

## CHAPTER II

### PERFORMANCE AUDIT

This chapter contains the findings of Performance Audit on (i) Public Distribution System, (ii) Seawater desalination plant at Chennai and (iii) Information Technology audit on Computerisation in Tamil Nadu Water Supply and Drainage Board.

### CO-OPERATION, FOOD AND CONSUMER PROTECTION DEPARTMENT

#### 2.1 Public Distribution System

##### Executive Summary

Public Distribution System (PDS) is a major instrument of the Government's economic strategy for ensuring availability of food grains to the public at affordable prices as well as for enhancing food security to the poor. While the overall responsibility of management of food grains in the country vested with Government of India (GOI), the State Governments were responsible for their effective distribution through the PDS. In Tamil Nadu, the State Government adopted the Universal PDS (UPDS) instead of the Targeted Public Distribution System (TPDS) for supply of rice with no distinction between Above Poverty Line (APL) and Below Poverty Line (BPL) families. The PDS was implemented by the Co-operation, Food and Consumer Protection Department in the State. During the period 2006-11, the State Government incurred an expenditure of ₹ 14,550 crore towards subsidy of food grains under PDS.

A Performance Audit of the implementation of PDS in Tamil Nadu covering the period 2006-11 was conducted between January and July 2011. The Performance Audit revealed the following deficiencies:

Allotment of rice to the districts for supply under PDS was in excess of the requirement, the excess allotment ranged between 19 and 28 *per cent* at the State level.

The total quantity of food grains distributed monthly to the cardholders under the PDS in the State was less than the quantity fixed by GOI under the TPDS.

Despite periodical attempts to eliminate the bogus cards, the number of persons included in the family cards in circulation in the State as of March 2011 was more than the population of the State.

Excess subsidy of ₹ 6.60 crore paid to the cooperative societies during 2006-07 to 2009-10 remained to be recovered.

There were instances of delay in disposal of cases relating to seizure of smuggled commodities, non-realisation of fines and delay in disposal of the seized vehicles involved in smuggling of the PDS commodities.

### **2.1.1 Introduction**

Public Distribution System (PDS) is a food management strategy of the Government for ensuring availability of food grains to the public at affordable price. The Government of India (GOI) introduced (June 1997) the Targeted Public Distribution System (TPDS), under which 10 kg of food grains per month was to be issued at subsidised rate to families living Below Poverty Line (BPL). GOI also launched the Antyodaya Anna Yojana (AAY) in December 2000 for the poorest of poor in the country. Under AAY, 25 kg of food grains per month at the subsidised rate of ₹ 3 per kg of rice and ₹ 2 per kg of wheat were to be distributed. The scale of issue of food grains under both TPDS and AAY was raised to 35 kg per month with effect from April 2002. The State Government, however, has adopted the Universal PDS (UPDS) instead of the TPDS for supply of rice with no distinction between Above Poverty Line (APL) and Below Poverty Line families in the State. Under the UPDS in the State, rice is supplied at subsidised rates universally to whoever desires to avail the benefit. Besides rice, sugar, kerosene, wheat and palmolein are distributed at subsidised rates to the beneficiaries. The scale of issue of commodities under PDS is given in **Appendix 2.1**.

### **2.1.2 Organisational set-up**

The Principal Secretary to the Government, Co-operation, Food and Consumer Protection Department, assisted by the Commissioner of Civil Supplies and Consumer Protection (CCS) is responsible for implementation of the scheme at the State level. At the District level, the PDS is implemented through the District Supply and Consumer Protection Officer (DSO) assisted by Special Tahsildars (Civil Supplies)/Taluk Supply Officers. As of March 2011, the network of PDS comprised 24,789 full time Fair-price Shops (FPSs) and 7,746 part time FPSs. Of the 32,535 FPSs, 30,432 were run by Co-operative societies. The remaining 2,103 shops were run by the Tamil Nadu Civil Supplies Corporation Limited (TNCSC) and Self Help Groups. At the State level, the functioning of FPSs run by Co-operative societies was administered by the Registrar of Co-operative Societies. The TNCSC was entrusted with the procurement, storage and transportation of rice and other essential commodities for distribution under the PDS through FPSs in the State. The Civil Supplies CID (CS CID) wing headed by an Additional Director General of Police was entrusted with the enforcement function.

### **2.1.3 Audit objectives**

The objectives of the Performance Audit were to assess whether;

- (i) financial management was efficient and economical,
- (ii) PDS commodities were supplied timely to the beneficiaries at the scale and rates prescribed by Government and
- (iii) the family cards were issued after due verification of beneficiaries and PDS commodities were issued as per the options of the beneficiaries.

### **2.1.4 Audit criteria**

The norms and instructions contained in the following documents were used as criteria for judging the performance of the scheme:

- (i) GOI guidelines,
- (ii) PDS (Control) Order 2001 of GOI,
- (iii) State Government Orders on issue of family cards, price and scale of issue of food grains under PDS and
- (iv) Tamil Nadu Kerosene (Regulation of Trade) Orders 1973.

### **2.1.5 Audit coverage**

The Performance Audit on implementation of PDS in the State was conducted between January and July 2011 covering the period 2006-11. Besides reviewing the records at the Department of Co-operation, Food and Consumer Protection, Office of the Commissioner of Civil Supplies and Consumer Protection and Registrar of Cooperative Societies, the implementation of the scheme was test-checked in eight out of the 32 districts in the State. In each selected district, records of three sample taluks and four fair-price shops in each sample taluk were test-checked. The districts and taluks were selected by simple random sampling without replacement. The list of districts/taluks covered in the Performance Audit is given in **Appendix 2.2**. The procurement, storage and transportation of PDS commodities performed by TNCSC were not covered in this audit as the same had been commented in the CAG's Audit Report (Commercial) of the State for the year ended March 2009. An entry conference was held with the Principal Secretary to the Government, Cooperation, Food and Consumer Protection Department on 7 January 2011, wherein the purpose and scope of the audit were discussed. Exit conference was held with the Secretary to Government, Cooperation, Food and Consumer Protection Department on 21 December 2011 wherein the audit findings were discussed.

## Audit findings

### 2.1.6 Financial management

#### 2.1.6.1 Food subsidy

The food grains such as rice and wheat, meant for PDS were procured by the Food Corporation of India (FCI) and made available to the State Government at the Central Issue Price (CIP) fixed by GOI for BPL, APL and AAY categories. However, the State Government further subsidised the price of rice meant for the PDS cardholders and the subsidy cost was borne by the State Government. Besides rice, commodities like toor dhal, black gram and palmolein were distributed through PDS at subsidised prices since April 2007. The CIP, sale price of rice under PDS fixed by the State Government and food subsidy borne by the State during 2006-11 are given in **Table 1**.

**Table 1: Food subsidy**

Year	Central issue price of rice (₹ per kg)			Sale price of rice in PDS (₹ per kg)	State's expenditure on food subsidy (₹ in crore)
	BPL	APL	AAY		
2006-07	5.65	8.30	3.00	2	1,950
2007-08	5.65	8.30	3.00	2	1,950
2008-09	5.65	8.30	3.00	1 (from September 2008)	2,700
2009-10	5.65	8.30	3.00	1	4,000
2010-11	5.65	8.30	3.00	1	3,950
<b>Total</b>					<b>14,550</b>

The increase in State's expenditure on subsidy from ₹ 2,700 crore in 2008-09 to ₹ 3,950 crore in 2010-11 was mainly due to reduction in the sale price of rice from ₹ 2 to ₹ 1 per kg with effect from September 2008. Further, open market purchase of additional quantity of rice to meet the increased off-take over and above the central pool allocation, increased off-take of sugar and its purchase at non-levy price and subsidised sale of pulses contributed to the increased expenditure on subsidy.

#### 2.1.6.2 Non-remittance of unspent funds

**22 District Collectors  
did not remit the  
unspent funds**

Government sanctioned (May 2008) ₹ 13.05 crore for the door to door verification of family cardholders. Audit noticed that even though the verification exercise was completed (August 2010) in all the 32 districts, only 10<sup>1</sup> District Collectors remitted the unutilised amount to CCS, and the remaining 22 District Collectors were yet to remit the unutilised amount to

<sup>1</sup> Coimbatore, Dindigul, Erode, Kanyakumari, Karur, Namakkal, Thanjavur, Thiruvallur, Thiruvannamalai and Thoothukudi.

CCS (March 2011). In five<sup>2</sup> out of 22 districts for which details were available, a sum of ₹ 37.89 lakh remained unutilised as of March 2011 and kept in bank accounts. Government stated (November 2011) that the District Collectors were instructed to utilise the amount for the expenditure already incurred towards elimination of bogus cards during the year 2007 and the entire action was planned to be completed by November 2011.

### 2.1.6.3 Government dues pending collection

**TNCSC owed ₹ 2.16 crore to Government towards the cost of seized PDS rice deposited with them**

As per the Essential Commodities Act, 1955, on seizure of PDS commodities during the inspection of godowns of private traders, the seized stock except kerosene was to be deposited with TNCSC for eventual disposal. Based on the orders of District Revenue Officers (DROs), TNCSC was to take such commodities for distribution under PDS and remit the value to Government. As per information furnished by CCS, TNCSC owed ₹ 2.16 crore to the Government as of March 2011 towards the cost of seized commodities (rice) taken into its account. There was no proper system in place at State/District level to watch and reconcile the dues payable by TNCSC to Government on this account. In 19 districts, Audit noticed that the dues payable by TNCSC to Government as maintained by CCS was ₹ 78.68 lakh, whereas the amount as furnished by TNCSC was ₹ 93.20 lakh, which reflected the lack of reconciliation of accounts by the agencies. The Government stated (November 2011) that necessary instructions had been given to the Collectors concerned to reconcile the figures given by TNCSC and rectify the difference. The Government also stated that subsequent to audit, TNCSC had remitted ₹ 1.32 crore to Government account as of September 2011.

Similarly, the department, on seizure of kerosene from smugglers, handed over the kerosene to wholesale dealers for distribution to the fair-price shops under PDS. The dealers have to remit the value of the seized kerosene to Government account. In the test-checked districts, Audit noticed that a sum of ₹ 20.88 lakh was to be collected by the department from the dealers towards the cost of kerosene handed over to them on seizure during the period 2001-2011. The Deputy Commissioner (DC)/DSOs neither took follow-up action to realise the amount nor maintained demand, collection and balance (DCB) details to watch recovery of the dues from the dealers. At the State level too, CCS did not watch the progress of recovery of dues from the dealers. In reply, Government stated (November 2011) that out of ₹ 20.88 lakh, ₹ 6.67 lakh had been collected from the dealers and remitted to Government Account.

**Demand, collection and balance details in respect of fine imposed on owners of vehicles involved in smuggling of the PDS commodities were not maintained at district level**

### 2.1.6.4 Non-realisation of fine

Vehicles involved in smuggling of the PDS commodities were either confiscated to Government or released on payment of fine imposed by the District Revenue Officer. In the test-checked districts, Audit noticed that the DC / DSOs neither took follow-up action for imposition of the fine and to realise the amount nor maintained details of demand, collection and balance,

<sup>2</sup> Cuddalore, Kancheepuram, Pudukottai, Salem and Tirunelveli.

to watch the recovery of the dues. Records produced to Audit revealed that fine amount of ₹ 45.23 lakh imposed in 283 cases during 2006-11 in five out of eight test-checked districts was pending collection as of March 2011. At the State level, CCS did not monitor the cases pending in the districts. Thus, poor follow-up action at the district level coupled with lack of monitoring at the State level resulted in non-realisation of the fine imposed on the owners of vehicles involved in smuggling of the PDS commodities. In reply, Government stated (November 2011) that out of ₹ 45.23 lakh, ₹ 0.85 lakh had been collected and action was being taken to speed up collection of fine amounts and it was a continuous process.

#### 2.1.6.5 Subsidy to fair-price shops

Government provides subsidy to the Co-operative Societies every year to compensate the loss suffered by the fair-price shops run by them. The details of subsidy released by Government during 2006-10 to the Co-operative Societies are given in **Table 2**.

**Table 2: Year-wise details of subsidy released to the Co-operative Societies**

Year	Amount released (₹ in crore)	Released in
2006-07	60.07	April 2008
2007-08	95.32	March 2009
2008-09	93.50	March 2010
2009-10	116.02	March 2011

**Subsidy amounting to ₹ 6.60 crore was paid in excess to Co-operative Societies**

Audit noticed that the subsidy due to the co-operative societies was worked out and released by the Register of co-operative societies (RCS) based on the un-audited accounts of the societies. The Department was to adjust the excess subsidy, if any, from the co-operative societies concerned on completion of audit of the accounts by the Director of Co-operative Audit. As of March 2011, excess subsidy of ₹ 6.60 crore paid to the co-operative societies in 21<sup>3</sup> districts was pending recovery. Audit scrutiny of records revealed that the reasons for pendency in adjustment/recovery of the excess paid subsidy were, (i) recoverable amount in respect of previous years exceeded the societies subsidy claim for the subsequent year and (ii) non-claiming of subsidy by some of the societies which earned profit. Further, in three<sup>4</sup> test-checked districts, audit of accounts of seven co-operative societies to whom ₹ 9.14 crore were released as subsidy, was yet to be completed as of March 2011. Due to non-completion of audit of the accounts of the societies, the excess subsidy if any had not been determined. Though Government insisted for early completion of audit of the societies accounts for the year for which sanction for release of subsidy was made, the audit of societies was in arrears. The Government stated (November 2011) that out of ₹ 6.60 crore, a sum of ₹ 26.35 lakh had been recovered from the institutions concerned and the remaining amount of excess subsidy would be adjusted in the subsidy

<sup>3</sup> Chennai South, Cuddalore, Dindigul, Kancheepuram, Karur, Madurai, Nagapattinam, Namakkal, Pudukottai, Sivagangai, Thanjavur, Theni, Thiruchirapalli, Tirunelveli, Thiruvallur, Thiruvannamalai, Thiruvarur, Thoothukudi, Vellore, Villupuram and Virudhunagar

<sup>4</sup> Chennai - I, Chennai - II and Karur

proposals of the Co-operative Societies for the year 2010-11. Further, Government stated (November 2011) that, it was closely monitoring the early completion of audit and directed the Director of Cooperative Audit to give priority to clear the pendency in audit.

## 2.1.7 Allotment and off-take of rice

### 2.1.7.1 Allotment of rice in excess of requirement

The CCS allotted rice under PDS every month, based on the number of family cards in circulation in the State. The DSO issued taluk-wise/shop-wise allotment orders. Details of the allotment and off-take of rice under PDS during 2006-11 are given in **Table 3**.

**Table 3: Year-wise allotment and off-take of rice in the State**

(In lakh tonnes)		
Year	Allotment	Off-take
2006-07	36.86	27.18 (74)
2007-08	37.78	27.33 (72)
2008-09	38.92	29.55 (76)
2009-10	38.76	30.96 (80)
2010-11	37.92	30.87 (81)

(Figures in bracket: percentage of off-take)

While the total off-take of rice against the allotment for the State as a whole was in the range of 72 to 81 *per cent* during 2006-11, in ten districts it was in the range of 48 to 75 *per cent* as given in **Table 4** indicating excess allotment of rice for PDS by the department.

**Table 4: Total off-take of rice against the allotment during 2006-11**

Allotment of rice was made in excess of requirement

(In lakh tonnes)			
District	Allotment	Off-take	Excess (Allotment - off-take)
Namakkal	4.28	2.05 (48)	2.23 (52)
Chennai South	9.44	4.79 (51)	4.65 (49)
Erode	7.35	3.82 (52)	3.53 (48)
Coimbatore	12.38	6.82 (55)	5.56 (45)
Chennai North	11.34	6.42 (57)	4.92 (43)
Salem	9.06	6.23 (69)	2.83 (31)
Karur	2.86	1.94 (68)	0.92 (32)
Virudhunagar	5.23	3.80 (73)	1.43 (27)
Thoothukudi	4.26	3.10 (73)	1.16 (27)
Thiruchirappalli	7.15	5.34 (75)	1.81 (25)

(Figures in bracket represent percentage of allotment)

The DC, Chennai (South) and DSO, Coimbatore claimed that it was due to low off-take and attributed the low off-take to poor buying capacity of cardholders, migration, change of residence and non-supply of entitled

quantity of rice as per the cardholder's choice viz., raw rice or boiled rice. However, the department did not analyse the reasons for the low off-take so as to make the allotment on the basis of actual requirement. More allocation of rice than the actual quantity needed for distribution under PDS has the risk of illegal diversion of the subsidised rice, unnecessary transportation etc., especially in the context of existence of bogus family cards as discussed in paragraph 2.1.9 of this report. In reply, Government stated (November 2011) that the cardholders buy rice depending upon their needs. Hence, the off-take was lower than the allotment. Government further stated that allotment cannot be made based on the previous month's off-take, and if allotment is made based on the previous month's off-take, then there is a possibility of denial of rice to cardholders who have not bought rice during the previous month but prefer to buy the same during the current month.

The reply is not acceptable as it can be seen from the **Table 4** that the off-take of rice in the test-checked districts was only in the range of 48 to 75 per cent during 2006-11 which clearly indicated that the allotment was made in excess of the actual requirement. During the exit conference, the department agreed to reduce the gap between allotment and off-take by refining the procedure.

#### 2.1.7.2 *Inadequate supply of rice to fair-price shops in Coimbatore District*

In the test-checked Coimbatore District, Audit noticed that the District Revenue Officer allotted only about half the quantity of rice allotted to the District for distribution under PDS through fair-price shops during 2007-10, as given in **Table 5**.

**Table 5: Year-wise allotment of rice in Coimbatore District**

Year	Allotment made by the CCS	Opening balance with fair-price shops	Rice Requirement	(In lakh tonnes)	
				Allotment made by the District Supply Officer to FPSs	Off-take
2007-08	2.72	0.15	2.57	1.20 (47)	1.20
2008-09	2.85	0.16	2.69	1.56 (58)	1.56
2009-10	2.15	0.08	2.07	1.28 (62)	1.28
2010-11 (upto January 2011)	1.67	0.32	1.35	1.35 (100)	1.35

(Figures in bracket represent percentage of rice requirement of FPSs)

The DSO, Coimbatore stated (May 2011) that the reduced allotment of rice to the fair-price shops was made during 2007-10, in order to arrest the illicit transportation of PDS rice to the neighbouring State. Audit however noticed that no such restriction was made in the allotment of rice in 2010-11 as 81 per cent of quantity allotted by the CCS was in turn allotted to the fair-price shops. Instead of arresting the diversion of PDS rice by better administrative measures such as continued vigil on the movement of rice from godowns to

shops and more periodical inspections/verification of stock at the fair-price shops, reducing the allotment of rice to the shops by the DSO, Coimbatore during 2007-10, amounted to denial of the entitled quantity of rice under PDS to the cardholders. In reply, Government stated (November 2011) that although cent *per cent* rice allotment was made by the Commissioner of Civil Supplies and Consumer Protection to the Coimbatore District, fearing that rice not purchased by the cardholders might find their way to open market clandestinely, the DSO had allotted reduced quantity of rice based on the off-take prevailed during the previous month and claimed that there were no representations at that time from the general public that reduced quantity of rice was being distributed to them. Further, Government stated that orders were under issue for revival of Pollachi unit of CS CID and creation of five State Border checkpoints in Kanyakumari, Coimbatore, Vellore, Krishnagiri and Tiruvallur districts to prevent smuggling of PDS rice to the neighbouring States.

Even though Government has now initiated action to arrest the illegal diversion of rice in Coimbatore District by revival of CS CID unit and creation of checkpoints, its reply that no representation was received from the general public that reduced quantity of rice was being distributed to them is not acceptable as the records of DSO, Coimbatore disclosed that there were representations from various cooperative institutions asking for more allotment of rice citing that the public were facing trouble due to short supply of rice.

### 2.1.8 Supply of food grains to cardholders

**Monthly distribution of food grains to cardholders under PDS was less than the scale prescribed by GOI**

As per GOI guidelines, food grains should be distributed at the rate of 35 kg per month to each of the BPL and APL families and AAY beneficiaries. However, the State Government provided 35 kg of food grains (rice) per month only to the AAY beneficiaries. The State Government provided only 12 to 20 kg of rice per month depending upon the number of persons (units) included in the family card as given in **Table 6**. Apart from rice, the State Government also provided 10 kg of wheat per month to all cardholders in Chennai and district headquarters and five kg in other areas. The unit-wise quantity of rice entitled and the number of family cards (rice) in circulation as of March 2011 are given in **Table 6**.

**Table 6: Unit-wise details of entitlement for rice under PDS**

Number of units in the family	1	1.5	2	2.5	3
Entitled quantity of rice as fixed by Government of Tamil Nadu	12 kg	14 kg	16 kg	18 kg	20 kg
Number of cards in circulation as of March 2011	2.97 lakh	1.15 lakh	19.80 lakh	16.65 lakh	124.59 lakh

It could be seen from the above that the total quantity of food grains distributed monthly to cardholders of the State was less than the 35 kg fixed by GOI.

Government in its reply stated (November 2011) that any method used for identifying BPL families, under the GOI advocated TPDS was bound to result in some amount of exclusion of deserving families and claimed that UPDS was based on principle of self selection and only those who needed subsidised food articles had been supplied food grains and as such it assured better food security. Government also stated that besides rice/wheat, toor dhal, urid dhal and palmolein totaling about 35 kg had also been supplied through PDS in the State. The reply is not acceptable since the State Government supplied rice at two different scales, i.e. maximum of 20 kg of rice per card holder under PDS and 35 kg for AAY beneficiaries, which indicated absence of appropriate assessment of requirement of food grains per family.

## **2.1.9 Family Cards**

### **2.1.9.1 Issue of family cards**

Family cards issued under PDS have a validity of five years from the date of issue unless they are suspended or cancelled earlier. Family cards have to be issued afresh or renewed, after its validity is over. However, the State Government in 2005 had renewed the family cards issued during 1998 and issued new cards to the persons left out without carrying out proper verification. The State Directorate of Economics and Statistics, based on the 2001 general census, projected a population of 6.70 crore for the year 2010. The number of households in the State in 2010 was assessed as 157.49 lakh reckoning 4.3 persons per family. However, the number of family cards actually issued and in circulation as of March 2010 was 196.74 lakh which was in excess of the projected households by 39.25 lakh. As of March 2011, the number of family cards in circulation was 195.83 lakh as against the projected households of 167.77 lakh, which was in excess of the households by 28.06 lakh. Further, the number of persons included in the family cards, as of March 2011, was 8.37 crore as against the 2011 census data of 7.21 crore. It indicated that the deletion of family cards of un-deserving households/doubtful nature was not made properly.

**Number of persons included in the family cards was more than the population of the State**

Government in reply *inter alia* stated (November 2011) that people were more vigilant at the time of family cards enumeration and invariably showed separate portions in the same house of a same door number and sought separate ration cards for getting ration supply and hence the number of households as declared in the census was not matching with the family cards data. Further, Government stated (November 2011) that as against 196.38 lakh family cards in circulation as of August 2011, the projected households in the State for the year 2011 was 200.38 lakh. This was based on reckoning 3.6 persons per family, as per the National Sample Survey Report on Household Consumer expenditure in India 2007-08.

However, the data on households in the State, furnished by the Government in its reply could not be verified in audit as the same was not available in the Census 2011. In the light of this and also in view of the fact that the total number of persons included in the family cards as of March 2011 was more

than the population of the State by 1.16 crore which clearly indicated the existence of bogus cards, the reply is not acceptable. In the exit conference, the Secretary to Government stated that the Government proposed to eliminate the bogus cards in two to three years time by resorting to issue of biometric based smart cards.

#### **2.1.9.2      *Non re-verification of the family cards in Chennai District***

In Chennai District (excluding Anna Nagar Zone), there were 20.61 lakh cards in circulation in 2009. The department through its door to door verification exercise conducted between October 2009 and August 2010, identified 5.97 lakh suspected bogus family cards and issued “stop supply” order. However, Government found deficiencies such as non-coverage of all multi-storey buildings in the verification process, non-availability of cardholders at the time of verification and change of residence etc., and restored (January 2011) supply of the PDS commodities to all the 5.97 lakh suspected bogus family cards. Though Government ordered (January 2011 and May 2011) the CCS to re-verify the suspected family cards by June 2011, the exercise was not completed by the department. An amount of ₹ 2.92 crore was sanctioned to the Deputy Commissioner of Chennai North and South districts for this purpose. However, the amount of expenditure incurred was not furnished to Audit. Thus, non-completion of the re-verification exercise had delayed the elimination of suspected bogus family cards in Chennai District. Government in its reply stated (November 2011) that on verification, 10,894 representations were accepted and the remaining 2,65,027 representations were rejected and orders were issued in this regard.

#### **2.1.10    *Implementation of Essential Commodities Act, 1955***

##### **2.1.10.1      *Poor follow-up measures on seizure of smuggled PDS Commodities***

As per the PDS (Control) Order 2001, State Government should take all possible steps to ensure that essential commodities reach the intended beneficiaries and do not get diverted to open-market. PDS commodities smuggled or hoarded are seized by the CCS and CS CID under the Essential Commodities Act, 1955.

As per the Essential Commodities Act, 1955, read with departmental instructions on seizure of the commodity, the DRO of the district concerned has to conduct an enquiry and pass orders within six months of the seizure. If the seized commodity was proved as PDS commodity, it should be confiscated. Otherwise, the value of the commodity seized was to be paid to the party concerned. Audit noticed that there were 10,241 cases of seizure pending with the DROs of the districts as of March 2011, of which 200 cases were pending for more than six months. Further, 157 out of the 200 cases pending for more than six months were related to Coimbatore District. The high pendency of cases indicated ineffective follow-up measures on implementation of the Essential Commodities Act. Government in its reply

stated (November 2011) that as of September 2011, out of 10,241 pending cases 3,912 cases were disposed.

### **2.1.10.2      *Non-disposal of the seized vehicles***

**1,024 seized vehicles involved in smuggling of PDS commodities were lying undisposed**

Vehicles involved in smuggling of the PDS commodities were either confiscated to Government or released on payment of fine imposed by the DRO. According to information furnished by CS CID units to Audit, 1,024 seized vehicles involved in smuggling of the PDS commodities were lying un-disposed off in 18 CS CID units as of March 2011, due to non-passing of orders by the DC/DROs. Audit noticed that seizure of 356 out of 1,024 vehicles was made prior to April 2009.

In three<sup>5</sup> out of eight test-checked districts, 377 vehicles confiscated during 2006-11 were not disposed off by the department as of March 2011. Retaining the confiscated vehicles for a prolonged period would not serve the Government's interests as the condition of the vehicles might deteriorate over the period and their value would decline. CCS did not have details of number of vehicles seized, released / disposed off during 2006-11 and also, he did not furnish such details sought by Audit. In sample districts, there were no details available on number of vehicles seized and disposed off. The aspect of seized vehicles was not covered in the periodical reports on seizure and hence, not monitored by CCS.

Government in reply stated (November 2011) that 52 vehicles were disposed off during September 2011 to November 2011 and special efforts were being taken to assess the value of vehicles to be auctioned and the process of auctioning was being initiated.

### **2.1.11      *Supply of Kerosene***

#### **2.1.11.1      *Distribution of kerosene to cardholders***

**Supply of kerosene to persons possessing two LPG cylinders could not be ruled out as stamping of LPG connection details in family cards was pending.**

Government of India allocated 59,780 kilo litres of kerosene every month during 2005-2010 for distribution under the PDS in the State. The monthly allotment to the State was reduced to 52,804 kilo litres per month from 1 April 2010 as more number of LPG connections were released to the State. The scale of supply of kerosene under the PDS in the State during 2006-11 ranged from three to 10 litres per month per cardholder depending on the location of the household like district headquarters, village, etc., and the number of LPG cylinders possessed by the cardholder. Cardholders having two LPG cylinders were not eligible for the supply of kerosene under PDS. As the scale of supply of kerosene to the cardholders was linked to LPG connections possessed, the department instructed (February 2008) the cardholders to carry out stamping of LPG connection details in their family cards. The details of actual number of LPG connections in the State as furnished by the oil companies and the actual number of cards in which stamping was done as reported by the district collectors are given in **Table 7**.

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<sup>5</sup> Chennai North, Chennai South and Coimbatore.

**Table 7: Details of actual LPG connections in the State and the actual number of family cards in which stamping was done**

(Number in lakh)

As on	Connections as per oil companies			Connections stamped as per district authorities			Balance to be stamped		
	One cylinder	Two cylinders	Total	One cylinder	Two cylinders	Total	One cylinder	Two cylinders	Total
29.2.2008	57.29	56.01	113.30	21.35	33.75	55.10	35.94	22.26	58.20 (51)
31.3.2008	57.29	56.01	113.30	22.54	34.24	56.78	34.75	21.77	56.52 (50)
31.5.2008	57.29	56.01	113.30	24.09	34.96	59.05	33.20	21.05	54.25 (48)
30.6.2008	57.29	56.01	113.30	26.66	39.10	65.76	30.63	16.91	47.54 (42)
27.5.2010	*	*	119.48	*	*	69.72	*	*	49.76 (42)
05.8.2010	*	*	119.48	*	*	73.94	*	*	45.54 (38)
31.8.2010	60.45	58.94	119.39	35.94	38.67	74.61	24.51	20.27	44.78 (38)

\* Break-up not available; Figures given in brackets indicate percentage of pendency in stamping

(Source: Details as furnished by the Oil companies/ District Collectors)

The above table indicated that only 74.61 lakh cardholders had their LPG connection details stamped in their cards as against existence of 119.39 lakh LPG connections in the State as of August 2010. As only 74.61 lakh cards out of 194 lakh family cards in circulation were stamped, supply of kerosene under PDS to family cardholders having two LPG cylinders could not be ruled out.

Government in reply stated (November 2011) that LPG distributors had been releasing the LPG connection without insisting for ration card and due to dearth of staff, it became difficult to verify the huge number of LPG connection holders for the purpose of stamping. It further stated that the process of verification and stamping was going on and it would be completed as early as possible. Early completion of the verification and stamping of LPG connection details in the family cards would eliminate supply of kerosene at the subsidised rates to ineligible family cardholders.

### 2.1.11.2 Registration of Kerosene dealers

**Registration and renewal fee amounting to ₹ 1.11 crore (approximate) for selling kerosene through FPSs, was to be collected from the cooperative societies**

As per the Tamil Nadu Kerosene (Regulation of Trade) Orders 1973, only a person registered under the order by the registering authority (DSO/Assistant Commissioner of Civil Supplies) can buy and sell kerosene as a retailer. The certificate of registration is valid for three years from the date of issue and has to be renewed subsequently. However, Audit noticed that none of the fair-price shops distributing kerosene functioning under the control of Registrar of Co-operative Societies was registered as of March 2011 and the Government had suffered a revenue loss of ₹ 1.11 crore (approximate) on account of non-collection of the registration and renewal fee of ₹ 300 and ₹ 150 per fair-price shops respectively from 24,695 kerosene outlets.

Government in its reply stated (November 2011) that the kerosene outlets of cooperatives were since being registered under the TN Kerosene (Regulation

of Trade) Order. Out of the total number of 24,695 kerosene outlets, it was reported that 1,639 outlets had obtained licences and 20,614 outlets had applied for licences. In respect of the remaining 2,442 outlets, Government stated that the process of payment of fees and filing of application was under progress and it would be closely monitored.

## **2.1.12 Computerisation of PDS in Chennai**

### **2.1.12.1 Handheld billing system**

The Registrar of Co-operative Societies (RCS) introduced (September 2009) handheld billing machines in Chennai for billing to monitor the issue of PDS commodities to the cardholders. As and when the billing was done through this machine, the transactions were updated on a central server maintained by Electronics Corporation of Tamil Nadu Limited (ELCOT), and the transaction was to be monitored by RCS. Scrutiny of the data available in the central server with reference to billing made through the handheld billing machines in 16 ration shops selected in Chennai revealed the following discrepancies:

- (i) Rice was reported to have been issued in 16 cases to cardholders who opted for sugar.
- (ii) In 27 cases, same card was billed in two ration shops.
- (iii) In 320 cases, the quantum of PDS commodities issued to the cardholders was more than their entitlement.

Government in its reply stated (November 2011) that it had proposed to issue biometric-based smart cards during the year 2012-13 and necessary modifications would be carried out in the handheld billing machines.

### **2.1.12.2 Monitoring of daily stock in fair-price shops**

In March 2009, RCS introduced Daily Stock Monitoring System to enable monitoring of stock position in each ration shop. Under this system the details of closing balance were to be sent by salesperson of shops run by cooperatives through SMS to a central server.

This system has not been integrated with the handheld billing system wherein issue of commodities is captured as and when the transaction happens. Audit analysis (July 2011) of the data at Anna Nagar and Ambattur zones of Chennai District showed that the closing balance as per the daily stock monitoring system did not tally with the handheld billing system. It was also seen that the closing balance as per the system did not match with the stock register maintained in the ration shops.

Government in its reply stated (November 2011) that stock monitoring through SMS was being fine-tuned and action was being taken to implement the system through National Informatics Centre. It added that the development of software was under progress.

### **2.1.13 Conclusion**

Allotment of food grains under PDS was made in excess of actual requirement for distribution in the fair-price shops. The full benefits of TPDS were not derived as the total quantity of food grains supplied by the State to the cardholders under the PDS was less than the scale fixed by GOI under TPDS. The Government's exercise of deletion of bogus cards was incomplete as evident from the fact that the number of persons included in the family cards in circulation was more than the population of the State as of January 2011. Follow-up measures on seizure of smuggled PDS commodities were ineffective as more than 6,000 cases were pending at District level as of September 2011.

### **2.1.14 Recommendations**

- Government may consider need-based allotment of rice to Fair-price Shops.
- Government should review the position of family cards in circulation and expedite weeding out the bogus family cards so as to curb the possible diversion of PDS commodities.
- Government needs to expedite stamping of LPG connection details in the family cards to eliminate supply of kerosene at subsidised rates to the ineligible cardholders.

## MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT

### CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD

#### 2.2 Seawater desalination plant at Chennai

##### Executive Summary

To bridge the gap between demand and supply of drinking water and to augment reliable water supply in the Chennai Metropolitan Area, the Chennai Metropolitan Water Supply and Sewerage Board (Board) set up a 100 million litres per day (mld) capacity seawater desalination plant at Minjur, Chennai on 'design, build, own, operate and transfer' (DBOOT) basis. A Performance Audit of setting up of the desalination plant revealed deficiencies such as non-preparation of Detailed Project Report, adoption of the Public Private Partnership mode for implementing the project without examining the alternative options, purchase of contracted quantity of desalinated water throughout the year for 25 years irrespective of the storage position in the surface water sources, additional financial burden to Government, etc. The important audit findings are highlighted below:

The Detailed Project Report for setting up of the desalination plant was not prepared. Comparative cost benefit of implementing the project by other alternative modes *vis-à-vis* the Public-Private Partnership mode was not worked out before deciding to set up the plant on DBOOT basis.

Due to non-revision of water charges by the Board, the entire cost of purchase of the desalinated water at ₹ 48.66 per kilo litre had to be borne by the Government resulting in additional annual financial burden of ₹ 180 crore to the Government.

An avoidable expenditure of ₹ 6.95 crore was incurred by the Board on electricity charges due to delay in getting the tariff changed from industrial tariff to the tariff applicable for the high tension electricity connection for municipal water supply scheme.

The Board surrendered 44.56 acres of surplus land to Tamil Nadu Industrial Development Corporation (TIDCO) in December 2009. But neither the value of land (₹ 96 lakh) was received back nor equal area of alternate land was obtained from TIDCO.

##### 2.2.1 Introduction

The Chennai Metropolitan Water Supply and Sewerage Board (Board) is responsible for planning, construction, operation and maintenance of water supply and sewerage system in the Chennai Metropolitan Area (CMA). The

Board draws water mainly from various surface and ground water sources<sup>6</sup> for drinking water requirements of CMA. The surface water sources receive water during the north-east monsoon which is normally active during October to December. As the sources are monsoon dependent, failure of rainfall adversely affects the city water supply. Acute water scarcity in the CMA and failure of the monsoon during 2003 necessitated a sustainable solution for source reliability and augmentation of drinking water supply. The availability of water from various sources for Chennai city was reported (2003) as 296 million litres per day (mld) as against the demand of 1,418 mld leading to a vast gap of 1,122 mld. Hence, in order to bridge the demand-supply gap and to augment reliable and assured source of water supply to Chennai City, the Board proposed (April 2003) to set up a seawater desalination plant at Minjur, Chennai on design, build, own, operate and transfer (DBOOT) basis.

The estimated project cost of ₹ 500 crore for a 100 mld plant was to be financed by the selected developer of the facility. The Board entered (September 2005) into a bulk water purchase agreement (BWPA) with the Chennai Water Desalination Limited (CWDL), a private developer of the facility, selected for designing, engineering, financing, procurement, construction, operation, maintenance and transfer of the project after 25 years. As per BWPA, the Board was to procure 95 *per cent* of the contracted quantity (100 mld) of the desalinated water for 25 years at a levelised tariff of ₹ 48.66 per kilo litre (kl). The Board also provided the required land on lease to CWDL and bore the electricity charges of the plant in excess of ₹ 3.50 per kilowatt-hour payable by CWDL to the Tamil Nadu Electricity Board (TNEB). The project, scheduled for commissioning in May 2008, was completed and commissioned in July 2010 at a cost of ₹ 551.62 crore.

### **2.2.2 Organisational structure**

At the Government level, the Principal Secretary to Government, Municipal Administration and Water Supply Department is responsible for implementation of the water supply and sewerage schemes in the areas under urban local bodies of the State. The Board, which is responsible for planning, construction, operation and maintenance of water supply and sewerage systems in the CMA, is governed by a Board of Directors. The Managing Director (MD) is the executive head of the Board. He is assisted by a Chief Engineer (Operation and Maintenance) (CE), an Engineering Director (ED), a Finance Director (FD) and an Executive Director. The Superintending Engineer (Transmission and Treatment) (SE) and the Executive Engineer (Desalination) (EE) assist the CE in monitoring the setting up of the seawater desalination plants and their operation. Government had not nominated any nodal officer for Public Private Partnership (PPP) projects in the State and at

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<sup>6</sup> Poondi, Cholavaram and Redhills reservoirs and Kandaleru reservoir in Andhra Pradesh under the Telugu Ganga Project

present, the Special Secretary to Government, Finance Department, who is the nodal officer for externally-aided projects looks after the PPP projects.

### **2.2.3 Audit Objectives**

The Performance Audit was carried out with a view to assess whether

- (i) the decision to set up the desalination plant through PPP mode was taken based on detailed project report and after considering other alternatives; and
- (ii) the Bulk Water Purchase Agreement safeguarded the interests of the Board and Government.

### **2.2.4 Audit Criteria**

The project was formulated (April 2003) and awarded (August 2005) to CWDL on DBOOT basis before issuance of guidelines on PPP projects by Government of India (GOI). The GOI issued the guidelines on PPP in January 2006. The audit findings were benchmarked against the following criteria.

- (i) Annual Plan targets;
- (ii) Provisions in the Bulk Water Purchase Agreement; and
- (iii) Government orders and instructions on the subject

### **2.2.5 Audit coverage and methodology**

The Performance Audit was conducted during April to July 2011 covering the period from the date of formulation of the project (April 2003) to June 2011. Records relating to implementation and monitoring of the project in the Secretariat, Municipal Administration and Water Supply Department and the Board were test checked. The audit objectives and criteria were discussed with the Principal Secretary to Government, Municipal Administration and Water Supply Department during an entry conference held in May 2011. The audit findings were discussed in an exit conference held in August 2011 and Government response to the audit observations have been taken into consideration while finalising the report.

### **2.2.6 Seawater Desalination Process**

The desalination process of the plant comprises drawal of 237 mld of raw seawater from the Bay of Bengal through an intake pipeline, pre-treatment of raw water, desalinating the seawater through Reverse Osmosis (RO) trains and discharge of 137 mld of brine reject back into the sea through submarine

pipeline. The pre-treatment process included disinfection, coagulation-cum-flocculation and gravity and pressure filtration. After filtration, the water undergoes various treatments before passing through the RO trains. The water is forced through the RO membranes at high pressure and the membranes retain salts and pass the desalinated water. The final product water from the RO system undergoes post-treatment processes before supply to the Board.

## **Audit findings**

### **2.2.7 Policy and Planning**

At the time of formulation of the project, Government had not evolved any policy on PPP projects. In the Annual Plan for 2003-04, Government had included a proposal for setting up a 300 mld desalination plant for water supply to Chennai at a project cost of ₹ 1,500 crore on DBOOT basis. However, in the subsequent Annual Plans (2004-05 and 2005-06) it was proposed to set up 100 or 200 mld capacity plant due to poor response to the first two tender calls (August and September 2003). In the third call, the Board invited bids (November 2004) for 100/200 mld capacity plants and evaluated the bids received for both the capacities. In February 2005, Government accorded the State's support for the project. The consultant for evaluation of bids recommended (May 2005) to the Board to go for 200 mld plant. The Tender Committee of the Board also found (July 2005) 200 mld plant as more economical and suggested to the Board to take a final decision on the capacity of the plant, after taking into account its financial capability and the means of financing the expenditure on purchase of desalinated water. The Board, while concurring with the views of the Tender Committee resolved (27 July 2005) to go in for a 200 mld capacity plant and approached (28 July 2005) Government for the required financial support to the Board. In the meanwhile, on the grounds of financial constraint the Board decided (04 August 2005) to setup a 100 mld plant at Minjur and issued work order to the selected developer. In November 2005, in response to the Board's request, Government directed that the overall revenue deficit of the Board be made good by revising the water tariff and stated that the request for financial support could be made if the resources were not sufficient even after revision.

It was, however, noticed that the Government decided (2008) to construct another 100 mld capacity seawater desalination plant at Nemmeli for Chennai city with the financial assistance of GOI and the project was taken up for execution on 'engineering, procurement and construction' (EPC)<sup>7</sup> basis. The work for this second 100 mld plant was awarded (December 2009) to a contractor at a cost of ₹ 1,033.68 crore (₹ 533.38 crore for construction and ₹ 500.30 crore for operation and maintenance for seven years). Expenditure of ₹ 348.81 crore had been incurred up to October 2011

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<sup>7</sup> EPC: Designing and installation of desalination plant and maintaining it for a prescribed period of time on the basis of contract payments

on the work, which was scheduled to be completed by June 2012. Thus, the Government which, initially had not quickly responded favourably to the requested financial support to the Board for setting up a 200 mld plant at Minjur, subsequently opted for construction of another 100 mld plant at Nemmeli at a cost of ₹ 1,033.68 crore.

### **2.2.8 Non-preparation of detailed project report**

For a major desalination project of 100 mld capacity at Minjur, the Board should have studied the comparative cost-benefit of implementing the project by Government funding/loans or through Public Private Partnership route and should have analysed the viable and economical options before taking the final decision. In this case, no feasibility report or detailed project report (DPR) was prepared by the Board and it decided (2003) to set up the plant on DBOOT basis without exploring other alternatives.

Government stated (October 2011) that due to unprecedented water crisis in 2001 and subsequent drought situation in 2003, it took a policy decision to establish a 300 mld plant on DBOOT basis as a permanent drought proofing measure. It further stated that considering the urgency behind the decision of Government and taking into account the time factor that would involve in the preparation of project report, the question of preparation of DPR and consideration of other alternatives did not arise. The reply is not convincing as the project which involved huge cost and recurring financial burden to the Board/Government, should have been taken up for execution after a detailed study of its viability and economical aspects. Non-consideration of the other alternatives citing urgency and time constraints had not served the purpose, as the plant proposed in 2003 was awarded on DBOOT basis in August 2005 and commissioned in July 2010 only.

### **2.2.9 Financing of the Project**

The cost of construction of the entire plant along with the connected infrastructure was financed by the private partner. Government accorded (February 2005) approval for State support for the project. As per the agreement signed by the Government, the Board and the company (December 2006), the Board was to make direct payment on receiving bills from the company, open letter of credit (LC) for a value of three months of charges estimated at minimum off-take of water and escrow the receivables of the Board to replenish the LC, if the amount available in the LC was not sufficient to meet the bills. As per the Trust and Retention Account Agreement signed by the Government, the Board and the CWDL, the Board was to ensure that a 'debt service fund' of ₹ 30 crore was deposited by Government in the bank account one month prior to the commercial operation date so as to meet any shortfall in the escrow account.

### **2.2.9.1 Non-revision of water charges and financial burden to Government**

Water charges collectable from the domestic/partly commercial consumers were last revised by the Board in 1998. In respect of other categories of consumers, the revision was done in January 2003. While formulating the project (April 2003), the Board had decided on the financial viability of the project taking into account the periodical revision of water charges for all consumers. When the Third State Finance Commission (SFC) recommended (September 2006) that Government should consider compensating the Board for the higher cost of desalination, Government stated (May 2007) that the Board would manage the high cost commitment through its own revenue and central grants and that if there was any gap even after appropriate revision of water charges, the State would endeavour to support the Board. SFC also recommended to the Board to increase the water charges in 2007-08 and thereafter once in three years.

The Managing Director of the Board informed (July 2010) Government that the Board was unlikely to generate any additional revenue from the project and the Board's revenue receipts were not sufficient to meet the revenue expenditure. Government's support was requested to pay charges to CWDL towards purchase of desalinated water from the plant. The Board required about ₹ 15 crore per month to pay water charges to the company as per BWPA. Based on the proposals (2010-11) submitted by the Board, Government sanctioned and released ₹ 120 crore during 2010-11 in three instalments to meet the cost of water.

Thus, despite Board's assurance at the time of formulation of the project to revise the water tariff and Government's acceptance (July 2009) to the recommendation of the Third State Finance Commission for revision of tariff, the Board had not revised the tariff. Due to non-revision of water tariff, the entire cost of procurement of water had to be borne by the Government resulting in additional annual financial burden of ₹ 180 crore<sup>8</sup> to the Government.

Government stated (October 2011) that the proposal for revision of tariff was under consideration and would be placed before the Board at the appropriate time and that the Board's dependence on Government for financial support might continue even after tariff revision depending on the financial position of the Board. When two adjacent municipalities<sup>9</sup> levy monthly water charges at flat rate of ₹ 65 for residential connections, the Board continues to levy ₹ 50 per month (flat rate) for residential connections in Chennai Corporation area since 1998.

<sup>8</sup> ₹ 15 crore per month x 12 months

<sup>9</sup> Ambattur and Tambaram

#### **2.2.9.2      *Drawal of funds from PD Account***

Government released (August 2010, December 2010 and February 2011) grants-in-aid of ₹ 120 crore to the Board for purchase of water from CWDL. The amount was drawn (September 2010, January 2011 and March 2011) from the Consolidated Fund of the State and credited to the Personal Deposit (PD) Account in the name of MD of the Board under '8443 Civil Deposits' head. Subsequently, the Board transferred the entire amount from the PD account to its current account in bank within ten days of credit to the PD account. Out of this, the Board invested ₹ 45 crore in short-term deposits in nationalised banks and earned interest of ₹ 42.69 lakh. Since the average monthly requirement of funds for the purchase of water during 2010-11 was about ₹ 11 crore only, drawal of the entire grant from the Government account by the Board and keeping it in banks was not justified. The amount could have been drawn monthly as Government had placed the amount in the Public Account.

Government stated (October 2011) that the funds were deposited in the PD account only in the last month of the quarter and withdrawn by the Board from the PD account mostly after incurring the expenditure. The reply is not correct as the funds were withdrawn from the PD account within 10 days of their credit to the said account. The Government grants of ₹ 120 crore (₹ 45 crore released in September 2010; ₹ 45 crore in January 2011 and ₹ 30 crore in March 2011) drawn from the public account and credited to the current account in banks were utilised for making payments up to the months of December 2010, April 2011 and June 2011 respectively and after paying the bills of the developer, the remaining amounts were invested in short-term deposits for periods ranging from 15 to 45 days. It was noticed that only an amount of ₹ 27.43 crore was initially borne out of the Board's fund and the same was got recouped subsequently from the Government grants.

#### **2.2.9.3      *Release of fund far in advance of requirement***

As per the Trust and Retention Account agreement signed by Government, the Board and CWDL, the Board was to ensure that a 'debt service fund' of ₹ 30 crore was deposited in the bank account one month prior to the date of commissioning of the project (COD). Based on the proposal (October 2008) of the Board, Government, without ascertaining the extended COD, released (February 2009) ₹ 30 crore out of ₹ 50 crore provided in the budget for purchase of water, 16 months prior to the COD (25 July 2010). Even though Government ordered for drawal of ₹ 30 crore and keeping it in the PD account, the Board withdrew the amount from the PD Account and invested it in bank deposits and earned interest of ₹ 1 crore up to October 2009, defeating the Government's intention of retaining the funds within the Government account until it was drawn for depositing in the Trust and Retention Account. Consequently, Government money of ₹ 30 crore was kept outside the Government account for 16 months and the Board earned interest of ₹ 1 crore out of the investment.

Government stated (October 2011) that the COD could not be correctly ascertained and the date was extended due to various factors such as cyclone, economic slowdown, etc. The reply is not relevant to the audit observation that Government funds were drawn far in advance of requirement from the PD account and kept outside the Government account for 16 months.

### **2.2.10 Bulk Water Purchase Agreement**

As per provisions of the BWPA, the Board was to purchase a minimum quantity of 95 mld of desalinated water out of the contracted 100 mld, provide uninterrupted power supply to the plant, pay to CWDL water capacity charges on annual basis for a period of 25 years, water variable charges comprising of energy charges, operation and maintenance charges and consumables linked to the wholesale price index and provide the land required for setting up of the plant. The desalinated water was to be supplied by CWDL at the plant site.

#### **2.2.10.1 Purchase of water**

As per BWPA, the Board has to purchase 95 *per cent* of the contracted quantity of desalinated water throughout the year for 25 years even during the periods of comfortable storage position in the surface water sources for supply to Chennai. The agreement did not provide for purchase of reduced quantity of desalinated water during such periods.

It was noticed in audit that on commissioning of the desalination plant, the quantity of water treated in the Redhills treatment plant by drawing water from the Redhills reservoir was reduced to the extent of desalinated water received at Redhills storage tank as the Board had to purchase the desalinated water from CWDL, irrespective of the actual requirement/availability of water in the reservoirs. It is to be mentioned here that the cost of treated water from the Redhills treatment plant by drawing water from the reservoir worked out to ₹ 4.78 per kl as against ₹ 48.66 per kl paid to CWDL.

#### **2.2.10.2 Locking up of funds**

The Board computed (April 2003) the requirement of land for the desalination plant operations on RO process at 0.2 acre per mld and arrived at the total requirement of 60 acres for installing 200/300 mld capacity plant. The Board had identified and finalised (July 2003) a site belonging to Tamil Nadu Industrial Development Corporation (TIDCO) measuring 60 acres in Kattupalli, Minjur for locating the plant. However, the Board revised (May 2005) its requirement to 120 acres with the intention of installing additional plant of the same capacity in the place. It paid (November/December 2005) ₹ 2.59 crore for 120 acres of land and took possession (December 2005) of the land. Subsequently 60 acres of land was leased out to CWDL at a lease rent of ₹ 1,000 per month.

The plant with 100 mld capacity was set up in an area of 61.18 acres. Due to deviation during the course of construction by CWDL, 14.26 acres were left unutilised in the northern side of plant. TIDCO requested (February 2006) the Board to surrender 60 acres of land allotted additionally for giving to some other industrial project with an assurance of allotting equal area of land elsewhere, if required. The Board surrendered (December 2009) 44.56 acres of the land after retaining 61.18 acres and 14.26 acres are lying vacant. It was noticed (March 2011) that neither the value (₹ 0.96 crore) of the surrendered land was received back from TIDCO nor equal area of land was allotted by TIDCO.

As the land procured initially (60 acres) was sufficient to set up desalination plant of 200 mld capacity, the Board's request for additional allotment of 60 acres was unnecessary and this resulted in locking up of funds of ₹ 0.96 crore for more than five years. Further, the land leased out to CWDL was not yet registered in the name of the Board.

Government stated (October 2011) that the matters of registration of the land in favour of the Board and refund of value of the surrendered land by it were under pursuance with TIDCO.

#### **2.2.10.3      *Avoidable expenditure***

It was specified in the bid conditions that power would be supplied by the Board to the plant at the HT Tariff II A<sup>10</sup> applicable to the municipal water supply scheme. The bidders quoted their rates for desalinated water taking into account the said tariff. CWDL obtained (March 2009) a high tension (HT) service connection from the Tamil Nadu Electricity Board (TNEB) and the supply was billed under HT Tariff III applicable to industries. The Board requested TNEB (May 2009) to classify the tariff under IIA. As the request was turned down (December 2009) by TNEB stating that it had no powers to subsidise the tariff for a commercial organisation, a review petition was filed (June 2010) with the Tamil Nadu Electricity Regulatory Commission (TNERC) to change the tariff. The TNERC stated that the Board had, on its own, assumed municipal tariff for the private developer without the consent of the TNERC. However, accepting the Board's representation (October 2010) that the plant was constructed for augmenting water supply to Chennai city, TNERC finally ordered (December 2010) for classification of HT tariff II A and the revised tariff was given effect from 21 December 2010. The Board paid to TNEB ₹ 6.95 crore in excess towards energy and demand charges at industrial tariff during the period from July to December 2010. Having committed in the bid stage (November 2004) itself that municipal tariff only would be charged and any extra payment would be on the Board's account, the Board should have taken up the matter with TNERC well in advance and obtained orders before commissioning of the project. The belated action on the part of Board resulted in avoidable payment of ₹ 6.95 crore to TNEB.

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<sup>10</sup> High Tension tariff IIA - Energy charges at ₹ 3.50 per kwh upto July 2010 and at ₹ 4.00 from August 2010 and Demand charges at ₹ 200 per KVA

Government stated (October 2011) that efforts were being made by the Board to get refund of the amount paid in excess to TNEB on account of the difference between the industrial tariff and municipal tariff.

#### **2.2.11 Conclusion**

The Board had not prepared feasibility and detailed project report for the project. It failed to consider other alternative economical options after analysing the cost benefit of the alternative modes of implementing the project before adopting the PPP mode. The Board has to procure the contracted quantity of desalinated water for 25 years irrespective of the storage position in the surface water sources. Due to non-revision of water tariff by the Board, Government had to bear the cost of procurement of water.

#### **2.2.12 Recommendations**

- The Board should take action to revise the water and sewerage charges so that its dependence on Government support for purchase of the desalinated water can be minimised.
- Future projects, if any, on seawater desalination should be determined after detailed study of the alternative modes giving flexibility to avail the desalinated water depending on actual requirement.

## **MUNICIPAL ADMINISTRATION AND WATER SUPPLY DEPARTMENT**

### **TAMIL NADU WATER SUPPLY AND DRAINAGE BOARD**

#### **2.3 Computerisation in Tamil Nadu Water Supply and Drainage Board**

##### **Executive Summary**

The Tamil Nadu Water Supply and Drainage Board (Board) resolved (March 2005) to introduce an integrated online computer system named “TWAD Integrated E-Governance System (TWADNEST)” encompassing all its administrative and functional activities. Funded wholly by the Government of India under the National Rural Drinking Water Programme, development of TWADNEST was entrusted to National Informatics Centre (NIC), Chennai. The Project TWADNEST remained incomplete even after six years with a cost overrun of ₹ 76.40 lakh on the software development. The computers and other equipment which were procured well in advance of implementation of TWADNEST are likely to become obsolete due to passage of time. The important points noticed by Audit are given below:

The capability of NIC, Chennai for developing the TWADNEST software was not evaluated and ensured before entrusting the project to them resulting in time and cost overrun.

As of May 2011, an amount of ₹ 92.50 lakh had been deposited with NIC, Chennai without getting the final product.

In contravention of the guidelines, computers and infrastructure valued at ₹ 3.22 crore were procured even before the TWADNEST was developed.

The Project Monitoring software representing the core activity of the Board was not developed by NIC. Data relating to few modules of TWADNEST under implementation, lacked integrity due to absence/failure of controls.

The Project Monitoring System, developed in-house, failed to provide reliable Management Information System due to incorrect/ incomplete data.

##### **2.3.1 Introduction**

The Tamil Nadu Water Supply and Drainage Board (Board) was formed in 1970 to provide drinking water and drainage facility to all parts of the State except Chennai city. The Head Office of the Board is located at Chennai and for administrative purposes the State is split into four Regions<sup>11</sup>, each headed

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<sup>11</sup> Coimbatore, Madurai, Thanjavur and Vellore.

by a Chief Engineer. There are 17 Circle Offices headed by Superintending Engineers and 93 Divisional Offices headed by Executive Engineers. In order to have better accountability, effective monitoring and transparency in delivery of services, Government of India (GOI) had allotted funds of ₹ 7.27 crore between 2004 and 2009 for implementation of a computerised integrated online application under the 'Rajiv Gandhi National Rural Drinking Water Mission' (NRDWP). The Board chose NIC, Chennai as the principal consultant for the computerisation project.

### 2.3.2 Scope of computerisation

Prior to 2005, the Board had developed many stand-alone in-house applications to handle its administrative activities. The integrated online system, encompassing all the administrative<sup>12</sup> and functional<sup>13</sup> activities of the Board, was taken up for development during March 2005. The proposed system, titled 'TWAD Integrated E-Governance System' (TWADNEST) was in the nature of an Enterprise Resource Planning (ERP) system and was a web based application with data stored in Oracle 10g. The system was to have four main sub-systems namely;

- (a) Human Resources Management System (HRMS),
- (b) Financial Accounting System (FAS),
- (c) Project Monitoring System (PMS) and
- (d) Water Quality Management System (WQMS).

NIC was entrusted (April 2005) with the task of developing and implementing the system in 10 months. A State Level Steering Committee (SLSC)<sup>14</sup> was formed (March 2003) for monitoring the computerisation project in the Board. The Board also had developed in-house, a set of ad-hoc web based systems with data in SQL server<sup>15</sup>.

### 2.3.3 Scope and Audit objectives

The audit was undertaken to assess the extent to which the TWADNEST and the standalone modules provided Management Information System (MIS) towards achieving the objectives of implementation and monitoring of water supply schemes as well as transparency in delivery of services. The objectives of audit were to check whether

<sup>12</sup> Payroll, Service matters and Financial Accounting activity in the Board.

<sup>13</sup> Water supply, maintenance, water quality maintenance and drainage activity of the Board.

<sup>14</sup> SLSC was under the chairmanship of Secretary to Government of Tamil Nadu, Municipal Administration and Water Supply Department and had representatives from the Board, NIC, Chennai, Finance Department of the State Government on the State side and a member from Rajiv Gandhi National Rural Drinking Water Mission, Government of India.

<sup>15</sup> SQL server is a relational database server meant for storage and retrieval of data.

- (i) the Board had a well defined business continuity plan,
- (ii) development of the integrated online computer system was properly planned and implementation was economical, efficient and effective and
- (iii) the applications developed had adequate controls to ensure completeness, accuracy and reliability of the data.

#### **2.3.4 Audit Criteria**

The criteria relied upon in audit were:

- (i) Guidelines issued by the Government of India from time to time,
- (ii) Instructions issued by the Government of Tamil Nadu,
- (iii) Policy notes of the Board and
- (iv) The System Requirement Specifications of TWADNEST.

#### **2.3.5 Audit methodology**

Audit commenced with an entry conference (April 2011) with the Managing Director of the Board followed by scrutiny of files relating to computerisation at the Head Office. Data from the ad-hoc systems and the few modules of TWADNEST in use, stored in the Head office/NIC were downloaded and examined using CAATs<sup>16</sup>, for adequacy and reliability. The provisions and controls available in the application software were ascertained through examination of the data entry screens and through exception reporting. To learn the procedure prevailing in the Divisional Offices, a questionnaire was circulated to all the 93 Divisions and Thiruvallur Divisional office was visited. The observations of audit were issued to Government (September 2011) and audit concluded with an exit conference (October 2011).

#### **Audit findings**

##### **2.3.6 Planning and implementation**

The critical nature of TWADNEST, its coverage and the infrastructure involved calls for proper planning at its development and implementation stages. Deficiencies noticed in this regard are brought out hereunder.

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<sup>16</sup> Computer Assisted Audit Techniques.

**The capability of NIC for development of TWADNEST was not evaluated before entrustment of the task.**

### **2.3.6.1 Assessment of capability of the Software developer**

The Board, in 2005, chose to integrate all its functions into one integrated online computer system viz., TWADNEST. Though not mandatory, NIC was entrusted (April 2005) with the development and implementation of TWADNEST without considering its capability in developing software of such a scale and magnitude. NIC carried out two systems studies (October/November 2004 and June 2005) with the support of technical personnel of the Board and undertook to complete TWADNEST in 10 months time at a cost of ₹ 16.10 lakh. Two years after taking up the project, NIC realised (August 2007) that their initial assessment was deficient and TWADNEST was too complex and voluminous to be completed within the agreed time and cost. NIC demanded an additional amount of ₹ 76.40 lakh for outsourcing the software development through its commercial arm National Informatics Centre Services Inc. (NICSI). The Board, being a party to this deficient planning was constrained to concede additional time and cost. However, even after six years, the project has not been completed and its cost has increased from ₹ 16.10 lakh to ₹ 92.50 lakh on software alone.

The Board in its reply (June 2011) stated that NIC being their principal consultant and an agency for development of software for Government departments, the task was entrusted to them. Government acknowledged (October 2011) that NIC could not assess the time and cost requirements due to their inexperience in developing projects of this scale.

### **2.3.6.2 Phasing of TWADNEST**

The development of TWADNEST was planned (March 2005) to be carried out in two phases viz.

- Phase I Development/implementation in one Regional office, one Circle office and four Divisional offices as a pilot project and
- Phase II Rolling out the same for the rest of the State.

However, NIC realised after two years that the project was too complicated and suggested a new phasing out of the project. During the SLSC meeting held in August 2007, the Board in view of slow progress of TWADNEST suggested for outsourcing. NIC termed the work carried out on TWADNEST until then as Phase I and the remaining as Phase II and proposed to outsource Phase II at an additional cost of ₹ 76.40 lakh to which the Board readily agreed (January 2008). So far, the Board has spent ₹ 92.50 lakh on software.

### **2.3.6.3 Outsourcing of software development by NICSI**

Development of TWADNEST was outsourced (March 2008) to M/s Sobha Renaissance Information Technology (SRIT) Ltd., Bangalore, by NICSI, for completion in six months time at a cost of ₹ 76.40 lakh (of which ₹ 5 lakh formed the service charges of NIC). However, on SRIT failing to complete the task as scheduled and demanding an additional ₹ 67 lakh for development of just one sub-system (PMS) against the entrusted three sub-systems (HRMS, FAS and PMS), the contract was terminated by NIC (November 2009). The

development of TWADNEST was taken back on itself by NIC, which now proposed to carry out the task using manpower hired through NICS. The following were observed in audit.

**Outsourcing of software development to SRIT had to be terminated, contributing to a delay of 18 months.**

- The Board attributed (a) insufficient manpower and frequent changes in functional specialist, (b) wrong interpretation of business rules and (c) poor planning and non-preparation of realistic schedules, to the failure of SRIT in developing the software. These factors were realised by the Board only after 18 months of entrustment of the project which indicated lack of monitoring by the Board and NIC.
- As per the work order issued to SRIT, the excess cost of developing TWADNEST through any other agency was recoverable from them. But neither the Board nor NIC had ensured incorporation of this clause in any agreement with SRIT.
- NICS appropriated an amount of ₹ 5 lakh (7 per cent of cost of work order issued to SRIT) towards its service charges for development of the software through SRIT, even though nothing was delivered to the Board.

The Board having failed to exercise sufficient control over the development of TWADNEST should recover the entire amount spent on the project from the parties concerned if the package is not developed within a reasonable time.

#### **2.3.6.4 Current state of software development/implementation**

**TWADNEST remained at the preliminary stage even after the earmarked amount of ₹ 92.50 lakh was fully spent.**

The Board had on many occasions expressed displeasure over the poor handling of TWADNEST by NIC/NICS. NIC in turn attributed the delay to failure of the Board to bring out their total requirement at the time of entrustment of the work to them. The reason cited for outsourcing the project to SRIT was shortage of manpower in NIC. However, when SRIT failed in their endeavor, the work was again taken by NIC on its own against the same odds that prevailed earlier. As a result, the project was yet to be completed despite 11 extensions granted to NIC.

The subsystem-wise status of implementation of TWADNEST as assessed by Audit (May 2011) was as under:

**Human Resources Management System:** Out of the 28 modules, nine were implemented and the remaining were either under testing/implementation stage or yet to be taken up.

**Financial Accounting System:** Out of the 32 modules, nine were implemented and the rest were either under testing/implementation stage or yet to be taken up.

**Project Monitoring System:** This system had 14 modules but none of them had been implemented.

**Water Quality Management System:** This segment of the software, though developed and handed over to the Board by NIC, was not in use in the Board.

Further, critical phases like integration of modules, integrated testing and parallel run etc., were yet to commence. The flow of data across the modules would be possible only on implementation and integration of all the modules. Despite non-completion of the system (May 2011), the amount of ₹ 92.50 lakh allocated for development of software was stated to have been fully spent by NIC.

Government replied (October 2011) that TWADNEST will be implemented in all respects by March 2012. However, considering the number of times the project had undergone revisions, the prospect of NIC developing and implementing TWADNEST appears doubtful. When this was pointed out in the exit conference (October 2011), Government directed the Board to make a fresh assessment of the situation and arrive at a realistic target date.

#### **2.3.6.5 Failure to follow the System Development Life Cycle**

**The full course of SDLC like development of URS, issue of completion certificates, etc. was not followed.**

In development of TWADNEST, NIC did not follow the System Development Life Cycle<sup>17</sup> (SDLC) method. On completion of the system analysis, no User Requirement Specification (URS) was drawn up by NIC and got approved by the Board. NIC claimed that the fluid nature of requirement of the Board was one of the contributing factors to the delay in development of TWADNEST. With no URS in place, the developer was free to develop the software as understood. The Board did not issue completion certificates for those modules said to have been completed and delivered/implemented by NIC. Hence, the exact number of modules completed/implemented was not available on record.

The Board in their reply stated (July 2011) that they were not following the practice of giving acceptance reports for the completed modules. The reply of the Board is not acceptable, as in development of such a software in the nature of an ERP, failure to follow the SDLC was not in conformity with the established standards. Government advised (October 2011) the Board to prepare URS and have their requirement documented.

#### **2.3.6.6 Avoidable procurement of MS SQL Server**

The Board holds a valid licence for Oracle 10g DB 2 acquired at a cost of ₹ 24.72 lakh (July 2006) for development of TWADNEST and have trained its officials to use it. In addition, one 'MS SQL Server, Enterprise Edition 2008' was procured at a cost of ₹ 7.82 lakh in August 2010 for in-house software development. The purchase of one Relational Database Management System (RDBMS) when in possession of a set of valid processor based licenses for another was superfluous. The expenditure of ₹ 7.82 lakh incurred on procurement of the MS SQL Server software was avoidable.

The reply of the Board (July 2011) that MS SQL was required for their in-house development is not acceptable as development could have been carried out using the existing RDBMS irrespective of the operating system, with the

<sup>17</sup> (a) Project Planning and feasibility study, (b) Systems analysis and requirements definition, (c) Systems design, (d) Implementation, (e) Integration and testing, (f) Acceptance, installation and deployment and (g) Maintenance.

same knowledge-base and effort. Government opined (October 2011) that the purchase of MS SQL was avoidable.

### 2.3.7 Procurement of computers and provision of infrastructure

As per NPC<sup>18</sup> guidelines, acquisition of computers and infrastructure was to be carried out only after the related application software was ready. The Board had however, procured all the required computers, a dedicated network, a stand-by network and all other peripherals costing ₹ 6.35 crore, even when the development of application software was not complete, and these items could not be utilised for the intended purpose, as brought out hereunder.

- 484 computers procured, utilising TWADNEST funds, at a cost of ₹ 1.55 crore in 2005 had already served their lifetime.
- Four Itanium Servers procured (July 2006) at a total cost ₹ 25.76 lakh were replaced (December 2010) with three HP servers with Xeon processors at a cost of ₹ 9.75 lakh, claiming that the existing servers could not handle the workload under TWADNEST.
- 74 out of 93 Divisional Offices, were connected (July 2009) through the Tamil Nadu State Wide Area Network (TNSWAN) at an initial cost of ₹ 1.41 crore and recurring cost of ₹ 14.66 lakh per year and a stand-by BSNL broad band connection at ₹ 10.07 lakh per year. While the BSNL broadband connection was used for its day to day work, TNSWAN remained unutilised.
- For networking of five to seven computers within each of the 74 Divisional offices, Electronics Corporation of Tamil Nadu Ltd., had recommended, one unmanaged switch each costing ₹ 2,650 each. The Board, however, purchased manageable switches costing ₹ 28,750 each without citing any valid reason, and thereby incurred an additional expenditure of ₹ 18.79 lakh.

### 2.3.8 Business Continuity Planning

#### 2.3.8.1 Non-renewal of the Memorandum of Understanding

**The MoU with NIC for development of TWADNEST had lapsed and was not renewed**

For consultancy services and software development, the Board entered into a Memorandum of Understanding (MoU) with NIC/NICSI for three years from April 2005. The MoU was not renewed after its expiry in March 2008. In the absence of a valid MoU/agreement, the Board did not have legal backing to enforce the conditions agreed upon by NIC.

The Board replied (July 2011) that NIC did not come forward to renew the MoU, stating that TWADNEST would be completed in a short period. Government accepted (October 2011) to renew the MoU with NIC.

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<sup>18</sup> NPC – National Project Committee – Committee functioning under Ministry of Rural Development, GOI for monitoring performance of projects sanctioned to States.

### 2.3.8.2 *Non-renewal of Product support for Oracle 10g server*

The Board purchased (May 2006), two processor-based licenses for Oracle 10g server at ₹ 24.72 lakh which included ₹ 3.88 lakh towards product support for the first year. The support was however, not extended for successive years. A seamless working of Oracle 10g will be critical for the functioning of TWADNEST on its implementation. In such a situation, continued support of Oracle Corporation was an absolute requirement in terms of business continuity in the Board. Similar institutions, like Chennai Metropolitan Water Supply and Sewerage Board (under the same department) have opted to have product support of Oracle.

The Board replied (July 2011) that product support was not renewed after first year as it was not felt necessary. They, however, did not produce any record in support of their claim that this was a conscious decision. Government assured (October 2011) that the product support would be obtained.

### 2.3.9 *Implementation of the modules of TWADNEST*

#### 2.3.9.1 *Discrepancies in HRMS data*

**Data in the implemented modules of TWADNEST were error-prone due to lack of controls and validations**

The Employee Profile system maintains a database of personnel and their postings in various offices. An examination of the related data for its completeness, correctness and adequacy disclosed the following:

- (a) There were 34,151 records where the institution code remained blank and the offices where the employees were posted could not be identified, defeating the very purpose of the system.
- (b) There were 830 instances where the same official was depicted as working in two different offices over a period of time.
- (c) There were 339 instances where the posting of a person in a particular office was repeated twice.
- (d) There were 28 instances where persons were relieved from the offices prior to the date of their joining the offices.
- (e) There were 1,117 instances where a person had joined an office and got relieved from that office on the same day.
- (f) There were 1,954 instances of transfers in respect of 355 offices (during 2009, 2010 and 2011) where entries were made to the system after a delay ranging between a month and three years in contravention of an online system.

These audit findings indicate lack of controls and validations in the modules. The Board in its reply (June 2011) stated that the errors would be corrected, necessary controls would be incorporated in the software and entries to the system would be made promptly.

### **2.3.9.2      *Functioning of the TWADNEST GPF system***

Though the General Provident Fund (GPF) system was claimed to be online by the Board, it was noticed that the Payroll system, from which GPF data had to flow to the GPF system, was yet to be developed. Data was either fed into the GPF system or transferred thereto from the legacy stand alone system using external procedures which could not be termed as online.

The Board in its reply (June 2011) stated that efforts would be made to speed up the capture of data into GPF. The reply did not however, address the integration issues raised in the audit observation. Government advised the Board (October 2011) to follow a proper sequencing in the development of modules as suggested by Audit.

### **2.3.9.3      *Incomplete functioning of the financial accounting system***

**The Financial Accounting System could not generate the Final Accounts of the Board.**

Computerisation of FAS remained incomplete as it has not been delivered in full shape by NIC. As figures for FAS have to flow from all other systems like HRMS and PMS all of which are incomplete, the eventual implementation of FAS does not appear to be possible within any predictable time frame.

Though feeding of Journal Entries for the generation of trial balance had commenced in 2006, adjustment entries at the close of the financial year were not fed to the computer system. Therefore, the system could not generate the Final Accounts of the Board. Thus, in the system data, the opening balance in respect of 323 heads for 2010-11 did not agree with the closing balance for 2009-10. Similarly, in respect of 142 heads, the opening balance for 2011-12 did not agree with the closing balance of 2010-11.

The Board in its reply (June 2011) stated that year-end adjustments would be made through the system from the accounts of 2011-12. They also agreed that only after all other systems were made online, a complete integration with FAS would be possible.

### **2.3.9.4      *Failure to use the Water Quality Management System***

The WQMS software developed under TWADNEST, for monitoring the quality of water supplied to habitations, was not being used by the Board as of July 2011. However, to meet the MIS requirement of Board, details were forwarded to the Head office by the field offices in MS Excel sheets on monthly basis which were manually consolidated for the State as a whole. Using general purpose software like MS Excel and ignoring the availability of tailor made WQMS defeated the very purpose of the integrated online system.

The Board in its reply (July 2011) stated that the field offices were reluctant to discontinue the habit of sending returns on MS Excel and did not take up the WQMS software. They also stated that WQMS would be used when TWADNEST becomes functional.

### 2.3.9.5 *Non-implementation of the Project Monitoring System*

No module of the Project Monitoring Software representing the core activity of the Board was developed.

Implementation and maintenance of water supply schemes was the core functional activity of the Board. It involved identification, investigation, preparation of estimates, tendering, funding, collection of beneficiary details, monitoring the physical and financial progress, time scheduling and settlement of contractor bills, etc. PMS was to take care of all such activities and was the mainstay of TWADNEST in achieving the objectives of the integrated system. In spite of the criticality of this sub-system, no module relating to it had been developed/implemented. The Board's claim that TWADNEST was partially functional, after implementing a few modules in FAS and HRMS which were of administrative nature, without implementing even a single module of PMS, was not convincing.

### 2.3.10 In-house developed programs

The indefinite delay in implementation of TWADNEST resulted in the Board managing its MIS requirement, especially in project monitoring, through a set of in-house developed programs. The adequacy and integrity of data in these programs were examined in audit and the following are the observations.

#### 2.3.10.1 *Deficiencies in the daily pumping report*

The data relating to daily pumping report provided incorrect and deficient MIS.

The quantum of water pumped each day under all the 531 combined water supply schemes<sup>19</sup> (CWSS) maintained by the Board, was keyed in by respective maintenance divisions through an in-house developed web-based application. The performance of these schemes was monitored through outputs obtained from this application. An examination of this application disclosed that:

- The calculation of daily 'average quantity of water pumped during a week' was worked out incorrectly. To cite an example, water pumped during the week 17 April 2011 to 23 April 2011 aggregated to 6.96 million litres per day (MLD), but the daily average was given as 1.018 MLD against the correct average of 0.994 MLD.
- There was no control to ensure daily entry of data in the pumping report. Calculation of 'average quantity of water pumped during a month' was done taking into consideration only those days in the month for which data was available. No effort was made to differentiate between the dates for which 'no data entry was made' and dates for which 'no water was pumped'.
- There was a provision to generate reports for the days on which pumping was deficient for reasons like pump/pipe repairs, power failures, etc. However, in 587 instances reasons for the deficient pumping were not furnished in the database rendering the MIS

<sup>19</sup> Combined water supply schemes that supply water from multiple sources to a combination of habitations, villages, etc.

information incomplete. Recording of reasons should be made mandatory in cases where the shortfall exceeds a certain percentage.

- There were 986 instances where the recorded quantity of water pumped for a given day was more than twice the designed quantity, indicating that the data was allowed to be fed without any validation or input control. In 87 of the cases 'EB Power Failure' was given as the reason for excess pumping which is not logical.

The Board in their reply (June 2011) stated that the incompleteness would be rectified and errors would be investigated.

#### ***2.3.10.2 Incomplete database regarding supply of water to habitations***

As per the policy note of the Government, out of the total number of 93,699 habitations (March 2011), 86,679 habitations were fully covered for water supply and the remaining 7,020 were partially covered. However, according to the data (April 2011), 2,715 habitations were yet to be provided with water. There were another 2,619 habitations, which according to the data were provided with water, but did not figure in the habitation master. This indicates that either the master list of habitations was incomplete or the fact of having supplied water to these habitations was not based on facts.

The Board (July 2011) replied that the data was used for internal monitoring purpose only. It is reiterated that the said monitoring purpose would not be served with incorrect/incomplete data.

#### ***2.3.10.3 MIS on the functioning of the schemes***

The Board keeps track of functioning of all the 3,83,777 water supply schemes in the State for which purpose, surveys were conducted and the functional state of the scheme was stored in the Project Monitoring Database. However, due to lack of input and other controls, the database had deficiencies and errors, preventing the system from furnishing a dependable MIS, as brought out hereunder:

- (a) The date of survey was not stored in the database for 3,26,543 schemes.
- (b) Though 36,933 schemes were declared non-functional, the date from which they were non-functional was not stored.
- (c) In 18,011 schemes, the date of survey was earlier to the date of implementation and their status was shown as 'Working', 'Not Working', etc.
- (d) For 5,920 schemes the working status was given as 'Others' whereby the computer generated MIS report in respect of these schemes would not reflect their actual status of working.
- (e) In respect of 1,084 schemes their 'working status' was either blank or contained meaningless characters/codes.

(f) The schemes were split into categories like 'Hand Pumps', 'Power Pumps', 'Open Well', 'Bore Well', etc., and for those that did not fit into any of these listed categories, their exact type would have to be specified. But, in the data for 33,802 schemes, their type was given as 'Others Specify'.

(g) The field storing the name of agency, which had financed the scheme remained blank in 1,411 records and contained junk in 2,893 records.

(h) The field storing the identity of the agency, which had executed the scheme, like TWAD Board, Local Body, etc. remained blank in 1,330 records and contained junk in 454 records.

The Board in their reply (June 2011) stated that data validations were not carried out due to manpower shortage, and would be done in future. They also stated that surveys were not carried out regularly due to shortage of funds.

#### **2.3.10.4 Inconsistency in the data relating to water sources**

An examination of the table providing information on water sources disclosed discrepancies as follows:

(a) Out of the available 3,36,571 water sources, 27,538 were declared as not in use. However, 1,667 schemes drawing water from these 'not in use' sources were stated as working satisfactorily in the Scheme information table indicating that referential integrity<sup>20</sup> across the tables in the database was not maintained.

(b) The data relating to the diameter of wells was blank in 7,784 instances, between 25 meters to 2,050 meters in 1,924 instances and between zero and eight centimeters in respect of 27,876 wells. Similarly the depth of the well was blank in 7,608 instances, more than 200 meters in 6,256 instances and less than three meters in 341 instances. A suitable range-based control at the data input stage could have helped in elimination of such incorrect data entering the system.

The Board in their reply (June 2011) stated that data validations were not carried out due to manpower shortage, and the same would be done in future.

#### **2.3.10.5 Discrepancies in calculation of water charges**

**System data indicated overcharging and undercharging by the Board for the water supplied.**

Water supplied to civic/private bodies under CWSS attracted charges based on quantum of water supplied, the collection of which was watched through a manual Demand Collection and Balance (DCB) register. A comparison of the 'daily pumping return' stored in the computer system and the quantum of water supplied as per the DCB disclosed the following:

In respect of all the 85 CWSS in five divisions<sup>21</sup> for the month of March 2011, it was observed that the quantum of water pumped did not agree with the quantum of water for which charges were claimed. Such disagreement resulted in instances where

<sup>20</sup> Referential integrity is a database concept which ensures that relationships between data tables remain consistent.

<sup>21</sup> Salem Maintenance Division, Sivaganga, Thiruchirappalli, Tiruppur and Thiruvallur Rural Water Supply Divisions.

- (a) the quantum of water charged for was less than the quantum pumped, indicating that the consumers were undercharged by ₹ 5.98 lakh in 27 schemes and
- (b) the quantum of water charged for was more than the quantum pumped, whereby users were overcharged by ₹ 32.55 lakh in respect of 58 schemes.

In the exit conference, Secretary to Municipal Administration and Water Supply Department stated (October 2011) that corrective measures in this regard were already underway.

### **2.3.11 Conclusion**

Development of TWADNEST an ERP like project, was entrusted to NIC whose expertise for carrying out the task was not evaluated by the Board. The assessment of the time and cost required for the project was done by NIC without any basis. Despite 11 extensions of time conceded over a period of six years and an additional expenditure of ₹ 76.40 lakh, NIC was able to complete only a few modules. In such a situation, completion time of the project, which is yet to go through the complex process of integration and field testing, could not be assessed in audit. Even the few functioning modules of TWADNEST continued to depend on the manual systems. Further, data in the in-house application developed to serve as a standby for project monitoring lacked integrity. Though the NPC guidelines cautioned against procurement of hardware prior to the development of software, the full complement of machines was procured and networking and other infrastructure were provided well in advance. The procured machines had already exhausted their prescribed life.

Thus, even after spending the entire allocated amount of ₹ 7.27 crore and six years on the task, the desired benefits of complete computerisation in the form of TWADNEST, was yet to be achieved.

### **2.3.12 Recommendations**

In view of the above, it is recommended that Government should take charge of the situation and ensure that

- a fair assessment of NIC's likelihood of completing and implementing TWADNEST is made and a revised schedule is drawn up and adhered to;
- the MoU with NIC be renewed without further delay;
- the sequence of development of modules should be so prioritised as to give importance to the functional activity and
- the software related deficiencies pointed out in this report are rectified.

The above points were referred to Government in September 2011; reply has not been received (January 2012).