

Chapter II

Performance review relating to Government company

Sardar Sarovar Narmada Nigam Limited

2 Outcome audit on the irrigation component of Sardar Sarovar Project

Executive summary

Sardar Sarovar Narmada Nigam Limited has been engaged in implementing the interstate multipurpose Sardar Sarovar Project (SSP) and managing Narmada water through 458 Kms long Narmada Main Canal and a distribution network of 89,931 kms comprising of Branch canals, Distributaries, Minors and Sub-Minors. The performance audit of the Company for the period 2004-05 to 2008-09 covered the activities related to planning, execution, development and commissioning of the Canal network.

Project planning

The Detailed Project Report (DPR) originally prepared (January 1980) by the Company remained unrevised. Though the deadline of 2000 was fixed for achievement of full irrigation potential, no detailed plan to execute the project was prepared. As a result, the Company could create irrigation potential mainly in phase I and II A and in other phases, it constructed branches only without creation of any irrigational potential.

Project finance

At the end of March 2009, the Company's share capital was Rs. 23,719.21 crore and total borrowing was Rs. 9,075.30 crore. The project cost increased substantially from Rs. 6,406.04 crore at 1986-87 prices to Rs. 35,045.75 crore at 2005-06 prices. Due to imprudent financial management, the Company incurred avoidable expenditure of Rs.32.28 crore on higher borrowed cost and guarantee fee. The Company diverted AIBP funds to the tune of Rs. 1,833.12 crore meant for development of NMC and distribution network to other areas of the project which led to delay in creation of irrigation potential.

Project implementation

The completed length of the canal system was only 18,803 kms against the envisaged length of 90,389 kms.

Out of the total envisaged CCA of 18.29 lakh ha, the Company so far developed a CCA of 3.41 lakh ha of which the utilised CCA remained at 1.20 lakh ha only.

In Phase I and II A, there were 669 and 130 numbers of missing links affecting a CCA of 1,86,824 ha and 51,590 ha respectively. Of the above, 1,70,271 ha of CCA in Phase I was reported as developed which was actually not developed as no irrigation benefit can be availed from the incomplete construction of canals.

Due to non adoption of 'vertical integration approach', the Company created only branch canals in Phase II B, Phase II C and SBC and no irrigation potential could be created. The Company created irrigation potential in water fed zones first and ignored the water scarce zones like Saurashtra and Kutchh. In addition the Company was slowly converting the irrigation project into a drinking water project.

No data was maintained by the Company on the impact of providing irrigation facility on agricultural productivity or agricultural pattern in the SSP command area. As a result, the Company was not in a position to know whether the project has achieved its objective of increase in the agriculture produce as envisaged.

Irrigation policy

The Company has not framed a comprehensive long term policy. The interim policy framed by the Company did not cover some vital issues like, system of assessing corps pattern, guarding canal up to sub-minor level, fixation of water charges, duties and responsibilities of WUAs.

Canal maintenance

Even after investment of Rs. 18,515.58 crore in canal network, the repairs and maintenance was not done indicating laxity of the Company in safeguarding its valued assets besides threat of life/property in canal vicinity.

Conclusions and recommendations

The financial management of the company was poor as it borrowed funds at higher cost. While implementing the project the company failed in adoption of 'vertical integration approach' and which was

further marred by non prioritization of distribution network and diversion of funds to other component of Sardar Sarovar Projects.

There were deficiencies in management of contracts like award of work before acquisition of requisite land/ obtaining requisite clearance/ finalising the construction stage drawings, failure to take up repairing work in time which led to missing link in the channel and the development of CCA was adversely affected.

This review contained seven recommendations which included formulating strategic plan to execute canal project, expedite the work of development of distribution work, taking corrective action based on reasons identified for missing links and complete them as soon as possible, taking immediate steps to strengthen the WUAs for better management of canal and making a viable debt service plan to avoid huge financial burden on GoG in future.

Introduction

2.1. Union Ministry of Water Resources constituted (October-1969) Narmada Water Disputes Tribunal (NWDT) for adjudication of disputes over the use, distribution and control of the water of interstate river Narmada among the States of Madhya Pradesh (MP), Maharashtra, Gujarat and Rajasthan. The NWDT gave its final award in August 1978 and December 1979. Sardar Sarovar Project (SSP) envisaged construction of dam, power house, Narmada Main Canal (NMC) and distribution network of canals.

As per NWDT award, the share of participating States from the utilisable quantum of Narmada water was distributed as below:-

Sl. No	Participating State	Share of Narmada Water (MAF ^Y)
1.	Madhya Pradesh	18.25
2.	Maharashtra	0.25
3.	Gujarat	9.00
4.	Rajasthan	0.50

As per the award, an interstate authority i.e., Narmada Control Authority (NCA) started functioning since December-1979 for ensuring compliance to the decisions and directions in the award. The NWDT also formed (August-1978) Narmada Review Committee (NRC) to review and suspend any decisions taken by the NCA. Union Minister of Water Resources is the Chairman and the Chief Minister of each beneficiary States is the member of

^Y Million Acre Feet.

NRC. The Union Government also constituted (September-1980) Sardar Sarovar Construction Advisory Committee (SSCAC)[£] to ensure efficient, economical and timely execution of dam and hydro power works.

Government of Gujarat (GoG) also promoted (March-1988) Sardar Sarovar Narmada Nigam Limited (SSNNL; the Company) for implementing SSP under the administrative control of Narmada Water Resources, Water Supply & Kalpasar Department (NWRWS & KD). The Management of the Company is vested in a Board of Directors (BoD) consisting of a Chairman, a Managing Director (MD), Joint MD (Finance) and Director (Civil) as full time members. Part time members include Chief Secretary- GoG in *ex-officio* capacity and one official representative each from the participating States, viz. MP, Maharashtra and Rajasthan. BoD has various sub-committees to monitor and control the activities of the Company. At field level the Company has Seven[×] Chief Engineer offices, 18 circle offices each headed by Superintending Engineer and 73 divisional offices each headed by Executive Engineer. SSNNL books project expenditure under the following heads of accounts:-

- Unit-I: Dam and appurtenant works;
- Unit-II: Narmada Main Canal (NMC);
- Unit-III: Power;
- Group-IV: Branches and distributaries;
- Group-V: Common expenditure (Interest payment etc); and
- Group-VI: Non-sharable expenditure.

Scope of Audit

2.2 The performance audit conducted during January-July 2009 covered the activities related to planning, execution, development and commissioning of the Canals (Unit II) and distribution network (Group IV) and its outcome[¥]. Audit examined the project related records kept at the head office (HO) of the Company, five[°] Chief Engineer offices and 26 division offices[°]. Though the execution of the canal network system is spread over a period of more than twenty years since 1987, Audit covered mainly the activities related to the project from April 2005 to March 2009 covering expenditure of Rs. 11,502.99 crore incurred for the Unit II and Group IV during the period out of the total expenditure of Rs. 18,515.58 crore incurred on the units upto March 2009.

[£] The Secretary of Irrigation -Government of India (GoI) is the Chairman of the SSCAC and Chairmen of the Central Water Commission (CWC), Central Electricity Authority (CEA) and senior representatives of the beneficiary States are its members

[×] CE (Canal-I) Vadodara, CE (Canal-III) Gandhinagar, CE (KBC) Mehsana, CE (Canal-IV) Patan, CE (SBC) Rajkot, CE (Design & Q.C and CPC) and CE (ND, Kevadiya Colony).

[¥] Outcome means creation of Cultivable Command Area (CCA) as envisaged, actual irrigation done from water released and increase in agricultural production.

[°] CE (Canal-I) Vadodara, CE (Canal-III) Gandhinagar, CE (KBC) Mehsana, CE (Canal-IV) Patan and CE (SBC) Rajkot.

[°] **Phase I:** Division-4 and 7, P&D Division Bharuch; Division-9 Karjan; Division-8 Dhaboi; Division-5 Jambusar; Division 3,7 and 10 Vadodara.

Phase II A: Dehgam, Dholka, Division-7 Gandhinagar, Sanand, Division-4/3 and 1/3 Kadi, Thasra.

Phase II C: Division 24, 2/4 and 2/5 Radhanpur.

SBC : Division 3/4 and 3/5 Dhrangadhra, Limbdi, Surendranagar.

KBC Division 4/5 and 18 Mehsana, Chanasma.

Audit objectives

2.3 The objective of the performance audit were to assess :

- the development of distribution and canal network in properly planned manner;
- timely execution of the canal network and its commissioning in an economic, efficient and effective manner;
- the ability to provide envisaged irrigation facility by established canal network;
- the corporate governance at SSNNL which was geared to obtain managerial accountability for outputs and outcomes;
- the adequacy of operation and maintenance of the canal network;
- socio economic benefits; and
- financial viability of created canal network.

Audit criteria

2.4 The criteria adopted for assessing the achievement of audit objectives were:

- Provisions of the award of NWDT, instructions of GoI/ GoG;
- Plans prepared by the Company, study reports, clearances given by the various statutory bodies i.e. Ministry of Environment and Forests (MOEF), NCA, Planning Commission, etc;
- Sardar Sarovar (Narmada) Detailed project report (DPR)/Techno Economic feasibility report for canal network of the project;
- Provisions in the contract agreements and claims of the contractors;
- Agenda/board resolutions, progress report, budgets, Government Resolutions (GRs) and instructions of the Company's HO to its field offices; and
- Provisions in water supply agreements with distribution agencies/users.

Audit methodology

2.5 Audit methodology involved review, scrutiny and analysis of:

- NWDT award, instructions of GoI and GoG; DPR, relevant study reports and other statutory clearances;

- agenda notes and resolutions of Purchase and Tender Committee meeting, project committee meetings, BoD meetings and SSCAC meetings;
- tender documents, selection of bidders and contracts entered with them for execution of civil/other works and payments made;
- annual financial statements, budget allocation of GoG for SSP;
- documents related to loans availed by the Company;
- progress report of field offices relating to construction, maintenance and operation of canal network system; and
- data/information about achievement of various benefits envisaged under the irrigation component of SSP.

Audit findings

2.6 Audit findings were discussed with MD and Director (Canal) of the Company in the Exit Conference held on 31 August 2009 and the views expressed by them have been considered while finalising the performance review. Audit findings are discussed in the succeeding paragraphs.

Project planning

The Company did not revise the DPR as directed by the Planning Commission.

2.7 The DPR was originally prepared (January 1980) by the Narmada Project Dam Designs Circle, Vadodara. As per the report, the Unit-II (Main canal) was scheduled to be completed within a period of 12 years, and achievement of full irrigation potential within a period of 20 years from the start of construction. Planning Commission directed (October-1988) that as the project was too big and spread over a long period; the DPR should have been revised once in every five years. The Company, however, did not revise the DPR from time to time justifying deviations and appraising water availability, cost estimates, financing pattern, implementation schedule, envisaged increase in the agricultural production, etc. In the absence of revised DPR, control and monitoring exercised by the Company and its effectiveness could not be evaluated in audit.

Though the Company had decided for achievement of full irrigation potential by 2000, no detailed plan to execute the project was prepared. As a result, Company created irrigation potential in only two phases and in remaining three phases, it constructed only branches and could not create any irrigation potential.

Project Finance

Cost and finance for Canal project

2.8.1 The authorised capital of the Company which was Rs. 2,000 crore in 1988 has increased to Rs. 25,000 crore in March 2009. The paid up capital of

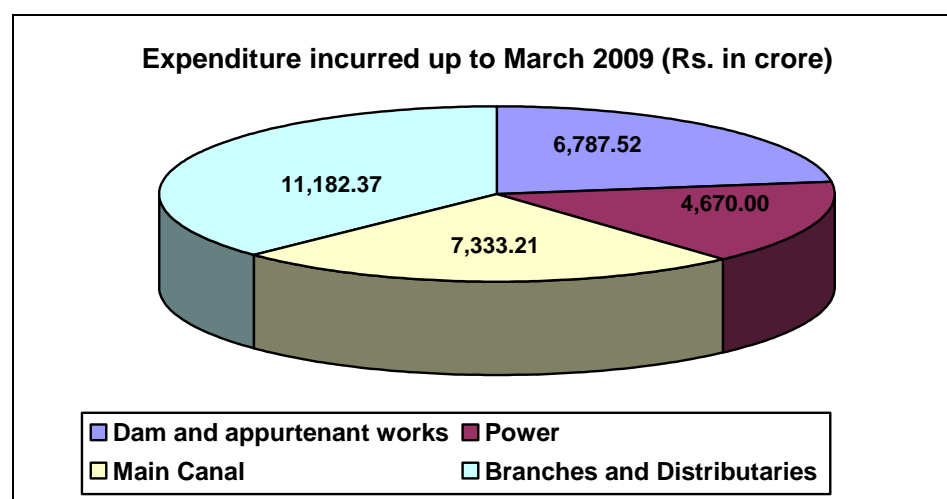
Rs. 23,719.21 crore upto March 2009 was released by the GoG which included financial assistance of Rs. 5,391.61 crore and Rs. 71.67 crore from GoI under Accelerated Irrigation Benefit Programme (AIBP) and Command Area Development and Water Management (CADWM) programme respectively for implementation of canal system. In addition, the Company met its funds requirements by way of borrowings from GoG, GoI and financial institutions. At the end of March 2009, the Company's total borrowing was Rs. 9,075.30 crore which included loans of Rs. 450 crore from HUDCO[‡] and Rs. 1,092.32 crore from NABARD[~]. Of this, an amount of Rs. 29,973.10 crore was spent on execution of project work, the balance amount was utilised towards other related activities.

The table below shows project cost and expenditure incurred up to March 2009.

Particulars	(Rs. in crore)				
	Project cost at 1986-87 prices [‡]	Revised cost at 1991-92 prices	Revised cost at 2005-06 prices	Expenditure* incurred up to March 2009	Expenditure* incurred during 2005-09
Dam and appurtenant works	1,019.45	1,886.09	5,621.89	6,787.52	3,842.55
Main canal	1,588.54	3,295.08	6,558.46	7,333.21	3,641.84
Power	979.95	1,559.45	3,076.79	4,670.00	2,456.93
Branches and Distributaries	2,818.10	6,440.00	19,788.61	11,182.37	7,861.15
Total	6,406.04	13,180.62	35,045.75	29,973.10	17,802.47

Source: Project estimates and Annual accounts of company.

The break up of cost incurred on different cost components of the project is given in the following pie chart.



The Company did not revise the cost estimates periodically.

The Company revised (December 1994) the cost estimates to Rs. 13,180.62 crore at 1991-92 price level which were not sent for approval of Planning

[‡] Housing & Urban Development Corporation.

[~] National Bank for Agriculture and Rural Development.

[‡] As approved by the Planning Commission.

* Including R&R expenditure.

Commission, GoI. The project cost was again revised to Rs. 35,045.75 crore at 2005-06 price levels which has not been approved by the BoD so far. The Company however, sent (July 2007) the revised cost estimate of Rs. 35,045.75 crore to GoG which in turn sent it to Planning Commission, GoI in July 2007. The approval of the same was awaited (October 2009).

High borrowing cost

2.8.2. For development of Narmada Main canal (NMC), the Company signed an agreement with HUDCO for a loan of Rs. 480 crore against the estimated project cost of Rs. 900.66 crore and the same was approved (February-2005) at floating rate of interest of 7.75 per cent per annum. Out of Rs. 480 crore loan sanctioned, the Company availed only Rs. 103 crore and balance loan of Rs. 377 crore was curtailed (October 2005) due to higher margin³ stipulated by HUDCO. The Company incurred expenditure of Rs. 3.77 crore towards guarantee fees on the undrawn loan (October 2005) also. Later on, the Company again applied (October 2005) for fresh loan of Rs. 347 crore at floating rate of interest and the same was approved (January 2006) by HUDCO for a period of 15 years. HUDCO revised its floating rate of interest from time to time, which ranged between 7.75 and 14 per cent during the period from September 2005 to March 2009. It was observed in audit that though NABARD was extending loan for similar projects under Rural Infrastructure Development Fund (RIDF) scheme at the fixed rate of interest of 6.50 per cent during the period, the Company did not opt for the cheaper loan resulting into loss of Rs. 28.51 crore towards differential cost of borrowing (1.25 to 7.5 per cent) during June 2005 to March 2009. Thus, the Company incurred avoidable expenditure aggregating to Rs.32.28 crore[∞].

Company incurred avoidable expenditure of Rs. 32.28 crore due to unplanned borrowings.

Diversion of funds to non-irrigation component of project

2.8.3. SSP has been an eligible project for receipt of Central Loan/grant assistance under Accelerated Irrigation Benefits Programme (AIBP) scheme. Following table shows the details of Central Loan Assistance (CLA) received and expenditure done on components under AIBP as well as unspent CLA.

Company diverted Rs. 1,833.12 crore to non-irrigation components of the project.

(Rupees in crore)

Sl. No	Year	2002-03	2003-04	2004-05
1	CLA Received (Excluding Fast Track Programme)	903.00	557.00	438.00
2	Ratio of contribution (Centre: State)	2:1	4:1	4:1
3	Total expenditure on AIBP components	549.57	674.76	592.04
4	Expenditure covered under NABARD Scheme*	0.00	209.10	219.32
5	Expenditure under Fast Track project	108.10	106.38	106.38
6	Actual expenditure on AIBP components from AIBP funds (3-4-5)	441.47	359.28	266.34
7	CLA utilized (as per Central State ratio)	294.31 [¶]	287.42 [¶]	213.07*
8	CLA unspent (1-7)	608.69	269.58	224.93

*Certain portion of the canal networks was funded by NABARD under RIDF.

³ HUDCO stipulated 45 per cent margin and 55 per cent loan i.e. 45 per cent of project cost to be brought by the Company and 55 per cent to be financed by the HUDCO.

[∞] Rs. 28.51 crore plus Rs. 3.77 crore.

[¶] 441.47 x 2/3.

[¶] 359.28 x 4/5.

* 266.34 x 4/5.

As shown in the table, the Company could not utilise CLA of Rs 1,103.20 crore provided by GoI during 2002-03 to 2004-05. Further, there was shortfall in expenditure of Rs. 27.36 crore as on 31 March 2002. Thus, the Company could not utilize Rs. 1,157.92 crore on the irrigation component of the project and diverted the same for other components. Moreover, the project also received Rs. 675.20 crore (2007-08) for development of Irrigation potential in identified drought prone districts under Drought Prone Area component of AIBP. This amount was also utilised for other components of work. Thus, total diversion of funds amounted to Rs.1,833.12 crore which led to delay in creation of envisaged irrigation potential and reaping of intended benefits.

Project Implementation

2.9 SSP is an interstate-multipurpose river valley project for development of irrigation, drinking water and power. It envisaged creation of annual irrigation potential of 18.29 lakh ha Cultivable Command Area[⊗] (CCA) in Gujarat through construction of 458 kms of NMC (Unit II) and 89,931 kms of distribution system (Group IV) consisting of branch canals, distributaries, minors, sub minors and field channels[#]. The canal system envisaged supply of drinking water to 8,215 villages and 135 cities and also supply of water for industries. The entire distribution system of SSP is broadly divided in to five phases starting at different chainage of NMC as detailed in paragraph 2.9.2.



Physical status of canal net work

2.9.1 The table below shows the physical status of canal network as on 31 March 2009.

[⊗] CCA is the area that can be reliably irrigated from a project and is fit for cultivation.
[#] to be constructed by end user.

Component of canal net work	Total length in km envisaged	Completed length in km.	Percentage of completion
Main canal (NMC)	458.00	458.00	100.00
Branch canals	2,759.00	1821.40	66.02
Distributaries	5,347.00	1533.87	28.69
Minors	20,027.00	4954.05	24.74
Sub-minors	61,798.00	10,035.99	16.24
Total	90,389.00	18,803.31	

Source: Progress Report submitted to the Chief Minister, Gujarat

Completion of distribution system below branch canals was less than 30 per cent.

As seen from the above, there was major shortfall in completion of canal network consisting of distributaries, minors and sub-minors which were for achievement of targeted irrigation potential. Target date for completion of the work of each component of the canal network was not fixed.

Development of Irrigation Potential

2.9.2. Table below shows phase-wise details of CCA envisaged, developed and utilised up to March 2009.

Phase	No. of branch canals	Location from NMC (chainage) in kms.	Envisaged CCA	CCA Developed	CCA Utilised
			In lakh ha		
Phase-I	15	0 to 144	4.46	2.63	0.90
Phase-II A	7	144 to 263	1.64	0.78	0.30
SBC	1	263 to 267	5.25	0.00	0.00
Phase-II B	8	267 to 374	3.31	0.00	0.00
Phase-II C	7	374 to 458	3.63	0.00	0.00
Total	38		18.29	3.41	1.20

Source: Information furnished by the Company
SBC – Saurashtra Branch Canal

Against 18.29 lakh ha CCA envisaged, the Company could develop only 3.41 lakh ha.

Against 3.41 lakh ha CCA developed, the Company could utilise only 1.20 lakh ha.

As evident from the above table, even after spending Rs. 18,515.58 crore on main canal and downstream distribution network, the Company could achieve only 18.64 per cent in development of CCA. To make things worse, the utilised CCA is only 6.56 per cent of envisaged CCA. Going by the achievement, the Company spent nearly Rs. 5.43 lakh to develop each hectare of CCA.

Non-adoption of 'vertical integration approach'

Due to non-adoption of vertical integration approach, Company could not create any irrigation potential in three out of five phases.

2.9.3 Water started flowing in Phase-I since July 2002. Construction of minors which commenced in October 1992, were still in progress (March 2009). Due to this, against the envisaged CCA creation of 18.29 lakh ha, only 3.41 lakh ha was developed (March 2009). Within the irrigation potential created, the benefits of irrigation were not reaching to the farmers as vital component of network i.e. sub-minors were not constructed or the canals which have been constructed have many missing links.

Audit scrutiny revealed that while clearing the SSP for investment, Planning Commission had put certain conditions which *inter-alia* included adoption of

‘vertical integration approach[∅]’ in construction of canal network. But the Company gave priority to construction of branch canals only. Distributaries, minors and sub-minors were not developed along with the branch canals. As a result, irrigation benefits have not reached to downstream farmers even after a period of 21 years since the commencement of work of branch canal and after investment of Rs. 18,515.58 crore.

Due to non adoption of ‘vertical integration approach’, the worst affected phases of the project were Phase II B, Phase-II C and SBC. Even after investing Rs. 1,196.02 crore^Δ on these phases, no irrigation potential has been created.

Non prioritisation of Distribution network

2.9.4 The main idea behind taking up SSP was to meet irrigation demand of Gujarat considering water scarcity in the State. The SSP envisaged CCA development of 18.29 lakh hectares through construction of NMC, branch canals, distributaries, minors and sub- minors.

Company constructed canals in water fed zones and ignored the water scarce zones.

Phase-I of the SSP covered four[€] Districts and nineteen[∇] Talukas. Analysis of the average rainfall trend for 28 years (from 1980 to 2007) revealed that the average rainfall in the above 19 talukas was 896 mm. On the other hand, during the same period, average rainfall in respect of Phase II B & C was 511 mm and the same for Saurashtra was 611 mm. The Company developed irrigation potential in Phase-I only whereas in Saurashtra and Kutchh[⊗] regions, it kept on constructing branch canals only without creating any irrigation potential. This clearly shows that Company provided irrigation network in water fed areas first and totally ignored the water scarce zones. As reported by the Company, against the envisaged CCA of 4.46 lakh ha in Phase-I, it had developed a CCA of 2.63 lakh ha and the utilised CCA is only 0.90 lakh ha indicating lack of demand for irrigation water in phase I. The fact, however, remained that it could have been more beneficial had the Company given due priority in development of distribution network in water scarce zones. The phase wise implementation has been discussed in paragraphs 2.10 to 2.14.

Phase I implementation

2.10 Distribution network system under Phase-I of SSP offtakes from the chainage falling between 0 and 144 kms of NMC (*i.e.*, between Narmada and Mahi rivers). It covered CCA of 4.46 lakh ha and serve four Districts and nineteen Talukas. This CCA was divided into 52 blocks for administrative

[∅] State should draw up an implementation schedule, segment wise, for completion of canal network, in such a way that a segment of the canal network, taken up from head, is completed in all respects so as to make the irrigation water available, for the designed potential of that segment, up to the outlet in that particular segment.

^Δ Excluding R&R expenditure.

[€] Narmada, Bharuch, Vadodara and Panchmahal.

[∇] Nanded, Tilakwada, Bharuch, Amod, Vagra, Jambusar, Naswadi, Sankheda, Pavi Jetpur, Dabhoi, Karjan, Waghodia, Sinor, Padra, Vadodara, Savli, Halol, Jambughoda and Kalol.

[⊗] Linked to Phase II C.

purpose and Chief Engineer (Canal-I), Vadodara is in charge of Phase I. Against the total envisaged CCA of 4.46 lakh ha, the Company had developed 2.63 lakh ha CCA only (March 2009) out of which, 0.90 lakh ha had been utilised

Completion status of canal network

2.10.1 The table below shows the status of completion of canal network in number as well as in length of various canal levels:

Particulars	Completion Status						Investment (Rs. in crore)
	Total (No.)	Comp- leted (No.)	WIP (No.)	Under Planning (No.)	Total (Length in km.)	Completed Length (in km.)	
Branch Canal	25*	25	0	0	656.91	656.91	296.82
Distributaries	204	193	11	0	1,101.39	1,084.70	271.81
Minors	1,500	1,170	208	122	4,560.70	4,397.23	360.32
Sub Minors	10,452	5,601	3,961	890	12,132.90	7,800.64	357.17
Total							1,286.12

Source: Information given by various division offices of Phase-I and Progress Reports

* includes 10 sub branch canals.

From the above, it would be clear that the Company's achievement of ultimate irrigation potential was lacking, despite the fact that the phase I was declared completed by the Company (way back) in 2001. The distribution system of phase-I was yet to be completed and wherever it was completed, the utilisation is far lagging behind. Thus, even after spending Rs. 1,286.12 crore on Phase I, the Company was not in a position to achieve the envisaged irrigation potential so far (March 2009).

Audit analysis of CCA developed

Due to missing links in canals, 1.87 lakh ha CCA is erroneously reported as developed.

2.10.2 As stated in the earlier paragraph (2.9.2), as per Company's reports CCA developed was 2.63 lakh ha and 0.90 lakh ha CCA was utilised. However, audit scrutiny revealed that CCA developed was wrongly declared. Due to missing links in canals, 1.87 lakh ha CCA was erroneously reported as developed as indicated below:

Sl. No.	Particulars	No. of missing links	Length of missing links (in Km.)	Since when missing Links	CCA affected (ha)
1	Branch Canals	1	4.41	2006	4,152 [^]
2	Distributaries	7	25.61	June 2004 to December 2005	12,401
3.	Minors and Sub Minors	661	3,523.00	N.A	1,70,271
Total CCA affected due to missing links					1,86,824

Source: Audit analysis based on information furnished by divisions

Following audit analysis shows how CCA developed was calculated erroneously in cases where missing links exist in the canal and water cannot be flown:

[^] CCA affected is the CCA of distributaries and minors of the branch which is already constructed.

- The divisions considered CCA of a canal as developed once the lining work of the canal was fully or substantially completed. The fact whether water can be released in the canal or not was completely ignored. As a result, even if the canal was having missing links due to which water cannot be released in the canal, it has been considered as developed. 40,194 ha CCA reported as developed in this manner was erroneous.
- In cases where the canal work was complete but water can be released upto certain chainage only due to missing link or some other problem, the division consider the entire area as CCA developed. Audit scrutiny revealed that against CCA of 1,51,383 ha shown as developed, actual CCA developed should be 67,028 ha based on the flow of water which means 84,355 ha CCA was incorrectly shown as developed.
- In cases where the construction of canal is going on, the divisions considered CCA as developed based on proportionate completion of lining work of the canal. But in many cases, the water either cannot flow in the incomplete canal or can flow upto a distance substantially less than the work completed. In such cases, the CCA reported was 68,295 ha where as based on water flow, the CCA developed should be 22,573 ha which showed that 45,722 ha CCA was incorrectly shown as developed.

Thus, due to incorrect method of calculating CCA developed 1,70,271 ha of CCA which was reported as developed was actually not developed as no irrigation benefit can be availed from the incomplete construction of canals. This anomaly is further validated by the figure of CCA utilised which was far below the reported CCA developed.

Missing Links analysis

2.10.3 As per audit analysis, major reasons for missing links were:

- Work awarded without acquiring requisite land;
- Poor quality of work execution (discussed at paragraph 2.16.2);
- Delay in taking up repairing work;
- Undue favour to the contractors.

It is important to note that considering the scale of the project, audit could not analyse the reasons of all the missing links as mentioned above. But, illustrative cases have been reported for the above reasons which indicate that there may be many such cases which the management needs to analyse. Photographs of some of the missing links noticed during Audit are given below:



The reasons for missing link are discussed below:

Works awarded without acquiring requisite land

Awarding work without acquiring requisite land led to incomplete works affecting 2,390 ha CCA.

2.10.4 The Company follows the Gujarat Public Works Rules (GPWR) and also the instructions regarding award of work contracts of GOG issued to Public Works Department from time to time. As per para 3(8) of Chapter 9 (Preventive Vigilance) of GPWR, tender for the work can be invited only if 50 per cent of required land is available and it is expected that remaining land would also be made available at the time of awarding the work. The Company’s BoD, however, decided (February 1992) to invite tenders if it has 20 per cent of required land in its possession and also to award the contract if it has 33 per cent of required land in its possession. Due to this, the works were awarded before acquisition of adequate land for the work leading in turn to poor progress of works execution in many cases.

Analysis of missing links showed that in eight cases, (given in *Annexure 7*) the construction of canal could not be completed due to non availability of land which affected total CCA of 2,390 ha. An illustrative case from the annexure is given below:

The Company awarded (February 2000) the work of constructing minor and distributaries of Dayadara branch in Block No. 6D4 in Vadodara district to Harishchandra (I) Limited at a cost of Rs. 8.79 crore with a stipulated completion period of 36 months. The contractor could not start the work of S1 minor from 0 to 455 metre as the land was not available. The remaining work from Ch. 455 to 2,240 metres got completed in June 2005. Thus, due to non completion of the work of initial chainage of canal, the completed work from Ch. 455 metres to Ch. 2,240 metres remained idle for more than four years affecting a total CCA of 318 ha.

Unfruitful investment due to delay in repairing works

2.10.5 In following cases, the Company failed to take up the required repair works in time which affected the creation of irrigation potential:-

Delay in repairing the damaged canals resulted in idle investment of Rs. 8.17 crore and affected 8,927 ha. CCA.

Sl. No	Name of Canal	Month of completion	Month/Year when damaged/Chainage	Investment (Rs. in crore)	CCA affected (In ha)	Remarks
1.	Vadodara Branch Canal	March-1997	2005/ (Ch.110.68 to 115.09 Kms)	8.17	4,152	Not repaired till date. As per latest estimate, the repair cost comes to Rs. 2.29 crore
2.	Kapurai Distributary	March-1999	April-2005/ (Ch. 8.47 to 12.828 Kms)	N.F	4,024	Company belatedly repaired it in March 2008 at a total cost of Rs.1.22 crore
3.	Surwada Distributary	June-1998	2005/ Ch.1.99 to 2.32 Kms	N.F	751	Till date not repaired.
Total					8,927	

N.F= Not furnished

Thus, it is clear from the above that in canals at Sl. Nos. 1 and 3, the Company had not done repairs works till date which affected 4,903 ha CCA and an investment of Rs. 8.17 crore remained unfruitful.

Undue favour to the contractors

2.10.6 The table below shows that there were instances of not taking up the risk and cost action against the defaulting contractors which resulted in delay in/non completion of work and non achievement of irrigation potential:-

Investment of Rs. 5.55 crore remained idle due to not taking action against the defaulting contractors.

Sl. No	Name of work/Name of contractor	Date of award/tendered cost	Date of withdrawal	Cost of work done/left out (Rs. in crore)	Date of re-award	Remarks
1	Construction of canals of Block-6C/ J.K. Transport & Construction Co.	April-2001/ Rs.7.30 Crore	August-2005	2.06/5.24	April-2006	Till date no final bill has been prepared. Hence amount to be recovered from contractor cannot be ascertained by the Company
2.	Constructions of canals of Block No- 9A4 and 9A5/ Backbone Project Ltd.	June-2000 /Rs.7.04 Crore	---	2.40/4.64	--	Till date the Company has neither taken any action nor re awarded the work
3.	Construction of canals of Block-9A4 and 9A5 /J.K. Transport & Construction Co.	June-2000/ Rs.8.16 Crore	August-2005	1.09/7.07	April-2006	The Company failed to take any action against the original contractor.
4.	Construction of structures on Kherda Disty./ Nanji Kalabhai & Co.	June-2005/ Rs.0.39 Crore	January -2007	--/0.39	---	The contractor did not start the work. Company relieved him without taking any action.

It would be observed from the above table that due to default on part of contractors, works costing Rs. 5.55 crore had remained idle and irrigation potential envisaged could not be achieved yet no action to get the work executed at risk and cost of the contractor has been taken.

Phase II A implementation

2.11 Distribution network system under Phase II A offtakes from the chainage falling between 144 and 263 Km NMC. The envisaged CCA of this phase is 1.64 lakh ha covering five[±] Districts and 16[∞] Talukas. Chief Engineer (Canal-III), Gandhinagar was in charge of this phase. Seven[≈] branch canals under this phase off take from NMC. Against the envisaged CCA of 1.64 lakh ha, the Company developed a CCA of 0.78 lakh ha of which only 0.30 ha CCA was utilised (March 2009).

Completion status of canal network

2.11.1 The table below shows the status of completion of canal network in number as well as in length of various canal levels:

Particulars	Completion Status				
	Total (No.)	Completed (No.)	WIP (No.)	Total (Length in km.)	Completed Length (in km.)
Branch Canals	07	07	0	383.49	383.49
Distributaries	34	21	05	741.55	394.07
Minors	205	86	51	1,725.48	1,108.65
Sub Minors	2,104	742	681	2,947.38	2,036.50

Source: Information furnished by Circle offices of Phase II A

The above table indicates that distribution network of phase II A was not fully completed and wherever it was completed the utilisation was very low though Rs. 1,494.95 crore[∞] had already been spent on the phase.

Missing Links analysis

2.11.2 As stated in the earlier paragraph (2.9.2), as per Company's reports CCA developed was 0.78 lakh ha and CCA utilised 0.30 lakh ha. However, audit scrutiny revealed that figures of CCA developed were wrongly declared as such, since missing links affected 0.52 lakh ha of CCA resulting in erroneous calculation as indicated below:

Due to missing links in canals, 0.52 lakh ha CCA is erroneously reported as developed.

Particulars	Missing links (No.)	Missing links (in km.)	Missing link since when	CCA affected
Branch Canal	3	0.09	January 2005	Nil
Distributaries	74	13.03	2002	37,800
Minors and Sub-minors	53	44.72	2002	13,790
Total CCA affected				51,590

[±] Kheda, Anand, Gandhinagar, Mehsana and Ahmedabad.

[∞] Kapadwanj, Kathalal, Mahemdabad, Mahudha, Matar, Thasara, Khambat, Bavla, Daskroi, Dholka, Sanand, Viramgam, Dehgam, Gandhinagar, Kalol and Kadi.

[≈] Sanali, Mehmadaabad, Ghodasar, Vehlal, Daskroi, Dholka, Sanand Branch Canal.

[∞] Amount includes cost of pumping stations also.

Thus, the actual area irrigated was 0.26[®] lakh ha instead of 0.30 lakh ha as reported by the Company. Some of the reasons of missing links are discussed below:

Works awarded without acquiring requisite land

2.11.3 As discussed in paragraph 2.10.4, in Phase-II A also the construction of canal in 12 cases, (given in **Annexure 7**) could not be completed due to non availability of land which affected total CCA of 4,834 ha. An illustrative case from the annexure is given below:

Award of works without acquisition of requisite land led to incomplete works affecting 4,834 ha CCA

The work of construction of Simej and Rampura distributary was awarded (April 2005) to Karnavati Infrastructure, Ahmedabad at a tendered cost of Rs.2.68 crore[®] with stipulated completion period of 15 months. The Company awarded the work without obtaining the land at Ch.2,319 m. Due to this, the work at this chainage was not completed and it was a missing link since the award of the work (April 2005) and affected a CCA of 1,198 ha. As on date, the Company had paid Rs.1.07 crore[∇] to the contractor which remained idle (March 2009).

Work awarded without permission from Highway Authorities

2.11.4 In the following instances, it was observed that the Company awarded the work without obtaining prior permission from State Highway Authority (SHA) or National Highway Authority of India (NHAI). Moreover, the SHA had made clear in May 2003 that henceforth all the approvals for construction beneath state highway would be granted under ‘Cut Push Method^μ’. But, the Company made the provision in the contract for constructing the structures under ‘Open Cut Method[∇]’. As a result, the work could not be completed in time and it also resulted in non achievement of irrigation potential as detailed below:

Award of works without permission from Highway authorities affected 7,828 ha CCA which resulted in idle investment of Rs. 14.11 crore.

[®] 0.78 lakh ha less 0.52 lakh ha =0.26 lakh ha.

[©] Combined work for Simej and Rampura distributary.

[∇] As per latest RA bill no. 13 of December 2008 final bill not yet prepared.

^μ In case the canal crosses some roads, the structures for canal diversion will be made beneath road by inserting the pipes by pushing method.

[∇] Under this method, the road is openly cut to construct the structures for canal passing.

Name of work	Date of award/ tendered Cost (Rs. in crore)	Date of sending permission	Payment made (Rs. in crore)	CCA affected (in ha)	Remarks
Shiyal Distributary (Ch.12.14 to 20.05 Kms)	February 2005/ Rs.4.33	April 2007 (NHAI)	4.14	4,748	The work was to be executed by NHAI as deposit work for which the Company had paid Rs.1.55 crore. The work was still in progress
Laxmipura and Charol distributary (Block-27)	October 2005/ Rs.3.57	March 2007 (SHA)	2.74	1,250	The work of structures was awarded (February 2009) to R.J. Waghasia Chowki Junagadh and was still under progress
Vehlal and Daskroi Branch Canals	November 2004/ Rs.8.13	January 2006 (SHA)	5.48	1,348	The proposal for re awarding the structures work was still under approval at HO of the Company.
Rohisa direct Minor	November 2004/ Rs.2.41	March 2008 (SHA)	1.75	482	--do--
Total			14.11	7,828	

As seen from the table above due to delay in seeking the required permission from NHAI/SHA a total CCA of 7,828 ha got affected and Rs. 14.11 crore incurred on the construction of the remaining works was lying idle.

Idle investment due to deficient planning

2.11.5 The construction of Dabhali distributary was awarded (October-2001) to B. Patel Infrastructure Pvt. Limited at a tendered cost of Rs.7.40 crore with completion schedule of 30 months. The canal existed at the downstream of Saidak river (Ch.3,010 and 3,220), tributary of Shedhi river, and during monsoon season flood normally occurs in the said vicinity which may cause damage to the canal. But while making the Cross Regulator planning of the said canal, Company ignored this fact and as a result, the canal at the above chainages was badly damaged during the monsoons of 2005. After realising this, the concerned division (Division-1, Thasara) proposed for providing underground pipelines between the Ch. 3,010 and 3,220 mtrs on Dabhali Distributary estimated at a cost of Rs. 46.59 lakh. The work has not been approved by HO (October 2009). There are two minors *i.e.* Dabhali Minor-2 and Sadeli Minor off taking beyond the Ch. 3,010 which were complete. Hence, due to missing link in the distributary, water could not flow in these minors as a result the investment made on these canals was lying idle affecting the irrigation potential of CCA of 308 ha.

Saurashtra Branch Canal (SBC) implementation

2.12 Distribution network system under SBC of SSP offtakes from the chainage falling between 263 and 267 kms of NMC. The envisaged CCA of this phase was 5.25 lakh ha covering five^Y Districts and 21[≤] Talukas. Chief

^Y Ahmedabad, Mehsana, Surendranagar, Bhavnagar and Rajkot.

[≤] Barwala, Dhanduka, Dholka, Ranpur, Sanand, Viramgam, Kadi, Chooda, Dhrangadhra, Halvad, Lakhtar, Limbdi, Patdi, Wadhawan, Bhavnagar, Botad, Ghadhada, Umralla, Vallbhipur, Maliya and Rajkot.

Engineer (SBC), Rajkot is in charge of this phase. There are seven[∞] sub branch canals offtaking from Saurashtra Branch Canal. Out of which three[‡] were completed, three[⊗] were under progress and one^ˆ was yet to be taken up. The Company invested Rs. 730.96 crore in this phase but no CCA was developed. (March 2009). Audit observations related to this phase are discussed below:-

Awarding contracts without ascertaining competency of contractors

Award of work to incompetent contractors resulted in delayed execution of work.

2.12.1 Para 3(6) (6) of chapter 9 (Preventive vigilance) of GPWR stipulates that if the rates quoted by the contractors are 10 *per cent* below/above the current SORs, the reasons and explanations should be taken from the contractors as to how they would be able to complete the work in time with the requisite quality. Further, if the quoted rates received are exorbitantly low, it should not be accepted.

A test check of the 73 works awarded (February 1997 to January-2008) for construction of six^ˆ sub branch canals of SBC revealed that in all these cases the contractors quoted exorbitantly lower rates *i.e.*, ranging below 13 to 51 *per cent* of the estimated cost of works. The Company, however, awarded the works without assessing contractors' capabilities in executing the works in time. As a result, 15 works of sub branches were delayed for a period of 24 to 49 months. No justification was on records for non adherence to GPWR.

Idle investment

2.12.2 Audit scrutiny revealed that there were instances of idle investment some of which are enumerated below:

Due to deficient planning, Company made idle investment of Rs. 4.38 crore on control cabin equipments and Rs. 1.48 crore towards premature construction of structure.

- The work of “manufacturing, supplying, erection and commissioning of radial gates for structure of SBC Ch.0.00 to 46.43 kms and Ch.46.43 to 70.976 kms was awarded (April 2002) to two firms[€] at a total cost of Rs. 9.85 crore with a stipulated completion period of 24 months. It was proposed that the canal would be operated by adopting remote monitoring and control system (RMCS). The radial gates were commissioned in both stretches of SBC in April 2004 and June 2003 respectively at a total cost of Rs.10.15 crore.

It was observed that the Company did not construct the control cabins at designated sites where control accessories would be kept to regulate the canal system locally (March-2009). Hence, the radial gates were being operated manually. As a result the expenditure of Rs. 4.38 crore incurred for the purchase of electrical and control equipments (*i.e.* rope hoist drums, control panels, remote terminal unit, gate cabinet, D.G.

[∞] Maliya, Vallbhipur, Dhrangdhra, Limbdi, Morbi, Botad and Narsinhapura branch canals.

[‡] Maliya (May-2005), Narsinhapura (October-2001) and Vallbhipur (March-2002).

[⊗] Dhrangdhra, Limbdi, and Botad Sub Branch Canal.

^ˆ Morbi Sub Branch Canal.

[€] There are seven sub branch canals but information in respect of Vallbhipur sub branch canal is not furnished by the Company.

[€] Indian Fabricators and Hardware Tools and Machinery Syndicate, Ahmedabad.

sets etc) acquired with radical gates remained idle. No records were available to confirm that these equipments were in possession of the Company.

- Morbi Branch Canal (MBC), a sub branch canal of SBC, was designed to cross Surendarnagar –Rajkot railway line at its chainage 1,540 meter. The Company incurred (May 2005) an expenditure of Rs. 1.48 crore for the construction of siphon beneath the railway line at this chainage. As the Company had not even awarded the contract for construction of MBC nearly four years after construction of the siphon, the investment of Rs. 1.48 crore remained idle.

Phase II B Implementation

2.13 Distribution network system under Phase II B of SSP offtakes from the chainage falling between 267 and 374 kms of NMC. The envisaged CCA of this phase is 3.31 lakh ha covering five^o Districts and thirteen[±] Talukas. Chief Engineer (KBC), Mehsana is in charge of phase II B. There are eight^o branch canals which were directly offtaking from NMC out of which four^s canals were completed and remaining four were under progress. There were 25 distributaries out of which 20^s distributaries were completed and remaining five^d were under progress. Though completion of branch canals and distributaries started in April 2004, the Company did not take up the work of developing the minors and sub-minors. Thus, even after investment of Rs. 196.87 crore made on Phase II, against the envisaged CCA of 3.31 lakh ha, no irrigation potential could be created.

Phase II C Implementation

2.14.1 Distribution network system under Phase II C of SSP offtakes from the chainage falling between 374 and 458 Kms of NMC. The envisaged CCA of this phase is 3.63 lakh ha covering three^o Districts and 16[†] Talukas. Chief Engineer (Canal-IV), Patan is in charge of phase-II C. There were seven^d branch canals directly offtaking from NMC out of which two^k were under progress and the remaining five were still under planning stage. The Company invested Rs. 268.19 crore on phase II C but no irrigation potential had been

^o Ahmedabad, Mehsana, Surendranagar, Patan and Banaskantha.

[±] Detroj-rampura, Mandal, Viramgam, Becharaji, Kadi, Mehsana, Patdi, Chanasma, Harij, Radhanpur, Sami, Santalpur and Kakarej.

^o Viramgam I&II, Goraiya, Kharaghoda, Jhinjuwada, Bolera, Rajpura and Amrapura.

^s Viramgam-I&II, Kharaghoda and Jhinjuwada.

^s Vidaj Distry, Sedrana Distry, Khawad-I Distry, Korda Distry, Khawad-II Distry, Kadipur Distry, Viramgam I Tail Distry, Laxmipura Distry, Sobhasan Distry, Charol Distry, Jivapura Distry, Bhimpura Distry, Viramgam II Tail Distry, Naviyani Distry, Sitapur Distry, Gunjala Distry, Vinjuwada Distry, Alampur Distry, Susiya Distry and Jahurpura Distry.

^d Virsoda Distry, Rudatal Distry, Dadhana Distry, Manawada Distry and Mandal Distry.

^o Patan, Banaskantha and Kutchh.

[†] Harij, Radhanpur, Sami, Santalpur, Bhabar, Diyodhar, Kankarej, Tharad, Vav, Anjar, Bhachau, Bhuj, Gandhidham, Mandavi, Mundra and Rapar.

^d Radhanpur, Kachhch, Vejpur, Madaka, Malsan, Dhima and Gadsisar Branch canal.

^k Kutchh and Radhanpur Branch Canal.

created so far as construction of even branch canals was not complete. (March 2009).

Awarding work without obtaining statutory clearances

Award of works for KBC without clearance from MoEF led to idle investment of Rs. 33.91 crore.

2.14.2 The Company awarded three contracts for construction of Kutchh Branch Canal (KBC) at chainage 54.90 to 65.00 km and from 112.50 to 133.52 km at a total cost of Rs. 104.64 crore in March 2005, with stipulated date of completion by September 2007. Audit scrutiny revealed that KBC crosses the Kutchh Wildlife Ass Sanctuary at various chainages between 47 to 110 km. However, permission from the Ministry of Environment and Forest was awaited (March 2009). Thus, award of contracts for the chainage beyond the sanctuary, in anticipation of environmental approval, was not a rational decision. It had resulted in idle investment of Rs. 33.91 crore (up to March-2009) incurred for construction of canal beyond the sanctuary as the canal passing through the sanctuary area was yet to be constructed (March 2009).

General deficiencies in Project Implementation

2.15 Apart from the deficiencies reported regarding various phases of the project in the preceding paragraphs, many general deficiencies were also noticed in the implementation of the project which are discussed below;

Awarding contracts without finalising drawings

Award of work before finalising the construction stage drawings resulted in significant delays.

2.15.1 Para 2.2(3) of chapter 9 (Preventive vigilance) of GPWR states that “the work should be awarded after finalisation of construction stage drawings”. Test check of records of the Company at Phase II A, Phase II B and Phase-II C revealed that there were considerable delays on the part of the Company in issuing the necessary design drawings. The details of such cases are as below:-

Name of work	Issue of work order	Stipulated date of completion	Issue of drawings	Delay (in months)
Phase II A				
Bhurkhi Sub Distributary (Pkg-II)	October 2004	April 2007	February 2007	27
Construction of distributaries and sub distributaries of Dholka Br. Canal (Pkg-II)	April 2005	July 2005	December 2006 to May 2007	20 to 24
Shiyal Distributary (Ch.12.14 to 20.051 Kms)	February 2005	May 2006	August 2005 to May 2007	06 to 27
Gangad Distributary (Pkg-I)	December 2004	June -2007	October-2006 to May-2007	21 to 29
Phase II B				
Goraiya Branch Canal (Ch.15.750 to 35.795 Kms)	July 2004	January 2006	July-2005 to January-2006	12 to 24
Construction of Jahurpura distributary	September 2007	September 2008	February to September-2008	05 to 12
Phase II C				
Kutchh Branch Canal (Ch.32.97 to 45.00 Kms)	March 2005	September 2006	July-2005 to June-2006	4 to 15

From the above, it can be concluded that the planning of the Company was poor which ultimately resulted in time and cost overrun and also non achievement of intended benefits.

Excess payment of price escalation

Company made excess payment of Rs. 3.74 crore as PE by not following the GoG directives.

2.15.2 As per GoG circular dated 31 August 1991, in the contract valuing above Rs. 15 lakh, if the contractor had to bring the cement and steel for the work, then, for the purpose of calculating the price escalation (PE), the concerned department should deduct the value of steel and cement brought by the contractor at star rates from gross value of work done by contractor during the quarter. Test check of 12 contracts[◊] which were awarded during the period 2004-09, the Company did not adopt above PE formula based on GoG circular. Consequently, the Company calculated the PE for labour and fuel component on gross value of work executed inclusive of the value of cement/steel brought by the contractor. This resulted in excess payment of Rs. 3.74 crore during 2004-09 as given in **Annexure 8**.

Delayed submission and approval of time limit extensions

Significant delays in submission and approval of time limit extension proposals were noticed.

2.15.3 Para 3.73 (4) of the GPWR stipulates that the application for grant of extensions of time limit for the contract submitted by the contractor should be finalised by the concerned competent authority within a period of two months and if the extension was not so finalised within two months, it should be referred to next higher authority with the reasons for delay in finalising extension.

On test check of records of six divisions^Y of the company, it was noticed that in 26 cases there were delays of 5 to 42 months in submission of extension proposals to the competent authority by the division offices as detailed in **Annexure 9**.

Besides, against the overall period of two months for grant of approval of extensions, the concerned competent authority (Chief Engineer/Director) took more than 3 to 22 months in 18 cases in granting the approvals as detailed in **Annexure 10**. This clearly indicates the internal inefficiency of the management.

Absence of contractors' registration and their performance review

Company does not have any system of registration and performance appraisal of the contractors.

2.15.4 GoG directed departments taking up construction work to follow certain norms for registration of contractors under various categories based on their financial resources, technical capabilities, their past performances etc. Further, as a measure of ensuring uniform procedure in awarding various punishments (*i.e.*, demotion to lower class, supervision of business, de-registration) to the defaulting contractor, GoG prescribed certain norms. It was

[◊] Phase-II A : Package II and III of Rajpura Sub branch canal.

Phase-II B : Canal structure on NMC, slice I of Goriya branch canal.

Phase-II C : Package I, II, III of KBC and package 1, 2 of Radhanpur branch canal.

SBC- Slice-I and III, and Structure on Limbdi Branch Canal.

^Y 2/5 Limbdi, 3/5 Dhrangadhra, 3/4 Dhrangadhra, 2/3 Dhandhuka, CE (KBC), NP Canal Division 3, Dahegam.

observed that though the Company was executing the works through contracts on a large scale, it did not devise any system for registration and review of list of approved contractors. As a result, the Company was not able to monitor performance of various contractors. If the Company followed these instructions, it could have avoided awarding contracts to contractor in any phase who had executed poor quality of work earlier. Such cases pointed out poor implementation of Phase I and breach of NMC due to poor quality of work.

Quality Control Mechanism

2.16 The company established a separate quality control wing for testing of the construction material and quality of work done in construction of the canals. The wing is headed by a Chief Engineer and assisted by two Superintending Engineers, six Executive Engineers and 33 field offices. All the field offices are equipped with material testing laboratories. The Company has fixed the norms for sample testing of materials being used by the contractors as well as quality of construction (soil excavation, embankment, lining, compaction, cement mixture, chemical tests etc.). Despite these arrangements, there were instances of canal breaches and poor quality of work executed by the contractors. Some of such instances are discussed in succeeding paragraphs.

NMC breach due to inferior quality of work

2.16.1 Narmada Main Canal (NMC) breached 7 times between 30 August 2005 and 11 March 2006 between the chainages 269.700 and 272.500 kms. As per the findings of Company (November-2005), main reason for the breaches was use of poor soil in embankments violating design drawings. The Company did not carry out detailed investigation on other breaches occurred during August-2005 to March-2006 and did not take technical and administrative steps to avoid its occurrence.

Though the Company got these defects rectified, the canal again breached (June 2008) at Ch.272.600 kms. The Company got it repaired (June 2008) at a cost of Rs. 1.06 crore (including Rs. 0.70 crore paid for crop compensation).

The High Power Committee (HPC) appointed (June 2008) to investigate the causes of breach reported (October 2008) that it was due to non-execution of canal embankment as per the designs. Besides the thickness of concrete lining provided in the canal was 5 to 6 cms at certain places against the stipulated thickness of 12.5 cms in the tender. Despite such gross violations of quality norms, the Company had not taken any action against the contractor. The Company also failed to fix responsibility against its officials for not ensuring execution of quality work. Moreover, though the contract empowers the Company to recover its dues from the contractor the Company did not recover the cost of Rs. 1.06 crore against the payment of Rs. 2.97 crore made to the contractor^ξ during June 2008 to March 2009 for the works executed under Kutchh Branch Canal.

Inferior quality of work caused breach of NMC seven times. Company did not take any action against the contractor resulting in loss of Rs. 1.06 crore.

^ξ SSJV Project Pvt Limited, Bangalore.

Poor Quality work execution

Company failed to take any action against contractors for poor quality of works. Entire canal needs reconstruction now.

2.16.2 Director (Canal) inspected the canal network of Bharuch district and found that the work executed in 22 distributaries and minors³ (2003 to 2006) covering 29,555 ha CCA constructed by nine[⊗] contractors was with poor workmanship due to use of sub-standard soil and improper bricking/lining works. Some of the deficiencies in these cases are discussed below:

- The Company failed to assess the quality of work within the defect liability period of six months since completion of these works, as provided in the contract. As a result, it failed to take action against these contractors for the poor workmanship. Based on the inspection report (July 2006) of Director (Canal), the Company debarred (July 2007) Harishchandra (I) Ltd. from participating in any future tenders of the Nigam. But, later on, in July 2009, the Company again allowed the said contractor to participate in the forthcoming tenders without giving any reason. The Company also awarded (February and May 2007) contracts costing Rs. 24.36 crore, Rs. 51.28 crore and Rs. 16.63 crore to three such contractors* for Saurashtra Branch Canal.
- In the construction of Vedachha Minor costing Rs. 10.32 crore, though the work was completed (July 2006) just before the inspection of Director (Canal), the Company did not take any action against contractor^Δ who had executed the work with poor workmanship. The Company also did not take any action on the recommendations of Director (Canal) for fixing the responsibilities of the Company officials for their failure to ensure quality of works (March 2009).

Company failed to take any action against contractor for poor quality of works. Entire canal needs reconstruction now.

2.16.3 Inspection report of Superintending Engineer (QC), Vadodara (June 2007) on Sarbhan Minor of Miyagam Branch, which was constructed by the contractor[#] in 2003, revealed that the contractor used black soil (CH type) in embankments which was not recommended as construction material as per IS: 1498-1970[¶] and the works was not carried out as per the tender specifications and designs. As a result, the canal was damaged (2003) and the estimated reconstruction cost is Rs. 1.30 crore. Despite this, the Company had not taken any step towards recovery of reconstruction cost from the contractor.

Some of the photographs showing poor workmanship of the works executed are given below:

³ Distributaries – Tralsamadh, Amleshwar, Nabipur, Keshrol, Saykha, Amod, Sadathala; Minors – T2, DA-1, T-1, Karmad, Nabipur-2, Amlod (S1), Uprali (U1), Simaliya, Ranoda, Hinglot, Kurla, Amleshwar, Kothia, Vedchha, and Ladodara.

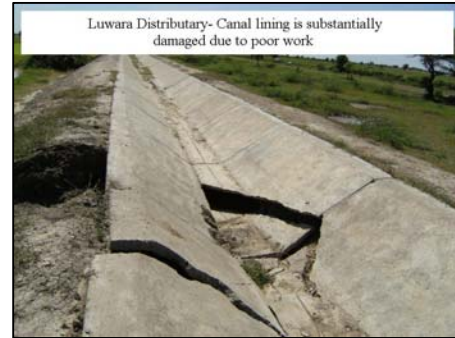
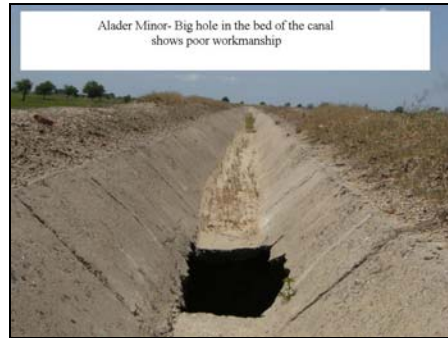
[⊗] Harishchandra (I) Limited, Visnagar Taluka Mazdoor Sahakari Mandali Limited (VTMS), B.Patel Infrastructure Pvt. Limited, Surya Construction Co, Nitin Construction Co, M.V.Patel Co, G-Ambica Construction Co, Bhavna Engineering Co, Montecarlo Construction Limited.

* Harishchandra (I) Limited, Visnagar Taluka Mazdoor Sahakari Mandali Limited and Bhavna Engineering Co.

^Δ Harishchandra (I) Limited.

[#] Harishchandra (I) Limited.

[¶] This is a standard prescribed for use of soil in embankments of canals.



Thus, the various deficiencies in the project implementation viz., non-adoption of vertical integration approach, non prioritization of distribution network, diversion of funds, missing links due to award of work before acquisition of requisite land; failure to take up repairing work in time; award of work before obtaining statutory clearances/before finalising the construction stage drawings and lack of effective quality control mechanism led to non development of CCA as envisaged. Consequently, the investment of Rs. 18,515.58 crore made in creation of canal network remained largely unfruitful.

Non formulation of Irrigation policy

Company has not formed any long term and comprehensive irrigation policy.

2.17.1 The Company has not framed a comprehensive long term irrigation policy (March 2009). The irrigation policies framed in August 2002 and September 2004 are interim and does not cover some of the vital issues viz., system of assessing crop pattern and water requirement, system for supply of water and guarding the canal up to sub-minor level, mechanism for fixation of water charges, measurement and billing of water supplied and its recovery, guidelines for entering into water supply agreement with water distribution agencies and users, duties and responsibilities of the Water User's Associations (WUAs) etc.

It was observed in audit that the Company did not even follow some of its guidelines given in the interim irrigation policies viz., not to supply water outside the command area, maintenance of records containing survey number for each area, crop grown and water losses during conveyance and recovery of advances from the farmers /WUAs.

Non functional WUAs

WUAs are not functioning effectively

2.17.2 It was envisaged to form 1,651 WUA under Phase I and II A of SSP and 1,580 WUA were registered (March 2009). 221 Village Service Area (VSA) were handed over to these WUAs up to March 2009. Audit scrutiny revealed that most of the WUAs were registered on paper and are not functioning. As a result, the Company was not able to know how much water would be required for irrigation in different seasons and at many places the water had to be released in rivers to avoid damage to the main and branch canals. If all the WUAs were functioning effectively, it would be easier for the Company to know the demand for water from time to time. Moreover, even in cases where VSAs were handed over to the WUAs, the repairs and maintenance of canals was not being done by WUAs.

Non Execution of water supply agreement

Company lost revenue of Rs. 436.46 crore by not entering into water supply agreement.

2.17.3 The N.P. Canal division-7, Gandhinagar was supplying water (from Mahi right bank canal escape) to Irrigation Division, Nadiad for various purposes viz. irrigation, filling the village tanks and agricultural activities. The records of the Company did not indicate the competent authority under whose instructions the water was released to the irrigation division. No terms and conditions were finalised with the Irrigation Division for supply of water. Though the Company was releasing the water since August 2001, the concerned division did not raise any bills till March 2007. Only in April 2007, the bill for Rs. 436.46 crore was raised for the supply of 5,864.45 Mm³ of water during the period August 2001 and March 2006. The Irrigation Division, however, did not agree (May 2007) to pay the bill stating that the division had neither received any directives from the Government nor had entered into any agreement with the Company for payment for water charges. Thus, due to supply of water without approval of competent authority and without entering into any contract led to non receipt of Rs. 436.46 crore. However, the Company kept on supplying water to Irrigation Division to the tune of 983.645 Mm³ (May-2007 to March 2009) against which no bills were issued till date.

Project conversion from Irrigation to Drinking water

2.18 As per NWDT award, the water allocated for domestic and industrial supply was 0.86 MAF (2,897 MLD) and 0.20 MAF (674 MLD) respectively. The table below shows the capacity created, under progress and planned to be created by GWIL, GWSSB and Municipal Corporation (MC) for drawal of water from SSNNL for drinking and industrial purposes. Besides, table shows the water being supplied directly by SSNNL for industrial purposes.

Particulars of projects	Drinking	Industrial	Total
	(In Million Acre Feet)		
Executed			
GWIL	0.00	1.03	1.03
GWSSB	0.08	0.00	0.08
MC	0.14	0.00	0.14
SSNNL	0.00	0.04	0.04
Under Progress			
GWIL	0.09	0.00	0.09
GWSSB*	0.00	0.00	0.00
MC	0.00	0.00	0.00
Under Planning			
GWIL	0.00	0.06	0.06
GWSSB*	1.57	0.00	1.57
MC	0.00	0.00	0.00
Total			3.01

Source: Information furnished by Company, GWSSB, GWIL.

* Based on Narmada Master Plan-2021 prepared by GoG

After failure to achieve irrigation potential, the Company is converting SSP into drinking water project bypassing the irrigation objective.

As per the NWDT award, 88 *per cent* of Narmada water allocated (9 MAF) to Gujarat i.e. 7.92 MAF was to be used for irrigation and remaining 12 *per cent* i.e. 1.08 MAF was for domestic and industrial purposes. This shows that the major objective of the project was to provide irrigation facility in the State. Accordingly, the Company is also getting central loans/grants under various central schemes as an eligible major irrigation project. Despite this, the capacity created, under progress and planned to be created for domestic and industrial purposes come to 3.01 MAF. Thus, the Company had already exceeded the allocated quantum for domestic and industrial purposes by 1.93 MAF. This suggests that the Company was creating the network of branch canals mainly to cater to the demand of drinking water and creation of irrigation potential had taken backseat. It seems that the whole project is being converted from an irrigation project to drinking water project.

Lack of MIS on agricultural productivity

Company has no MIS system to know impact of SSP on agriculture.

2.19 The Company had not maintained any records or data regarding the impact of providing irrigation facility on agricultural productivity or agricultural pattern in the SSP command area. As a result, the Company was not in a position to know whether the project has achieved its objective of increase in the agriculture produce as envisaged. In absence of these data, audit could not analyse the impact of provision of irrigation facility on agricultural pattern as well as productivity.

Canal Maintenance

Company totally ignored the periodical maintenance of NMC and other canal network.

2.20 The canal network created had got different components viz., NMC, branch canals, distributaries, minors and sub-minors with huge investment of Rs. 18,515.58 crore. As such, it is imperative to ensure proper maintenance of the net work. The Company, however, had never closed NMC for maintenance work since the commencement of flow in July 2002 as observed (October 2008) by High Power Committee (HPC) appointed by GoG. The Committee, in its report further observed that Storm Drainage arrangements made in the NMC was unsatisfactory and the repairable and restorable works of the canal

were left unattended and the stop-lock gates on the NMC were never tested. The above observations are clearly indicative of laxity of the Company in safeguarding its valuable assets besides, posing threat to life/property in the canal vicinity.

Audit observed that the Company was not undertaking any repairs and maintenance work of other canals completed before 2001 in Phase I leading to vegetation growth, cracks and breaches in the linings and beds of canals. The photographs given below are indicative of status of repairs and maintenance of canals:



Project viability assessment

Company's total revenues are merely 20 per cent of its committed liabilities. Huge cost of repayment of debt and maintenance of canal will fall on GoG.

2.21 The Company's total borrowing was Rs. 9,075.30 crore (March 2009). It was observed in audit that the Company had not developed any long term debt service liability planning. For the year 2008-09, the Company made interest payments to the tune of Rs. 744.35 crore and incurred expenditure of Rs. 237.21 crore towards employees' remuneration. On the other hand, it's earning towards sale of water and electricity^λ were only Rs. 112.84 crore and Rs. 73.65 crore respectively. As the Company was not able to generate enough revenues to meet interest and employees' remuneration liability, it would be very difficult for the Company to provide for funds for maintenance of the huge canal network it had already created. The question of repayment of loans from internal accruals, therefore, did not arise. Considering these facts,

^λ Being generated from the power project of SSP

maintenance of canals and repayment of loan and interest would be a huge financial burden on the Company. Since the Company would not be able to meet its liabilities, the burden would finally fall on GoG.

Corporate governance

2.22 As per Section 292A of the Companies Act, 1956, the Audit Committee (AC) is to be formed in the public limited Companies to have periodical discussion with the Company's auditors about the internal control system, scope of audit, audit observations and also to review half yearly/annual financial statements before submission to the BoD of the Company.

A mention was made in para 2.2.31 of the Report of the Comptroller and Auditor General of India 2008, (Commercial)–GoG about non attendance in AC meeting by Internal Auditors (IA) and Statutory Auditors (SA) of the Company. Subsequently also, during 2008-09, out of Six AC meeting held, IA did not attend any of the meetings.

Likewise, the non-attendance of non-executive directors in the BoD meeting of the Company was also mentioned in para 2.2.32 of the above mentioned report. However, out of four non-executive directors, only one director attended two meetings out of the four board meetings held during their term in 2008-09.

Project Monitoring

2.23 GoG constituted State level committee to monitor the Major, Medium and Minor irrigation project in May 2006. However, no meeting has been held since its constitution till March 2009.

The Company constituted Project Committee in August 2007. The mandate of the committee *inter alia* includes, approving work plans of SSP, approve the contracts, and monitor the progress of the project work. This committee was subsequently reconstituted (May 2008) into two committees:-

- Project Committee –I Dam & Appurtenant works, Power House and Narmada Main Canal.
- Project Committee –II Branch Canals, Distributaries and Command Area Development.

Total ten committee meetings were held during August-2007 to March 2009. Except approving the contracts, project committees has not done any monitoring of project.

The above matters were reported (September 2009) to the Government/ Company; their replies are awaited (December 2009).

Acknowledgement

Audit acknowledges the cooperation and assistance extended by different levels of the Management at various stages of conducting the performance audit.

Conclusion

- **Financial management of the Company was poor as it borrowed the funds at higher cost.**
- **There were deficiencies in the project implementation such as non-adoption of vertical integration approach, non prioritization of distribution network and diversion of funds.**
- **There were missing links due to award of work before acquisition of requisite land; failure to take up repairing work in time; award of work before obtaining statutory clearances/before finalising the construction stage drawings and lack of effective quality control mechanism which led to non development of envisaged CCA.**
- **The Company failed to plan the execution of works of various canals in coordinated manner. Contract management was also poor.**
- **The Company allowed drawal of water for drinking water significantly in excess of the award of NWDT and was converting the major irrigation scheme into a primarily drinking water scheme.**
- **The Company had neither taken any action on the reports of senior officers nor for the timely repair of breach of NMC many a times.**
- **Company's revenues were meager as compared to its fixed costs. This would lead to huge costs on GoG for repayment of loans and maintenance of canals in future.**

Recommendations

The Company should consider:

- **improving efficiency in the management of funds.**
- **formulating a strategic plan to execute canal projects, expedite the work of development of distribution network and re-examine the priorities in development of distribution network.**
- **taking corrective action after ascertaining the reasons of missing links with a view to exploit the intended benefits.**

- **initiating strict action against the tainted contractors and its own officials who were responsible for poor works and canal breaches.**
- **strengthening its internal control system for better works planning and contracts management.**
- **taking immediate steps to strengthen the WUAs for better management of canals and recovery of water charges.**
- **making a viable debt service plan to avoid huge financial burden on GoG in future.**