. Revised: New: 2.20 lakh acres, Stab: 0.30 lakh acres under Kaddem project*
Source of water	*Diversion of 40 TMC of Godavari*
Other purposes	*Supply of 6.5 TMC water to NTPC* *Lift of 3 TMC of water to supplement tail end ayacut of Kaddem Narayan Reddy Project*
Components	*Multistage lifting by constructing a barrage across Godavari near Yellampally village (Ramagundam mandal, Karimnagar district) with gross storage capacity of 20.16 TMC* *Erection of 62 radial gates of barrage*
Administrative Sanction	*₹3177.74 crore (July 2004 to July 2008 under various Government orders)*
Expenditure	*₹3347.27 crore*
Land	*Required: 27387 acres, Acquired: 18778 acres*
Power requirement	*116.80 MW*
R & R Houses	*Contemplated:13296, Completed:1448*

5.3.18.2 Key Issues

i. ***Identification of ayacut: (a)*** For excavation of distributory network for the ayacut of 2 lakh acres, a separate administrative approval was accorded (June 2008) for ₹376.25 crore. However, the technical sanction was accorded for the distributory network covering only 1.66 lakh acres under three separate packages as detailed below:

Table-5.14

Canal Network package-I	49,500 acres	under Gangadhara tank
Canal Network package-II	57,400 acres	under Rudrangi and Nagaram tanks
Canal Network package-III	58,800 acres	under Kodimial, Potharam, Surampet, New tank 450 and Lachupet tanks
Total	**1,65,700 acres**	

Source: Records of I & CAD department

Thus, abinitio there was a shortfall of 34,300 acres of ayacut. The distributary network package-II has not been taken up so far. Further, the department furnished the village wise ayacut particulars only in respect of Karimnagar district. In respect of Adilabad district, only mandal wise ayacut was furnished and village wise details were not furnished to Audit.

The Department replied that the balance ayacut would be taken up after making field studies. The reply is not tenable, as it is over 5 years since the DPR was completed at a cost of ₹1.5 crore.

(b) Two lakh acres of ayacut was proposed under stage-II, phase-I to be developed under different tanks. Mulavagu was one of the tanks proposed and work for the canal system under this tank was awarded in April 2005. T**he ayacut of 13,500 acres under this tank was later included under one of the packages of Pranahitha Chevella** for which tenders were called for and agreement was also concluded in November 2008. Due to the overlap of ayacut, the excavation of gravity canal beyond Mulavagu

would not be necessary and the Department is proposing to delete this item from the scope of contract of Yellampally.

A comparison of the ayacut proposed under Yellampally and Pranahita Chevella projects where both the mandal wise and village wise particulars of contemplated ayacut were available, revealed that there was an overlap of 30 villages under four mandals in these two projects.

The Department replied that the ayacut under this project was finalized after detailed investigations before even contemplation of Pranahita Chevella project. If this was so, there was no reason to have included the ayacut pertaining to this project in another project.

5.3.19 Dr. B.R. Ambedkar Pranahita Chevella Sujala Sravanthi (Pranahita-Chevella)

5.3.19.1 Project profile

Irrigation potential envisaged:	*16.4 lakh acres in seven districts[25] of Telangana*
Source of water	*160 TMC from Pranahita, 20 TMC from Godavari at Yellampally*
Purpose	*124 TMC for irrigation, 10 TMC for drinking water in villages enroute, 30 TMC for drinking water in twin cities of Hyderabad and Secunderabad and 16 TMC for industrial purpose*
Components	*7 links and 7 balancing reservoirs apart from utilization of 5 balancing reservoirs of other projects* *849 KM Gravity canal and 209 KM tunnel works*
Administrative Sanction	*Original : ₹17875 crore (May 2007)* *Revised : ₹38500 crore (December 2008)*
Expenditure	*₹2205 crore*
Lifts	*Number : 19, Height : 493*
Power requirement	*3466MW*
Land	*Required: 85000 acres, Acquired: 2685 acres*

5.3.19.2 Key Issues

i. ***Changes to project scope***: Originally the project envisaged irrigation to 12.20 lakh acres in 6 districts by utilizing 160 TMC of water from Pranahita river at a cost of ₹17,875 crore and administrative approval was given (May 2007) accordingly. Subsequently, the scope of the project was increased with the following deviations/additions:

- Provision of irrigation facilities to an ayacut of about one lakh acres in Mudhol and Nirmal constituencies of Adilabad district and shifting of the ayacut of 67,500 acres of Nalgonda district from Phase-III of Devadula to this project.
- Provision of irrigation facilities to about 1.5 lakh acres in Tanduru, Parigi and Vikarabad Mandals of Rangareddy district under this project.
- It was also proposed to feed an ayacut of 1.24 lakh acres through Pranahita Chevella, which was originally contemplated under Yellampally Project Stage-II, Phase-II.

[25] Adilabad, Karimnagar, Warangal, Nizamabad, Medak, Nalgonda and Rangareddy

- It was further decided to utilize 20 TMC of Godavari water from Yellampally Project for this project.
- The carrying capacity of water conveyor system from Pranahita to Yellampally Project was increased from 462 cumecs to 583 cumecs considering 90 days of diversion and 160 TMC of water requirement.

Consequent to the above major changes in the scope of the project, the administrative approval was revised in December 2008 to ₹38,500 crore. The DPR was submitted in April 2010 while the project works were awarded during May 2008 to May 2009. While most of the agreements stipulated completion period as four years, the DPR, which was prepared later, stipulated the completion period of the project as eight years.

ii. Inter-State issues: In inter-state agreements entered into (6th October 1975 & 7th August 1978) on utilization of waters of river Godavari and its tributaries, the States of Andhra Pradesh and Maharashtra agreed to have barrage(s) across the Pranahita river at suitable sites so as to provide irrigation facilities in their areas. The joint Project(s) for such barrages are to be taken up after reaching separate Agreement(s) between the two States for this purpose. It was also agreed therein that in using the waters permitted to each State, no State can construct projects other than those already specifically agreed to, submerging the territory of another State(s), without the prior consent of that State for such submergence.

As per the DPR of Pranahita Chevella, a total extent of 6140 acres will be submerged due to this project, out of which, 5247 acres (85.45 *per cent*) falls within Maharashtra. However, the GoAP went ahead with awarding works (May 2008 – May 2009) without sorting out the inter-state issues and entering into any formal agreement with GoM in this regard.

The GoM had requested the GoAP in October 2010 to conclude an agreement for formation of an Inter State Board (ISB) and draft protocol to sort out the issues relating to submergence. In May 2012 both the States signed an agreement to form an ISB to oversee the investigation, preparation of DPR and other issues relating to this project.

iii. Financial viability of the project: When the project proposals were submitted for approval in May 2007, the Finance Department expressed concern over the estimated cost of this project in view of a number of ongoing projects worth ₹60,000 crore and outlay on already committed projects and schemes. However, the Government went ahead and accorded administrative sanction for Pranahita Chevella for ₹17,875 crore (May 2007) stating that these issues would be addressed before uploading IBMs for tenders for the project. However, a year and a half later (December 2008), this was further enhanced by more than 115 *per cent* to ₹38,500 crore with an increase in ayacut by 34 *per cent*.

iv. Status of works: All the packages relating to this project were tendered in 'open' category.

- Out of the 28 packages, packages No. 1 and 2 should have been completed by the end of 2010 and the remaining packages are scheduled to be completed by the end of April 2013. At present, work in all the packages is in the initial stages.

The Department stated that field investigation for main canal and tunnels was completed in most of the packages and design works are in progress.

- Government permitted (June 2011) the Chief Engineer to revise the milestones of all the packages in such a manner so as to complete the entire project in next eight years. It was further ordered to initiate necessary action to revise the date of completion of different packages through supplementary agreement, ensuring that the benefits of the project start accruing in a time bound and continuous manner from 2014-15 onwards.

- The land required for the project was 85,000 acres but in the test checked seven packages (17, 18, 19, 23, 24, 25 and 26), no land was acquired.Formation of both the reservoirs was held up for want of land acquisition and R & R. The Department replied that the process of land acquisition was in full swing and about 22,889 acres of land was requisitioned and about 1578 acres was acquired.

v. ***Changes to payment Schedules:*** In this project, the percentage of survey components were specified as 0.43 to 0.50 *per cent* in the original payment schedules in all the packages. These were later revised upwards to 2 to 3.50 *per cent*. While cost contemplated as per the original payment schedule in all the packages was only **₹172.12 crore**, the cost agreed to be paid towards survey component as per the revised payment schedules was abnormally high at **₹1211.23** crore.

The Department replied that the decision of the Government to freeze investigation of the scheme before taking up actual execution made it very difficult to take up the investigation and designs of all components of packages and the scheme at one time, and the provision made in the original payment schedule were found to be insufficient without supplementation from the components of execution of these items.

5.3.20 Sri Komaram Bheem Project

5.3.20.1 Project profile

Irrigation potential envisaged:	*39500 acres under left canal and 6000 acres under right canal – Total 45500 acres* *Formerly known as Peddavagu Project, a medium irrigation project*
Source of water	*8 TMC of water Peddavagu river*
Components	*(i) formation of earthdam, (ii) construction of spillway, (iii) two head regulators, (iv) two main canals – left (65 KM) and right (9KM)*
Administrative Sanction	*Revised ₹450.14 crore (February 2009)*
Expenditure	*₹399.48 crore*
Land	*Required :7288 acres Acquired:6057 acres*
R & R Houses	*Contemplated:2091, Completed:1995*

5.3.20.2 Key Issues

i. ***Forest Clearance***: This project required clearance from the MoEF for diversion of 246.80 hectares of forest lands. Proposals for forest clearance were sent in a piecemeal manner and the final clearance from MoEF was received only for 181.66 hectares. The project was cleared by CWC in May 2000 and the works were awarded in March 2005.

The Department stated that the process of obtaining forest clearance in respect of head works was initiated in 1999 itself i.e., well before taking up the works, and that, the clearance was received in 2006. It was contended that had the project been postponed for want of forest clearance for main canal beyond Km 34, the ryots would have been denied early irrigation benefits to an extent of 14,000 acres.

The Department had not followed the same approach for the main canal, where, work was entrusted simultaneously with the head works in March 2005 when the process of forest clearance was not even initiated. Further, while the agreement period stipulated was just two years, the proposals for forest clearance for main canal were sent to MoEF only in February 2011, i.e. nearly six years after concluding the agreement and four years after completion of the original agreement period. In fact, even Stage-I clearance had not been received as of September 2012. The main canal was completed upto Km 34 as no forest lands were involved in that reach. The reach beyond Km 34 can be completed only after receipt of forest clearance.

ii. ***Administrative approval & Technical sanction***: NIT for the project works was issued on 10 January 2005 whereas the administrative approval was accorded later on 22 January 2005. Technical sanction for the estimates was accorded in March 2006, i.e. more than one year after award of works.

The Department stated that tenders for all the projects under Jalayagnam were invited in tune with the Government policy and that administrative approval was accorded in the same month in which the tenders were invited. The reply is not acceptable since the administrative approval was accorded after the date of issue of tender notice.

5.3.21 Sriramsagar Project – Stage II

5.3.21.1 Project profile

Irrigation potential envisaged:	*4.04 lakh acres in chronically drought affected areas of Warangal, Khammam and Nalgonda districts.* *Stage II is an extension of Stage I beyond KM 284 of Kakatiya Canal up to KM 346*
Source of water	*24.41 TMC from river Godavari in conjuction with 4.703 TMC of ground water*
Components	*Excavation of three branch canals with distributaries, Mylavarm and Bayyanna vagu balancing reservoirs and an aqueduct at Akeru*
Administrative Sanction	*Original : ₹830.75 crore* *Revised : ₹1043.14 crore*
Expenditure	*₹824.6 crore*
Land	*Required : 30000 acres and acquired 19869 acres*

5.3.21.2 Key Issues

i. ***Overlap of ayacut***: The works relating to extension of Kakatiya canal upto KM 346 and excavation of some of the distributaries, majors and minors commenced before Jalayagnam. Under Jalayagnam, the works relating to providing CC lining to Kakatiya canal and excavation of the remaining distributaries and field channels were taken up in seven packages.

During execution, the contractor executing package-58 noticed that an extent of 18,790 acres was already covered under the Nagarjuna Sagar left canal system. Therefore, ayacut to the extent of only 32,077 acres was being developed as against the ayacut of 50,867 acres contemplated under this package.

The Department replied that the fact of overlap of ayacut came to light after detailed investigation by the EPC agency and that a proportionate amount of ₹16.85 crore was reduced from the agreement value towards the above reduction in ayacut. Here the main issue is not about reduction in the agreement value. The fundamental question is the manner in which the Department entrusted the works without clearly identifying the proposed ayacut. In the instant case, the proposed ayacut lies at the tail end (Km 40 to Km 72) of the distributary No.DBM-71, which itself is located at the tail end (at Km 345.93) of Kakatiya Main Canal. The total ayacut proposed under this distributary was 1.63 lakh acres. The excavation work of DBM-71 was entrusted to different agencies and the distributary is largely completed upto Km 56. The works relating to the distributary network (i.e. majors, minors, sub-minors and field channels) on DBM-71 were taken up separately and entrusted to three agencies under EPC system. Deletion of an ayacut of 18,790 acres in the extreme tail end of DBM-71 means that, while the distributary was designed and constructed with a higher design to serve more ayacut, the actual ayacut itself would be less.

ii. ***Status of project:*** The works of this project were awarded during March 2005.

- All the distributaries are in progress.
- Distributory No.68 and tail end distributory are under investigation.
- Due to non-acquisition of land, Distributaries 61 and 65 could not be completed.
- Tenders for distributory 71 beyond KM 56 were cancelled for want of land acquisition.

The Department stated that land acquisition for package 54 could not be completed, as the ryots were vehemently opposing the canal execution.

- Sriramsagar Stage II suffered most when it comes to withdrawal of funds already allocated. Government withdrew 76, 87 and 87 *per cent* respectively out of ₹270 crore, ₹560 crore and ₹250 crore allocated during the last three years.

5.3.22 P.V.Narasimha Rao Kanthanapally Sujala Sravanthi Project (Kanthanapally)

5.3.22.1 Project profile

Irrigation potential envisaged:	*Stabilization of ayacut of SRSP (3.1 lakh acres) and SRSP stage II (4.4 lakh acres) – Total 7.5 lakh acres*
Source of water	*Lifting of 50 TMC of water from Godavari river and dropping it in Kakatiya canal for stabilization of ayacut*
Components	*(i) construction of Barrage at Kanthanapally on river Godavari (ii) Spillway (iii) Hydropower block (iv) Tunnels, lifts and canals*
Administrative Sanction	*₹10409 crore (February 2009)*
Expenditure	*Nil*
Lifts	*Number :3 Height : 249 meters*
Power	*878 MW*
Power generation	*Contemplated: 450 MW (now revised to 280MW)*

5.3.22.2 Key Issues

i. ***Sequencing***: This project contemplates stabilization of ayacut under SRSP (stage I and II) but was taken up even before the stage II of SRSP was commissoned. In fact, SRSP stage-II is currently under execution. If stage-I of SRSP was facing water deficit and requires supplementation of water from Kanthanapalli project, the rationale behind executing stage-II is not clear.

The Department replied that there is a short fall of about 60 TMC of water in the SRSP system and the ayacut of SRSP stages I and II beyond Km 224 had been experiencing regular shortage of water due to the following factors:

- Even while SRSP stage-II project was under execution, water was released to the fields as and when parts of the canal work got completed and due to availability of plenty of water the farmers are habituated to paddy crops whereas the project was designed for irrigating dry (ID) crops and that this change in cropping pattern led to shortage of water in SRSP Stage-II. The Department contended that it takes time to educate the farmers and change their mindset to go for ID crops.
- The capacity of the SRSP reservoir is also drastically reduced due to deposition of silt.

ii. ***Project Approvals:*** Tenders were invited for this project (May 2009) before obtaining clearances. However, there was no response from the bidders.

Ultimately, the project remained a non-starter even after three years of according administrative approval (February 2009).