

Ministry of Power

Performance Audit Report of Accelerated Power Development and Reform Programme

1 Distribution Reforms – Background

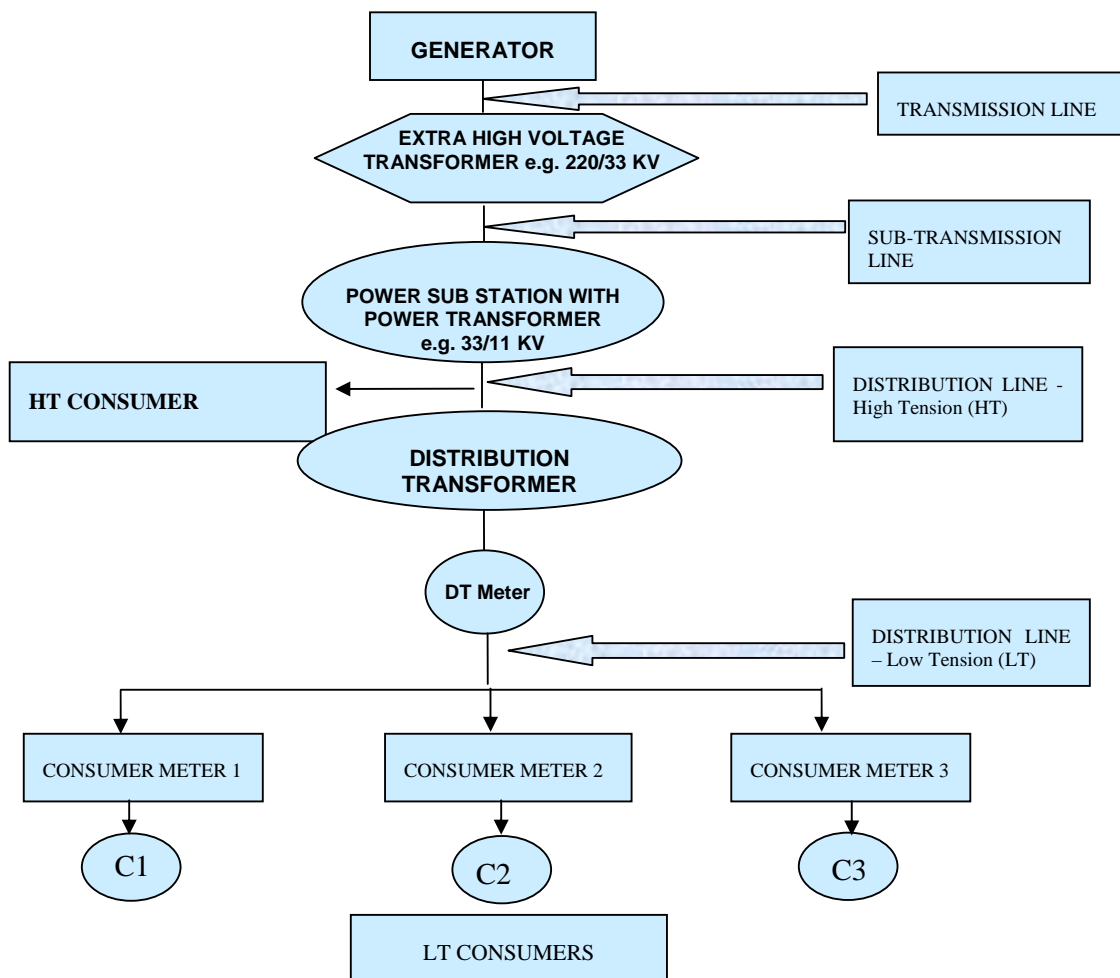
1.1 Electricity Generation, Transmission and Distribution

Generation, transmission and distribution are the three main commercial aspects related to production and distribution of electricity:

- Electricity is **generated** or produced in different types of thermal, hydro-electric and nuclear power plants.
- The generated electricity is then **transmitted** at high voltages (generally 110 KV or above) through a network of transmission lines, and is then passed through step down transformers that lower the voltage, and **distributed** to various consumers at different voltages.

A brief diagram showing the generation, transmission and distribution of electricity is given below:

Figure 1: Generation, Transmission and Distribution of Electricity



1.2 Accelerated Power Development Programme (APDP)

Due to the inability of State power utilities to systematically fund essential activities relating to the upgradation of the sub-transmission and distribution system and renovation and modernisation of old plants, developmental activities in the power sector had not taken place in an organised and comprehensive manner, resulting in shortages, poor quality of supply and frequent interruptions. The commercial losses of the State Electricity Boards had been escalating. In order to address these issues, the Government of India (GoI), in February 2001, launched the Accelerated Power Development Programme (APDP). The scheme would finance specific projects relating to:

- Renovation and Modernisation (R&M) / life extension/ uprating of old power plants (thermal and hydel); and
- Upgrading and strengthening of sub-transmission and distribution network (below 33KV or 66 KV), including energy accounting and metering in the distribution circles in a phased manner.

APDP was to continue till the end of the 11th Five Year Plan i.e. 2012. An amount of Rs. 1000 crore was budgeted as APDP funds among the States in 2000-01 for various schemes under the above categories.

1.3 Accelerated Power Development and Reform Programme (APDRP)

For quick turnaround of the power sector, GoI decided to restructure the concept of APDP from merely an investment window to also a mechanism for supporting power sector reforms in the States linked to the fulfilment of performance criteria by way of benchmarks. To “incentivise” the reform process, it was proposed to reward the actual improvement in the performance of the utilities by way of reduction in commercial losses and increased revenue realisation. Therefore, APDP was renamed as “Accelerated Power Development and Reforms Programme” (APDRP) in the Union Budget 2002-03.

1.4 Expected Benefits from APDRP

The following major benefits of the programme were envisaged:

- Reduction of Aggregate Technical and Commercial Losses (AT&C Losses)¹ from around 60 per cent to around 15 per cent in five years, to begin with in the urban areas and high density/ consumption areas, which implied a targeted reduction of 9 per cent per annum in AT&C Losses.
- Significant improvement in revenue realization by reduction of commercial and technical losses
- Improved quality of supply and reliable interruption-free power.
- Decrease in the burden of heavy subsidies to SEBs/ Utilities.

¹ Aggregate Technical and Commercial Loss (AT&C Loss) is considered the clearest measure of the overall efficiency of power distribution as it measures technical and commercial losses. By contrast, Transmission and Distribution Loss (T&D Loss) does not capture losses on account of non-realisation of payments.

2 APDRP – Salient Features

2.1 Organisational Setup

- At the Central level, the Distribution Division in the Ministry of Power (MoP), under the overall charge of the Joint Secretary, is responsible for release of funds, approval of projects, signing of Memoranda of Agreement (MoA), monitoring, processing of incentive claims etc.
- In addition, a Steering Committee, chaired by Secretary (Power) and comprising members from the Central Electricity Authority (CEA), Ministry of Finance (MoF), Planning Commission, National Thermal Power Corporation (NTPC), Power Grid Corporation of India Limited (PowerGrid), Power Finance Corporation (PFC) and Rural Electrification Corporation (REC), has been constituted to consider the proposals under APDRP and to review the implementation of the programme.
- NTPC and PowerGrid have been designated as the Lead Advisor cum Consultants (Lead AcCs).
- At the State level, the projects sanctioned under APDRP are implemented by the State Electricity Boards (SEBs)/ State Utilities/ State Electricity Departments (SEDs).

2.2 APDRP Components

APDRP has two components:

- An investment component for strengthening and upgradation of the sub-transmission and distribution system; and
- An incentive component to motivate utilities to reduce cash losses.

2.3 Investment Component

APDRP has an outlay of Rs. 40,000 crore as Additional Central Plan Assistance to the State Governments during the 10th Five Year Plan (2002-07). Of this amount, the investment component was for Rs. 20,000 crore, with the remaining Rs. 20,000 crore for the incentive component.

The funding mechanism under the investment component was as follows:

- For Special Category States², APDRP would finance 100 per cent of the project cost in the ratio of 90 per cent grant and 10 per cent soft loan.
- For other States, APDRP would finance 50 per cent of the project cost (ratio of grant and loan would be 1:1 i.e. 25 per cent grant and 25 per cent loan) and the SEBs/ Utilities would have to arrange the remaining 50 per cent of the funds from PFC/ REC or other financial institutions as counter part funds.

With effect from November 2005, the loan component of 10 per cent for Special Category States and 25 per cent for other States was dispensed with.

The release of funds is in instalments, linked with the release of counter part funds and project spending; the pattern differs for Special Category States and other States. Details of the pattern of release of funds are given in **Annexure-I**.

² Arunachal Pradesh, Assam, Jammu & Kashmir, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim and Uttaranchal are Special Category States

2.3.1 APDRP Interventions

The technical, commercial and administrative interventions under APDRP were prioritised into Category A and Category B items, as follows:

Table 1: Category A and B Items under APDRP

Category- A Items	Category- B Items
Targeted to reduce commercial losses and increase reliability by:	Targeted to reduce technical losses and capacity augmentation by:
<ul style="list-style-type: none">➤ Feeder Metering➤ Distribution Transformer (DT) Metering➤ Sub-Station R&M (Renovation and Modernisation)➤ Capacitor Placement➤ Distribution Transformer R&M➤ Service Connection Improvement➤ IT enabling, including Sub-Station Automation	<ul style="list-style-type: none">➤ New Sub-Stations➤ New Lines➤ Bifurcation of Feeders➤ Reconductoring

2.3.2 Procedure for Sanction, Implementation and Monitoring

In brief, the procedure for sanction and implementation of projects under APDRP is as follows:

- SEBs/ Utilities prepare Detailed Project Reports (DPRs), containing the activities to be implemented by the utilities, which are submitted to the AcCs.
- The DPRs are scrutinized and vetted by the AcCs, and submitted to the MoP for the consideration of the APDRP Steering Committee.
- After the proposal is approved by the Steering Committee, the MoP approaches the MoF for release of funds.
- MoF releases funds to the States. SEBs / Utilities obtain counterpart funds from Financial Institutions and open escrow account.
- SEBs / Utilities take up the tendering process and award contracts.
- Monitoring of the programme is done by MoP, Lead AcCs/ local AcCs, State level/ District level Distribution Reforms Committees.

2.4 Incentive Component

Under the incentive component, the State Governments would be given incentives upto 50 per cent of the actual total loss reduction by SEBs/ Utilities. The grant under this component was to be utilised exclusively for the improvement of the power Sector. The salient features of the incentive scheme are as follows:

- The year 2000-01 would be taken as the base year for calculation of loss reduction in subsequent years.
- Losses would be calculated net of subsidy.

- Revenue would be considered on net realization basis (i.e. increase in receivables would be factored into the calculation).
- Incentive in subsequent years would be given on the incremental loss reduction (disallowing regression, if any).
- All qualifications on the audited accounts in the audit report having a bearing on reduction of expenses or inflation of income would be factored in. Similarly, any change in accounting policy having the effect of decreasing expenses or increasing the period of amortization/ depreciation would also be factored in.

2.5 Conditions for availing benefits under APDRP

2.5.1 Memoranda of Understanding (MOUs)

As part of the six-level strategy, at the State level, the MoP insisted on signing of MOUs covering the following major reforms:

- Setting up of State Electricity Regulatory Commissions (SERCs);
- Restructuring of SEBs, viz. unbundling into separate entities for generation, transmission and distribution and corporatisation of unbundled entities;
- Removing cross subsidies and tariff anomalies, and providing budgetary support to SEBs towards subsidies;
- Introduce private participation in generation, transmission and distribution;
- Filing of first tariff petition by SEB/ Utility with SERC, and implementation of tariff orders of the SERC; and
- Securitisation of dues of Central Public Sector Undertakings (PSUs) to the SEBs/ Utilities

2.5.2 Memoranda of Agreements (MOA)

In order to enable the SEBs/ Utilities to manage distribution on a profit centre approach and to improve their performance on the basis of certain benchmarks, the signing of a Memorandum of Agreement (MOA) by them with the MoP for power reforms was made a pre-requisite for release of funds under APDRP. The key reforms envisaged through the MOA were as follows:

- 100 per cent metering for each 11 KV feeder and also for consumers;
- Energy accounting and audit;
- Distribution Circles to be operated as independent profit centres with adequate delegation of powers, with the Superintending Engineer as the Circle Chief Executive Officer (CEO);
- 11 KV feeders to be operated as business units, with the Junior Engineer as the feeder manager; and
- Turnkey contracting system to be adopted by the SEBs/ Utilities.

2.6 APDRP Expenditure

The progress of expenditure as of 31st March 2006 under the investment component was as follows:

Table 2: Year wise details of Project Cost, APDRP Component, Release and Utilisation

(All figures in Rs. Crore)

Year	Project Cost	Revised APDRP Component			Release			Counter Part Fund sanctioned	Counter Part Fund drawn	Utilisation
					Investment					
		Grant	Loan	Total	Grant	Loan	Total			
2002-03	14051.44	4534.87	725.48	5260.35	1030.04	725.48	1755.52	4562.64	493.70	586.81
2003-04	1777.52	721.09	993.99	1715.08	1362.52	993.99	2356.51	1211.39	1315.71	2718.97
2004-05	3054.63	1652.39	554.75	2207.14	873.98	554.75	1428.73	977.46	1042.42	3390.66
2005-06	296.87	82.08	0.00	82.08	590.94	0.00	590.94	292.85	1235.21	2810.76
TOTAL	19180.46	6990.43	2274.22	9264.65	3857.48	2274.22	6131.70	7044.34	4087.04	9507.20

State-wise details are given in **Annexure-II**.

3 Audit Objectives and Scope

A performance audit of APDRP, covering the period from 2002-2003 to 2005-2006, was taken up with the objectives of assessing whether:

- The intended objectives of APDRP viz. reduction in AT&C losses, 100 per cent system and consumer metering, improvement in quality and reliability of power supply, energy accounting and audit, and reduction in the gap between ARR and ACS have been effectively achieved.
- There was adequate and effective control over the release and utilisation of APDRP funds.
- The incentive mechanism envisaged under APDRP has been successfully implemented.
- The reforms sought to be achieved through the MOUs and MOAs with the State Governments and SEBs/ Utilities has been effectively implemented.
- The process for planning, implementation of APDRP was adequate and effective, and the projects were executed economically and efficiently.
- Information Technology (IT) applications and Computer Aided Tools were effectively implemented for improving distribution performance.
- There was a system of adequate monitoring to evaluate the programme and take corrective steps.

4 Audit Criteria

The main audit criteria used for the performance audit were:

- Guidelines for implementation of APDRP issued by the MoP;

- MOUs and MOAs with the State Governments and SEBs/ Utilities;
- Guidelines for Reduction of T&D Losses issued by the CEA (February 2001);
- Guidelines for Development of Sub-Transmission and Distribution Systems by Committee of Experts and CEA (November 2001); and
- DPRs for APDRP Projects.

5 Audit Methodology

The Performance Audit of the Programme commenced with an entry conference with the MoP in February 2006, in which the audit methodology, scope, objectives and criteria were explained. During this meeting, the MoP also made a presentation on the status of APDRP.

The period covered under the audit was 2002-03 to 2005-06. Field audit of the relevant records of the MoP, MoF, and SEBs/ Utilities/ SEDs was conducted at the Ministry and 29 States/ UT³ between June and October 2006.

An exit conference was held in January 2007 with the MoP, where the audit findings were discussed in detail. Representatives of NTPC, PowerGrid and CEA were also present at this conference.

The draft audit report was issued to the Ministry in January 2007. Replies were received from the Ministry, as well as from NTPC and PowerGrid, in January/ February 2007, which have been suitably incorporated in the report.

Audit gratefully acknowledges the cooperation and assistance extended by the MoP, NTPC, PowerGrid and CEA, and their officials at various stages of conduct of the performance audit.

5.1 Sample Selection

Of the 583 approved APDRP projects (as of March 2006) in 29 States/ UT, a sample of 294 projects was selected for detailed examination. These projects had a total approved cost of Rs. 10255.21 crores (including counter part funding), and as of March 2006, the reported utilisation of funds was Rs. 5617.64 crore. The process of sample selection is summarised below:

- In every State, 25 per cent of the Circles (subject to increase in order to cover the required number of projects) were selected.
- From within the selected Circles, the projects were stratified into two categories (a) projects which had been evaluated by external agencies, and (b) other projects, and the required sample of projects selected separately from each stratum.

Details of the sampling procedure followed are given in **Annexure-III**.

³ Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttaranchal and West Bengal.

6 Achievement of APDRP Objectives

6.1 Aggregate Technical and Commercial (AT&C) Losses

6.1.1 Projected Reduction in AT&C Losses not achieved

Hitherto, T&D Loss (Transmission & Distribution Loss) was being used to measure the efficiency of power distribution. However, this measure has the following anomalies:

- T&D loss does not capture losses on account of non-realisation of payments.
- In absence of feeder metering in the past, a substantial portion of T&D loss, including theft of electricity, was attributed to agricultural consumption. Utilities were overestimating agricultural consumption, and showing a lower value for T&D Loss.

By contrast, AT&C Loss is considered a clearer measure of the overall efficiency of power distribution, since it measures technical and commercial losses.

AT&C Loss is calculated as

$$\frac{(\text{Energy Input} - \text{Energy Realised}) \times 100}{\text{Energy Input}}$$

where

Energy Realised = Energy Billed x Collection Efficiency, and

$$\text{Collection Efficiency} = \frac{\text{Amount Realised} \times 100}{\text{Amount Billed}}$$

While launching APDRP in March 2003, it was envisaged that AT&C Losses would be brought down from the existing level of about 60 per cent to around 15 per cent in five years, to begin with in the urban areas and high density/ consumption areas. This implied that reduction of AT&C Loss @ 9 per cent per annum was targeted.

The State-wise details of AT&C Loss for the years 2001-02 and 2005-06, which came to light in the audit, are given in **Annexure IV**. Analysis revealed that AT&C Loss was still very high, and ranged between 15.86 per cent in Goa and 72.74 per cent in Mizoram. Except in the States of Goa, Andhra Pradesh and Tamil Nadu, the AT&C Losses continued to be very high in other States. The reduction in AT&C Loss in most States was marginal. **Thus, the primary objective of APDRP of reducing AT&C Loss by 9 per cent per annum had not been achieved.**

Audit examination of the AT&C Loss in States on a circle/ project-wise basis revealed the following:

- In respect of **Assam, Chhattisgarh, Haryana, Gujarat, Karnataka** (5 out of 14 projects test checked), **Madhya Pradesh** (12 towns), **Manipur** and **Meghalaya**, the losses increased as compared to the base year, indicating that SEBs / Utilities had not taken adequate steps to reduce the AT&C losses.
- In **Delhi**, the AT&C Losses ranged from 47.3 per cent to 66.1 per cent (5 districts of BYPL) and 49.5 per cent to 73.1 per cent (3 districts of BRPL) and as high as 53.93 per cent in Mangolpuri (NDPL).
- In **Himachal Pradesh**, the AT&C Losses for 2005-06 in 6 circles test checked in Audit ranged from 24.33 to 70.43 per cent.

Audit findings narrated above are corroborated by the October 2006 Report of the Task Force of the MoP on Restructuring of APDRP, which indicated that as per the data compiled by the Ministry, AT&C Loss at the national level came down from 38.86 per cent in 2001-02 to 33.82 per cent in 2004-05. The reduction in AT&C Loss of 5.04 per cent during three years implied a reduction of 1.68 per cent per annum against the target of 9 per cent per annum. As per the report, AT&C Loss had, in fact, gone up between 2001-02 and 2004-05 in the States of Bihar, Jharkhand, Assam, Manipur, Meghalaya, Jammu & Kashmir, Kerala and Pondicherry. The region-wise position of AT&C Loss, as per the report, was as follows:

Table 3: Region-wise position of AT&C losses (in per cent)

Region	2001-02	2004-05
East	47.34	44.85
North-East	40.65	41.59
North	46.01	40.64
South	27.63	23.81
West	39.60	32.73

6.1.2 Data regarding AT&C losses not authentic

Audit examination also revealed significant deficiencies in the maintenance of records relating to calculation of AT&C losses as explained in the succeeding paragraphs. Hence, the data reported by the MoP on AT&C Losses could not be regarded as authentic, accurate and acceptable.

6.1.2.1 Absence of proper guidelines/ procedures and supporting records

Audit examination revealed that:

- SEBs / Utilities had not issued any detailed guidelines to the field offices regarding calculation of AT&C losses.
- SEBs / Utilities had not evolved any system for study and correct assessment of technical and commercial losses separately at the State, circle, feeder and Distribution Transformer (DT) levels.
- Automated Data Logger System had not been implemented in all sub-stations, and computerization of Low Tension (LT) Billing and consumer indexing was sporadic.
- There was no evidence of verification of AT&C data by the Ministry, or a uniform approach for collecting and compiling the source data and calculating AT&C losses.

Audit examination also revealed systemic deficiencies in record maintenance in several States, as detailed below:

- In **Arunachal Pradesh, Bihar, Chhattisgarh, Meghalaya, Mizoram and Sikkim**, the data relating to Input Energy, Metered and Billed Energy etc. was not supported by any working details, in the absence of which it was not possible to ascertain the veracity of the reported figures and the resultant AT&C losses.

- In **Maharashtra**, the metered units compiled from the computerized billing system did not exclude the assessed, door locked, and provisional billing units. To that extent, the metering efficiency reported was incorrect.
- In **Kerala**, the billed energy included the consumption by High Tension (HT) consumers, but the revenue billed and realized did not include the energy consumed by the HT consumers. Further, in the absence of 100 per cent metering of feeders and DTs and large number of un-metered LT domestic and agricultural consumers, the authenticity of the reported AT&C losses could not be verified in audit. Also, the quantum of energy transmitted from 11 KV feeders outside the jurisdiction of a circle/division into its distribution system could not be ascertained. The input energy in all the circles / divisions covered by APDRP was accordingly worked out, based on a pre-fixed load sharing proportion.

6.1.2.2 Billing/ Metering done on assessment basis

Despite the stated objectives of 100 per cent system metering as well as consumer metering, a significant number of installations remained unmetered, and the computation of energy consumed was made on “assessment” basis, consequently adversely affecting the veracity of the source data for computation of AT&C loss.

Audit examination at the State level revealed the following:

- In **Kerala**, the energy metered and billed included the unmetered energy consumption under ‘Kutir Jyothi Scheme’ and public lighting taken on assessment basis.
- In **Jharkhand**, unmetered supply, in four sampled circles, ranged between 67.8 per cent and 39.93 per cent of total energy, as stated by the SEB. However, the basis of calculation of unmetered supply was not made available and thus the estimation of unmetered energy was purely a hypothetical exercise.
- In **Uttaranchal**, test check of records revealed that in four implementing units in Haldwani, Roorkee, Ranikhet and Srinagar Circles, billing continued to be made for ‘Public Lamps’ and ‘Public Water Works’ on assessment basis in the absence of metering details.
- In **Karnataka**, even after four years of signing of MOA, large numbers of installations were yet to be metered (March 2006). As against 10,59,366 Irrigation Pumpsets (IP sets), 4,41,843 Bhagya Jyothi (BJ)/ Kutir Jyothi (KJ) installations, and 26,570 street lights where meters were to be fixed as on 31 March 2005, only 98,892 IP sets (9.3 per cent), 2,14,067 BJ/KJ installations (48 per cent) and 11,918 street lights (44 per cent) could be metered.
- In **Tripura**, a fair amount of supplied energy was not metered but accounted for on the basis of assessment. During 2005-06 about 10-14 per cent of the energy billed was unmetered and was being accounted for on the basis of assessment. There were no prescribed norms for assessment of unmetered consumers. The criteria for assessment was not uniform among various billing authorities (average for last three months, connective load, minimum charge or even lump sum), which was bound to be deficient in correct and accurate assessment of losses.

6.1.2.3 Incorrect reporting of losses

Audit examination revealed significant instances of incorrect reporting of AT&C losses by the States/ Utilities, which were not detected by MoP due to lack of verification and validation of compiled data as detailed below:

- In **Kerala**, the AT& C losses reported to MoP for the year 2005-06 were less than the actual AT&C losses, with the difference in the figures ranging between 2 to 24 per cent in respect of 9 projects.
- In **Chhattisgarh**, the details of AT&C loss of the State reported to AcCs/ Ministry by the SEB, and those furnished to the State Electricity Regulatory Commission (SERC) were inconsistent for the period 2001-02 to 2004-05.
- In **Arunachal Pradesh**, the figures of AT&C losses for the years 2002-06 with the State Electricity Department (SED) and PowerGrid were not in agreement, and the figures reported by the SED were higher by 2 to 9 per cent.
- The collection efficiency is to be worked out as a percentage of the amount realized against amount billed. However, it was observed in **Kerala** (10 divisions), **Maharashtra** (one division) and **Meghalaya** that the amount billed as generated by the computerized billing system did not include arrears, while the amount realized included the arrears. The above inaccuracy in calculating the collection efficiency results in lowering the AT&C loss percentage.
- In **West Bengal**, the SEB (eight selected circles/ towns) had not disclosed AT&C losses aggregating to Rs. 25 crore to the GoI during 2005-06. Against the actual AT&C losses of 552.87 million Kilowatt Hours (Kwh), it had reported only 474.18 million Kwh to the GoI.
- Due to incorrect reporting of energy billed in respect of 5 sampled circles in **Himachal Pradesh**, the AT&C losses as reported by the Circles to the SEB and as reported by the SEB to the MoP for the years 2002-03 to 2005-06 were not in agreement, with the differences ranging between 6 and 33 per cent.
- In **Madhya Pradesh**, the figures relating to Energy Input, Energy Metered, Energy Billed, Revenue Billed and Revenue Collected furnished to NTPC (AcC) by the SEB varied from those received from the field offices in respect of 3 towns (Chhatarpur, Damoh and Balaghat).

6.1.3 Poor Metering and Collection Efficiency

Audit examination at the State level revealed that the metering and collection efficiencies were also poor, as detailed below:

- In **Manipur**, collection efficiency varied from 46 to 76 per cent during 2001-02 to 2005-06 and consequently AT & C losses were higher, ranging from 13 to 18 per cent over the corresponding T & D losses.
- In **West Bengal**, the AT&C losses (in respect of 8 selected projects) were higher by 19 per cent over the corresponding T&D losses, indicating a low Collection Efficiency.

- In **Chhattisgarh**, the LT arrears of the SEB increased to Rs. 192.13 crore by the end of March 2006 as against Rs. 131.43 crore at the end of March 2005, registering an increase of 46 per cent and the LT arrears in respect of all the four APDRP circle / town schemes test checked in audit registered abnormal increases ranging from 53 per cent to 368 per cent, thereby indicating poor collection efficiency.
- In **Haryana**, collection efficiency in Tohana, Hissar-II and Fatehabad Towns decreased to 88 per cent, 91.82 per cent and 87.27 per cent during 2005-06 against the collection efficiency of 97.52 per cent, 94.98 per cent and 94.59 per cent respectively in the base year i.e. 2001-02.
- In **Jharkhand**, in the 4 sampled divisions, the collection efficiency ranged between 56.77 and 79.90 per cent during 2005-06.
- In **Punjab**, out of 11 test-checked projects, the targeted metering efficiency of 100 per cent was not achieved in any of the projects. Actual metering efficiency ranged between 36.73 and 91.15 per cent and, in fact, decreased from the base year in seven projects. Similarly, the targeted collection efficiency was not achieved in six projects during 2005-06, and actual collection efficiency had decreased from the base year in four projects.
- In **Karnataka**, the average metering efficiency and average collection efficiency during 2005-06 in the 11 test checked projects were 74.46 per cent and 89.17 per cent against the targeted 89.91 per cent and 100 per cent respectively
- In **Andhra Pradesh**, Warangal, Tirupati and Eluru circles could achieve only 33.37 per cent, 46 per cent and 60.50 per cent metering efficiency against the targets of 90 per cent, 78 per cent and 70 per cent respectively.
- In **Madhya Pradesh**, in 19 towns the metering efficiency ranged from 40 per cent (Rewa) to 82 per cent (Mandla). In 15 towns, metering efficiency declined from 60 per cent in 2001-02 to 58 per cent in 2005-06 after the implementation of APDRP schemes. In Katni and Satna towns, the billing efficiency deteriorated from 80 per cent and 95 per cent respectively during 2002-03 to 55 per cent and 44 per cent respectively during 2005-06.
- In **Jammu & Kashmir**, test check of the records revealed that despite substantial increase in the infrastructure⁴, revenue realisation during 2002-03 to 2005-06 continued to fall short of the amount recoverable and the arrears on this account increased to Rs.899.88 crore in 2005-06 from Rs.540.88 crore in 2002-03 due to a poor collection efficiency of 33 per cent.

Reply of MoP

In its reply (February 2007), the MoP stated that:

- Reduction in losses could be expected in such areas where APDRP work had been taken up and sufficient work completed; APDRP should not be expected to reduce the AT&C loss by the same amount at the State or national level.

⁴ Out of Rs. 408.50 crore released, Rs. 321.92 crore was utilised.

- The APDRP Task Force mentioned that the reduction of AT&C loss at the national level from 38.86 per cent in 2001-02 to 33.82 per cent in 2004-05 could not be considered as small, as the actual implementation of the programme started quite late due to delay in preparation of projects by the Utilities and then in the implementation of the sanctioned schemes.
- The independent evaluators observed that reduction in AT&C loss was significant at the majority of the places where sufficient work was completed.
- The Ministry and AcCs had issued clear guidelines/ methodology for calculating AT&C loss and they were regularly monitoring the progress on reduction of loss at the project and utility level.
- The Ministry had also felt the need for better maintenance and authenticity of baseline data and was proposing to establish authenticated baseline data as one of the objectives of the restructured APDRP during the XI Plan.
- As regards incorrect reporting of losses, the Ministry was proposing to appoint independent validators during the XI plan.

The reply of the MoP is not tenable for the following reasons:

- Ministry's contention that a reduction of AT&C loss of 5 per cent in 5 years could not be considered small is not justified as the APDRP envisaged a reduction 45 per cent in 5 years. The gap is too wide for any satisfaction.
- The MoP and AcCs should have ensured the timely completion of work in the APDRP projects, especially those which were sanctioned upto 2003. The Ministry did not yet have a mechanism to ensure that the stated objectives of the APDRP are met even after the completion of five years of the programme.
- The guidelines/ methodology for calculation of AT&C Loss specified by MoP/ AcCs may be considered in the context of the incorrect reporting of AT&C Losses by the SEBs/ Utilities to the MoP.

Recommendations

Ministry may take steps to (a) ensure that States re-orient their efforts under APDRP towards reduction of AT&C Loss; (b) independently verify the authenticity of reported AT&C Losses; and (c) minimise the extent of billing/ metering done on assessment basis.

6.2 System and Consumer Metering

6.2.1 Status of Feeder, Distribution Transformer (DT) and Consumer Metering

At the time of formulation of APDRP, implementation of 100 per cent system metering and consumer metering was envisaged with a view to ensure proper energy accounting and auditing. In particular, metering of feeders and DTs were prioritised as Category – A items, as these were points of bulk deliveries.

Table 4: Status of feeder, consumer and DT metering as of March 2006⁵

Percentage of Metering	Feeder Metering		Consumer Metering		Distribution Transformer Metering	
	Number of States		Number of States		Number of States	
	2001-02	2005-06	2001-02	2005-06	2004-05	2005-06
100-80	18	25	14	20	4	3
80-60	-	1	7	5	-	-
60-40	3	1	7	4	2	2
40-20	6	1	-	-	4	5
Below 20	1	-	-	-	6	9
No data available	1	1	1	-	13	10

It can be seen from the above table that while there was considerable improvement in terms of reported feeder and consumer metering, as regards DT metering, only 3 States had shown 80 to 100 per cent metering and there was no information in respect of 10 States, with consequent lack of control on AT&C losses and inadequate energy accounting and auditing.

Details of State-wise metering status in respect of 11 KV Feeders, Distribution Transformer and Consumers, compiled from the status report supplied by the Ministry, are given in **Annexure-V (a&b)**.

An examination of the status of metering in the States indicated significant deficiencies, which are discussed in the succeeding paragraphs.

6.2.2 DT Metering

- The installation of DT meters vis-à-vis target was low in **Maharashtra** (71 per cent), **Uttaranchal** (61 per cent), **Uttar Pradesh** (40 per cent), and **Madhya Pradesh** (12 per cent).
- The DPRs did not cover requirement of meters for achieving 100 per cent metering. In **Chhattisgarh**, though there were about 19547 DTs in the APDRP Circles and Towns during 2002-03, the DPRs covered only 6957 DTs for metering, indicating deficient estimation.
- In **Kerala**, against the requirement of 6789 DT meters, only 5506 meters had been installed in the three short closed circle schemes.
- In **South Goa**, the DPR envisaged 1436 system trivector meters to be installed on DTs by October 2005; however, as of October 2006, these were under the process of tendering by the SED.

6.2.3 Feeder Metering

Despite the Ministry's reports showing a high percentage of feeder metering in most States, examination of the records at the State level revealed significant deficiencies in feeder metering, as summarised below:

⁵ As compiled on the basis of information made available by the MoP

- In **Rajasthan**, out of 10,594 feeders under the three Discoms, only 9,254 feeders were metered as on March 2006. However, as per the MoP, the State had 100 per cent feeder metering.
- In **Bihar**, though 1140 feeder meters were required for eight circles and orders had been placed in advance, only 752 meters had been supplied as of February 2007, of which only 428 meters had been installed. In respect of 33 Kv feeders alone, out of 237 meters required in respect of seven circles, only 105 meters had been installed as of February 2007.
- In **Jharkhand**, against 121 feeders in the four sampled circles which were required to be metered, 112 feeders were metered as of March 2006.
- In **Jammu and Kashmir**, out of 1558 CT operated trivector meters procured at a cost of Rs.2.14 crore for metering 1524 feeders, only 711 meters (46 percent) were commissioned.

6.2.4 Consumer Metering

Despite the Ministry's records showing a relatively satisfactory position in terms of consumer metering, audit examination at the State level revealed several deficiencies:

- Audit noticed that the DPRs did not cover requirement of meters for achieving 100 per cent consumer metering, defeating the APDRP objective of 100 per cent metering of consumers. In **Chhattisgarh**, the DPRs provided for only replacement of existing electro-mechanical meters with Static Electronic meters. Consequently, the un-metered free domestic consumers and agricultural consumers remained un-metered
- As per MoA, no new connections were to be provided without meters. However, connections were released in **Chhattisgarh** and **Assam** without meters, even after the MoA.
- In **Assam**, out of 12,09,900 consumers, 66,567 consumers remained unmetered as of 31 March 2006. Further, the tariff issued by the Board with regard to unmetered consumers, were also not fully implemented by the Circle authorities, as a result of which unmetered consumers were short-billed to the extent of Rs.7.55 crore for the period from June 2005 to March 2006.
- In **Maharashtra**, against the requirement of 7.99 lakh single / three phase meters in Nashik town, Nashik rural, Malegaon, Nagpur rural, Nagpur urban and Jalgaon projects, only 3.84 lakh meters were received. Further, 1.18 lakh meters received under the programme were diverted to other schemes or utilised for new connections (which is not permitted under APDRP). It was further observed that as against metering target fixed for agricultural consumers in Pune town (3302 meters), Pimpri-Chinchwad (3423 meters) and Nagpur rural (33077 meters), the achievement was nil as of September 2006.
- In **Orissa**, the physical achievement varied from 1.02 per cent to 18.83 per cent in respect of three phase meters (in three Discoms). As a result, the actual consumption of HT consumers had not been metered. Further, 22 per cent of all consumers of two Discoms were without meters, or had defective meters as of March 2006.
- In **Bihar**, out of 16 circles,
 - in four circles where metering is being done by the SEB itself, 90 per cent of the ordered meters were installed as of September 2006;

- in eight circles (the work being executed by PowerGrid), only 5 per cent of the ordered quantity had been installed as of September 2006;
 - in remaining four circles, no consumer meters had been installed as of September 2006.
- In **Jharkhand**, no consumer meter was actually installed as of August 2006 in respect of two circles (Dumka and Hazaribagh) out of 4 test checked circles against the targeted 15344, 458 and 13 numbers of single phase, three phase and HT trivector meters.
- In **Punjab**, though meters were to be provided to all the consumers by December 2001 and computerized billing of all the consumers was to be done by March 2002, as many as 8.32 lakh agricultural power consumers were still unmetered and their billing was not computerized (March 2006).
- In **Uttar Pradesh**, against the projected quantity of 5,20,929 single phase electronic energy meters, agreement for procurement of only 2,63,000 meters were executed. Of these, only 1,64,000 meters were supplied by the firms (up to June 2006), of which Management could install only 84,003 meters (only 16 per cent of projected quantity) upto June 2006.
- In **Gujarat**, the original DPR computed an aggregate requirement of 24,23,021 static meters, which was later reduced to 13,63,834 meters without any recorded justification. Further, test check in five selected projects revealed that there were abnormal delays, ranging between 1 to 37 months, in installation of static meters.
- In **Jammu and Kashmir**, against the target of metering 9,70,386 domestic and 17,487 industrial/commercial consumer installations under the programme, only 59,452 domestic (6 per cent) and 4803 industrial/commercial (27 per cent) installation were metered (March 2006) due to inadequate purchase of meters.
- In **Karnataka**, though MoP intimated (July 2003) KPTCL that only static / electronic meters should be procured from the funds under the APDRP / PFC/ REC, only 3.80 per cent and 0.36 per cent electronic meters (out of total meters installed) were installed by BESCO and HESCO.
- In **West Bengal**, contrary to programme guidelines and despite the availability of superior static meters at cheaper rates, the SEB procured electro-mechanical energy meters at an extra expenditure of Rs. 0.82 crore.

6.2.5 Periodical checking of metering

The purpose of installation of meters would be served only if the SEB/ Utility conducted checks as per the prescribed periodicity to verify that the installed meters were not being tampered with and were working efficiently. Audit examination, however, revealed that in **Jharkhand, Punjab, Assam, West Bengal, Karnataka, Haryana and Manipur**, periodical checking of meters was not a regular feature and the shortfall in checking of meters in these States ranged between 13 and 96 per cent during 2005-06.

6.2.6 Misreporting of data on installation of meters

Audit examination at the State level revealed several instances where the SEBs/ Utilities reported incorrect data in respect of meter installation to the MoP:

- In **Tamil Nadu**, in 4 test checked distribution circles of Chennai Metro, though 843 DT meters remained to be installed as of 31st March 2006, the SEB, in its monthly report to MoP, reported that all DT meters contemplated in the DPR had been installed.
- In **Jharkhand**, 95 per cent consumer metering, 86 per cent 11 KV feeder metering and 91 per cent DT metering was reported by the SEB. However, test check of four circles revealed that the physical progress of metering was virtually nil.
- In **Assam**, there was no co-ordination between the Board's headquarters office and field offices. Progress of metering actually achieved under different sub-divisional offices did not tally with the progress reports furnished by the Circle CEOs to headquarters office.
- In **Andhra Pradesh**, CPDCL actually procured 8,02,950 meters but reported procurement of 10,45,896 meters to the DRC. Similarly, SPDCL reported procurement of 278 feeder meters against the actual quantity of 30 and reported installation of 1,820 DT meters against the actual installation of only 478.

Reply of MoP

In its reply (February 2007), the MoP stated that:

- The national figure for feeder metering and consumer metering rose from 81 per cent and 87 per cent in 2001-02 to 96 per cent and 93 per cent respectively in 2005-06. When close monitoring started under APDRP, various States reduced their figures for feeder metering.
- Consumer metering did not reach the desired level due to State policies on free/ flat electricity supply to agriculture and other categories of consumers without installing meters. However, APDRP focus was on towns, where unmetered categories of consumers were very minimal.
- Earlier, metering of DTs was not targeted, as energy accounting and audit was envisaged at 11 Kv feeder level, and hence DPRs prepared earlier were not covering DT metering. However, subsequently, it was felt that energy auditing at DT level would be better for fixing accountability at the lowest level, and hence monitoring of DT metering was started in 2004-05.
- The Ministry planned to implement a restructured APDRP in two stages during the XI Plan. In the first stage, (a) all feeders, DTs and consumers in the APDRP towns would be metered; (b) all assets and consumers would be indexed; (c) feeder, DT and bulk consumer meters would be read remotely, and baseline data established and validated through independent auditors; and (d) based on baseline data, loss reduction targets would be fixed. Upgradation and strengthening of the electricity network would be taken up only in the second stage.

The response of the MoP is to be considered in the context of the deficiencies noticed in audit examination at the State level.

Recommendation

Ministry may ensure that (a) SEBs/ Utilities complete 100 per cent feeder, DT and consumer metering in all ongoing and completed APDRP projects within a clearly defined time frame; (b) such metering data is fully validated in an independent fashion; and (c) further funds for APDRP projects are released only after 100 per cent metering is validated.

6.3 Reliability and Quality of Power Supply

One of the expected benefits of APDRP was improved quality and reliability of power supply, which would encourage usage of energy efficient equipment/ appliances, which would further lead to improvement in availability of energy. The key performance parameters for quality and reliability were:

- Frequency of feeder tripping (number of trippings per feeder per month), and average duration of feeder outages⁶ (average outage duration per feeder per month);
- Failure rate of DTs;
- Average Power Factor; and
- Consumer Complaints and Disposal Time

Audit scrutiny, however, revealed significant deficiencies in this area, which are described in the succeeding paragraphs.

6.3.1 Feeder Tripping and Outages

While the MoP had prescribed that feeder outage should be less than one per feeder per month, audit examination at the State level revealed that the actual outage was much higher than the prescribed level, as summarised below:

- In **Punjab**, trippings per feeder per month during 2005-06 were more than one in four out of seven test checked schemes, and trippings per feeder per month ranged between 1.81 and 32.50.
- In **Jharkhand**, the number of trippings per feeder per month and average feeder outage duration in four test checked Circles was much more than the prescribed level as shown below:

Table 5 (a): Number of trippings per feeder per month and average feeder outage duration in test checked circles of Jharkhand

Circle	2001-02		2002-03		2003-04		2004-05		2005-06	
	Trippings per feeder per month	Average feeder outage duration in hours per month	Trippings per feeder per month	Average feeder outage duration in hours per month	Trippings per feeder per month	Average feeder outage duration in hours per month	Trippings per feeder per month	Average feeder outage duration in hours per month	Trippings per feeder per month	Average feeder outage duration in hours per month
Dumka	16	26	16	25	15	24	56	32	54	29
Dhanbad	101	40	96	39	94	39	92	37	83	39
Daltonganj	152	142	183	153	183	133	176	104	167	135
Hazaribagh	11	1	11	1	11	0	19	0	23	3

⁶ Feeder outages do not include shutdowns due to loadshedding.

- In **Kerala**, even in the completed projects, the target set for the number of feeder trippings was not achieved and was as high as 13,173 against the set limit of 300 trippings.
- In respect of 6 projects in **Kerala**, 8,365 number of feeder trippings were reported to the MoP as against the actual 11,226 trippings reported by circles / division, during 2005-06. Similarly, the duration of feeder trippings of 19 projects for 2005-06 was reported to MoP as 1,18,838 minutes as against 6,60,298 minutes reported by the circles / division.
- In **Andhra Pradesh**, though the target envisaged was to reduce the feeder trippings to 21 and 50 in Tirupati and Warangal Circles respectively, the actual numbers of trippings were 97,163 and 3,179 in 2005-06 respectively. Similarly, in all the 22 towns of SPDCL (TBP), feeder trippings ranged from 48 to 3,660 as against the target of 12 to 420.
- In **West Bengal**, feeder outages during 2005-06 ranged between 2946 and 110 against the targeted 2000 and 115 in 8 selected projects. In six projects, it had, in fact, increased in comparison to the existing level at the start of the project and exceeded the targets by 47 to 970 per cent.
- In **Sikkim**, outage duration per feeder per month increased from 11 hours in 2003-04 to 33 hours in 2005-06.
- In **Gujarat**, the feeder outages in Surat Town exceeded the target by 63 percent in 2005-06.
- In **Goa**, though a register was maintained at Sub-Division level to record details of outages and power factor, the data collected was not being processed or sent to Division / Circle or CEE Office for monitoring and analysis. Further, the details of duration of outages etc., were not being sent /reported to the GoI as required.
- In **Tripura**, outage duration per feeder per month worked out for Agartala Town projects for the period from September 2005 onwards ranged from 36 to 80 hours.
- In **Haryana** (UHBVNL), average outage duration per feeder per month increased from 1.7 hours in 2002-03 to 3.6 hours in 2005-06.
- In **Chhattisgarh**, trippings per feeder per month during 2005-06 were more than 1 in all the four schemes test checked and ranged between 2 and 41.

6.3.2 High DT Failure Rate

The Distribution Transformer is a key component of the distribution network, and its failure not only results in financial loss to the utility but also adversely affects consumer satisfaction due to interruption in supply. The high failure rate of DTs is caused by a combination of factors viz. over loading of DTs, improper earthing and protection, improper fuses, inadequate preventive maintenance etc. For proper reliability, DT failure rate of less than 1.5 per cent per annum was indicated by MoP. Audit examination, however, revealed that most States had DT failure rates which were much higher than this benchmark, as described below:

- In respect of **Chhattisgarh** and **Goa**, there was lack of substantial improvement in the DT failure rate between 2001-02 and 2005-06, as shown below:

Table 6: DT failure rates in respect of Goa and Chhattisgarh

Name of the State	2001-02	2002-03	2003-04	2004-05	2005-06
Chhattisgarh	15.30	16.33	16.34	18.38	16.47
Goa	6.73	6.27	5.7	6.14	5.30

- In **Chhattisgarh**, the DT failure rate was 16.47 per cent during 2005-06, despite installation of 1120 new DTs at a cost of Rs.10.62 crore in the APDRP circles and towns till end of March 2006.
- In **Rajasthan**, the DT failure rates ranged between 7 and 30 per cent. Further, even the targets were fixed between 4 and 18 per cent, which were much higher than the 1.5 per cent target fixed by MoP.
- In **Uttaranchal**, the DT failure rate was 16.2 per cent during 2005-06.
- In **Punjab**, the target of failure rate of DTs was not achieved in eight projects and it had increased during 2005-06 from 2001-02 in five projects. Audit noticed that failure rate of DTs was more than the prescribed limit of 1.5 per cent in all seven schemes and ranged between 2.73 and 27.10 per cent during 2002-06.
- In **Karnataka**, the DT failure rate in respect of Mangalore and Raichur showed an increasing trend to 7.95 per cent and 7.52 per cent in 2005-06 against 4.96 per cent and 6.50 per cent in 2003-04 respectively.
- In **West Bengal**, the DT failure rate ranged from 5 to 22 per cent against the targeted 5 to 14 per cent during 2005-06.
- In **Gujarat**, the DT failure rates in five selected projects exceeded the targets set by 1.20 to 38 per cent during 2005-06, despite the fact that the targets were fixed up to 20 per cent higher than the stipulated norm.
- In **Himachal Pradesh**, the overall failure rate of the Board was 4.04 per cent in 2005-06 as against the bench mark of 1.5 per cent.

6.3.3 Lack of improvement in respect of Consumer Complaints

Reduction in the number of consumer complaints is one of the benchmarks for improved quality and reliability of power supply. This, coupled with effective redressal of complaints, would reflect better customer satisfaction.

Audit examination however revealed significant deficiencies in this area, as summarised below:

- In **Chhattisgarh**, the DPRs provided for establishment of 26 consumer complaint centres at a cost of Rs 0.59 crore in all the APDRP circles and towns. However, it was observed in audit that the SEB had not taken up this work as of September 2006.
- In **Tamil Nadu**, there was a significant increase in the number of consumer complaints in 2005-06 as compared to pre-APDRP levels in 2001-02, in respect of Chennai Metro circle and it increased from 44,798 (2001-02) to 99,807 (2005-06).
- A system for recording consumer complaints, and recording of corrective and preventive actions was not developed in **Assam**.
- In **West Bengal**, the number of consumer complaints in 8 selected projects was 3,181 against the target of 2,349 during 2005-06.

- In **Gujarat**, in three projects (Baroda, Himmatnagar and Surat) out of the selected five projects, the number of consumer complaints received during 2002-06 was 81,254, 30,000 and 1,12,130 against the target of 70,000, 45,000 and 1,25,000 respectively.
- In **Andhra Pradesh**, there was only 13 percent and 70 percent reduction in consumer complaints as against the targets of 50 percent and 85 percent in Tirupati and Warangal Circles respectively.

Reply of MoP

In reply (February 2007), the MoP stated that:

- Quality and reliability of supply had improved in general in the areas where sufficient work had been completed, and this should have reduced the consumer complaints also. The monitoring of tripping and outages had resulted in improvement of reliability of supply in areas where sufficient work had been completed. In some utilities, reliability had suffered badly due to non-availability of power from the grid. For better consumer care, Consumer Sewa Kendras were envisaged in all district headquarters during the XI Plan.
- In the majority of towns where sufficient work had been completed under APDRP, DT failure rate had come down significantly, though the degree of improvement varied from place to place. Reducing the DT failure rate to the desired level of 1.5 per cent would take a lot of work and efforts by the utilities over a long period.

The reply of the MoP is general and does not address the specific issues identified during audit examination at the State level. Further, it was the MoP's responsibility to ensure timely completion of APDRP projects, with consequential impact on reliability of supply.

6.4 Energy Accounting and Audit

6.4.1 Introduction

One of the most important measures to ensure reduction of commercial losses, with relatively lower capital investment, is comprehensive energy accounting and audit, which would enable quantification of losses in different segments of the system and their segregation into commercial and technical losses.

Energy accounting involves preparation of accounts of the energy flow to various segments and various categories of consumers and how it has been consumed out of the total available quantum over a specified time period. Energy audit involves analysis of energy accounting data in a meaningful manner to evolve measures to introduce checks and balances in the system to reduce leakages and losses and also to improve technical performance. In order to achieve effective energy accounting and audit, it is imperative that meters are installed at all levels i.e. feeder, distribution transformers and consumers, meter readings are taken regularly and reconciled, and proper consumer indexing is done through GIS mapping and linked to the billing system so that loss pockets are identified and corrective measures taken.

Energy accounting is not a one time exercise but is to be done on a continuous basis.

6.4.2 Effective Energy Accounting and Auditing not carried out

Logically, with 100 per cent system metering at the feeder and DT levels, energy accounting at the feeder and DT levels should be feasible, provided meter readings are

being taken at the prescribed intervals. Audit, however, observed that effective energy accounting and auditing was not being carried out in the States.

The main reasons for lack of an effective energy accounting and auditing were as follows:

- **Lack of system metering** - for proper energy accounting and auditing, installation of tamper proof meters at all levels of transformation (including DT metering) was required. However, audit observed that the utilities failed to bring in a high level of DT metering. Only 10 per cent of the States had reported DT metering between 80 and 100 per cent as of 2005-06 as brought out in para 6.2.1. Even where feeder and DT meters had been installed, the lack of energy accounting at the feeder / DT levels is indicative of lack of regular readings of such meters. Test check of records and physical verification of one power sub station of test checked Supply Division in **Jharkhand**, revealed that though some 11 KV feeders and the connected distribution transformers were metered, neither were regular recording of feeder meters taken, nor were the feeder meter readings reconciled with meter readings of distribution transformers and meter readings of consumer meters. Thus, the whole purpose of metering at 11 KV feeder level was defeated in the absence of linkages between feeder, DT and consumer metering.
- **Lack of accountability at the circle and feeder level** – as brought out in para 9.1, the administrative intervention under APDRP of designating Distribution Circles as independent profit centres and feeders as business units, and ensuring accountability through a chain of MOUs from the circle level down to the feeder level, has not been successful.
- **Computerization** – as brought out in para 11, low progress in respect of IT enabling activities such as consumer indexing, digital mapping, Automated Meter Reading instruments, Data Loggers etc. contributed to non-implementation of effective and meaningful energy audit and accounting.

Deficiencies in energy accounting and audit in 19 states are summarised below.

Table 7: Status of Energy Accounting and Audit as observed in Audit

S.No.	State	Audit Findings on Energy Accounting and Audit (EAA)
1.	Assam	Feeder metering was not yet completed and a large number of meters remained non-functional; hence, effective EAA was not possible.
2.	Bihar	EAA was not being done, due to inadequate feeder metering.
3.	Chhattisgarh	Though the SEB had achieved up to 90 per cent metering of 33 Kv and 11 Kv feeders by March 2006, the progress in respect of DT and consumer metering was far from satisfactory, and hence effective energy audit was not possible.
4.	Gujarat	Consumer indexing had not yet started.
5.	Himachal Pradesh	Though energy audit was being conducted, energy audit data was not being prepared strictly as per the billing cycle and compared with the consumption of the DT for the same period (March 2006).
6.	Jharkhand	Neither were regular recording of feeder meters being taken nor were the feeder meter readings reconciled with meter readings of distribution transformers and meter readings of consumer meters, thus ruling out EAA.
7.	Karnataka	Though feeder-wise energy audit was being done, no commercial accounting (to segregate commercial and technical losses) had been initiated.
8.	Madhya Pradesh	Installation of DT meters was as low as 12 per cent.
9.	Maharashtra	Out of 55,080 DT meters, energy audit was done in respect of only 50,880 meters as of August 2006.
10.	Manipur	Twenty three per cent of the total consumers were without meters or had defective meters.

S.No.	State	Audit Findings on Energy Accounting and Audit (EAA)
11.	Meghalaya	Three phase consumer meters and wedge type UDC connectors were not installed due to non-availability of fronts, with consequential impact on EAA
12.	Orissa	In respect of three phase consumer meters, the physical achievement ranged from 1.03 per cent to 37.09 per cent. Hence, EAA was not effective.
13.	Punjab	The SEB had not evolved any system for EAA at distribution level.
14.	Rajasthan	There was significant shortfall in the installation of DT meters, with consequential impact on EAA
15.	Sikkim	In 18 out of 24 Sub-divisions, no consumer indexing had been done. Even in 6 sub-divisions where consumer indexing had been done, EAA had not been initiated as of September 2006.
16.	Tamil Nadu	There was a short fall in achievement of 100 per cent metering of consumer.
17.	Tripura	EAA was initiated only in January 2005, but there were no prescribed norms for assessment of unmetered consumers. Different billing authorities applied different criteria in such assessment.
18.	Uttar Pradesh	Neither at DT level nor at the Consumer level was 100 per cent metering done. Therefore, position of DT wise loss of energy could not be ascertained in Audit.
19.	Uttaranchal	Against a target of 14,777 DTs, only 9,080 meters were installed. Further, a sum of Rs.139.66 lakh was spent towards consumer indexing. However, EAA could not be taken up at any DT so far.

Further, CRISIL and ICRA, which had been mandated by PFC at the instance of MoP to carry out a performance rating of the state power sector across all States, in their report in June 2006 pointed out ineffectiveness of energy audit in all States (except Goa, Himachal Pradesh, Meghalaya, Madhya Pradesh and Mizoram where no comments were made in respect of energy audit).

Reply of MoP

In reply (February 2007), the MoP stated that:

- Energy accounting in APDRP towns had been started by most of the utilities. However, for effective energy audits, it had been felt that consumer indexing and DT metering would be required, and this work had been taken up subsequently by some utilities.
- In view of the poor progress by utilities, the MoP was proposing the highest importance to energy auditing during the XI Plan, and the investment under APDRP during the XI Plan (except works required for effective energy audit) would not be allowed before establishment of energy audit procedures and validation of baseline data in APDRP covered towns.

The reply of MoP is general and does not address the specific deficiencies highlighted by audit.

In their reply (January 2007), NTPC stated that for energy accounting and audit, APDRP guidelines provided consumer indexing and system metering as a mandatory component for offline/ online auditing on a continuous basis. This involved (a) regular reading of meters and the downloaded data through Meter Reading Instruments (MRI) to be brought to a central location with the help of software to bring out exception reports without human intervention; and (b) correlation with revenue data to identify loss pockets, besides identification of overloaded feeders and DTs.

The deficiencies identified through audit examination only serve to confirm non-adherence with the procedures indicated by NTPC.

Recommendation

Ministry may take steps to ensure that all States carry out effective energy accounting and audit at the feeder and DT levels, and necessary pre-requisites for such auditing and accounting e.g. 100 per cent system and consumer metering, regular/ automated system meter reading and reconciliation, and consumer indexing and other IT enabling activities are implemented immediately.

6.5 Gap between Average Revenue Realisation (ARR) and Average Cost of Supply (ACS) Not Eliminated

One of the objectives of APDRP was the ‘narrowing and ultimate elimination of the gap between unit cost of supply and revenue realization within a specified time frame’. Further, as per the instruction of MoP, the ARR should be rupee one above the per unit ACS.

An analysis of the information provided by the MoP revealed that this objective was far from being achieved, as of March 2006. Only 3 out of 29 States (**Chhattisgarh, Goa and Delhi**) had achieved the target of elimination of the gap between ARR and ACS. Further, in **Bihar, Maharashtra, Jharkhand, Rajasthan, Assam, Uttar Pradesh, Mizoram and Nagaland**, the gap between ARR and ACS had shown a deteriorating trend. State-wise details of the gap between ARR and ACS are enclosed in **Annexure-VI**.

Deficiencies noticed during audit examination in individual States are summarised below:

- In **Tamil Nadu**, the revenue gap had been determined by adoption of a uniform rate for the ACS for all the circles, which is not an appropriate method as the cost structure of various circles would vary depending on the assets and other infrastructure in the respective circles. In the absence of determination of circle-wise actual ACS, the correctness of the revenue gap could not be verified. Further, in eight out of 25 circle schemes where APDRP was being implemented, the revenue gap had increased between 2001-02 and 2005-06.
- In **Haryana**, ARR (in rupees per unit) was 2.83 on billed energy and 1.89 on input energy (on the basis of test checked 7 circles / towns) against the targeted ARR of 3.70 and 3.14 respectively.
- In **Jharkhand**, despite implementation of APDRP since 2003, the cash losses of JSEB have been increasing every year and the increase in cash losses in 2005-06 was 204 per cent of cash losses in 2001-02.
- In **Uttaranchal**, the ARR was Rs. 0.43 below the ACS during 2005-06.
- In **Punjab**, the targeted ARR was not achieved in any of the 11 test-checked schemes and in four schemes the ARR had decreased from the base year instead of increasing. The average ARR for the 11 schemes was Rs. 2.57 against the ACS of Rs. 3.29 for the year 2005-06. Further, despite the tariff orders of PSERC to continue the levy of surcharge for large supply consumers, test check in audit revealed six cases where surcharge was not levied, resulting in a loss of revenue of Rs. 7.74 crore during July 2003- December 2005.
- Higher AT&C losses at 44.1 per cent in the Himmatnagar project in **Gujarat** resulted in realization of average selling price at Rs.2.02 (with a billing efficiency of just 30.82 per cent) as against the average cost of the energy at Rs.2.92.

- In **Andhra Pradesh**, as against a target of bringing the gap between ARR and ACS to 'nil', the gap was 9 paise and 18 paise in Warangal and Tirupati Circles respectively.
- In **Sikkim**, despite four years of implementation of APDRP, the gap marginally improved from Rs 1.25 per unit to Rs. 1.16 per unit but the percentage cost recovery decreased from 60.97 per cent in 2001-02 to 56.39 per cent in 2005-06.
- In **Himachal Pradesh**, the average gap in 5 test check circles was Rs. 1.10 during 2005-06.
- In **Nagaland**, the gap between ARR and ACS was high and increased from Rs. 2.82 during 2001-02 to Rs. 3.27 during 2005-06.

Reply of MoP

In reply (February 2007), the MoP stated that as many of the utilities had increased the subsidy over the years, monitoring of ARR on subsidy and revenue realised basis would show the correct status. As per PFC data, the gap between ARR and ACS on a subsidy and revenue realised basis had come down from Rs. 0.56 in 2001-02 to Rs. 0.19 in 2005-06. Also, the gap had narrowed in the majority of APDRP towns where sufficient work had been completed.

The reply of the MoP is not tenable, since the reduction of subsidies to SEBs/ Utilities is one of the key objectives of APDRP and using ARR on subsidy realised basis would not be appropriate. Further, APDRP emphasises exclusion of subsidy for calculating the incentive component.

7 Release and Utilisation of APDRP Funds

7.1 Funds Release

7.1.1 Funds not released and monitored project-wise

The APDRP guidelines stipulated that funds should be released in separate tranches individually for each project, linked to the release of counter part funds and project spending. However, the MoP did not recommend release of funds project wise, but recommended lump sum releases for each State as a whole on the basis of the total projects approved by the Steering Committee.

Further, there was no system for monitoring utilisation of APDRP funds on a project-wise basis; the monitoring reports on utilisation showed project cost and total reported expenditure (APDRP and counter part funds put together). Hence, there was also no mechanism for detecting cases of diversion of funds between different APDRP projects.

Reply of MoP

In its reply (February 2007), the MoP stated that the Ministry of Finance restricted the release depending on availability of allocation to the State and availability of budget. Hence, it was not possible to allocate restricted released funds to all or limited projects eligible for the next tranche. Some flexibility was required during execution; otherwise projects would suffer for want of funds. Further, there had been no report of diversion of funds between different APDRP projects, and the monitoring of such diversions would be cumbersome and would not serve much purpose.

Recommendation

In order to have a comprehensive monitoring of the programme, the MoP should monitor together the release of funds and progress on a project-by-project basis.

7.1.2 Non-opening of separate accounts for APDRP funds

In terms of the APDP/ APDRP guidelines, States receiving APDP/ APDRP assistance would have to open a separate account / sub account head immediately for separate accounting classification. A separate account in a Scheduled Bank/ Nationalized Bank was also required to be opened. Funds required to implement projects under APDP/ APDRP schemes were to be released by the MoF, on the recommendation of the MoP, directly to this separate account. States which did not open a separate account for this purpose were not entitled to receive any funds under APDRP.

However, the MoP continued to recommend release of funds without the stipulated certificates from the State Governments regarding opening of a separate account head and expenditure statements prepared from the State monthly accounts. Even the MoF did not object to such recommendations and released funds in the absence of the stipulated requirements.

Audit examination of the records of the State Governments and SEB/ Utilities confirmed non-compliance with these conditions as summarised below:

- No separate bank account was opened in **Arunachal Pradesh, Himachal Pradesh, Goa, Gujarat, Kerala, Meghalaya, Mizoram, Nagaland, Rajasthan (Jodhpur and Ajmer Discoms), Sikkim and Tripura.**
- In **Assam and Chhattisgarh**, although a bank account was opened in a nationalized bank, the APDRP funds were not transferred / credited to this account, rendering the bank accounts inoperative.
- In **Haryana and Tamil Nadu**, a separate bank account was opened only for receipt of APDRP funds. Thereafter, the funds were transferred to a general / common account. Similarly, in **Karnataka**, though a separate bank account was opened by the utility, funds were utilised for making payments to parties and contractors not connected with implementation of APDRP and huge amounts were transferred to different bank accounts.
- In **Himachal Pradesh**, the funds were kept in the existing current account of the SEB, instead of a separate savings bank account.

Reply of MoP

In its reply (February 2007), the Ministry confirmed that many of the utilities either did not open separate accounts or did not operate these accounts due to various problems in their accounting procedures. APDRP funds were nevertheless released so that implementation of the sanctioned projects did not suffer. Keeping in view the accounting problems of the state utilities, the Ministry felt that the opening of separate accounts would not be feasible.

The reply is not tenable, since maintenance of separate head of account would help in keeping accurate accounts of the expenditure under a particular programme. Further, the detailed nature of the accounting problems which would inhibit separate accounting for APDRP was not specified. In any case, the release of funds in full knowledge of non-adherence to stipulated procedures is not justified.

Recommendation

Ministry should ensure that the separate identity of APDRP funds is maintained, and that separate accounts are opened not only by the State Government but also the SEB/ utility concerned.

7.2 Utilisation of funds**7.2.1 No requirement for Statements of Expenditure (SOEs) and Utilisation Certificates (UCs)**

In respect of APDP, the States/ SEBs/ Utilities were required to submit audited SOEs in respect of each project within 9 months of completion of the financial year. But the APDP guidelines stipulated submission of UCs within 9 months from the completion of the scheme or the financial year, whichever was earlier.

However, in respect of APDRP, no conditions regarding either UCs or SOEs were incorporated in the Guidelines, despite requirement of UCs in the prescribed proforma specified in the GFR.

Audit examination further revealed that:

- SEBs/ Utilities/ SEDs did not submit UCs regularly, nor were they furnishing the status of funds utilisation in a consistent format. Further, these were being intimated only while requesting release of the next instalment of funds.
- The MoP did not maintain any consolidated record of UCs received against each sanction/ release, and consequently, was not in a position to verify the actual quantum of funds utilised for implementation of APDRP.
- Though the Ministry had released Rs. 6131.70 crore up to 31st March 2006, UCs in the format prescribed in the GFR for only Rs. 103.52 crore (1.7 per cent) were found in the records of the MoP (**Mizoram** – Rs. 28.96 crore – 10.8.2006, **Bihar** – Rs. 50 crore – 17.3.2004, **Nagaland** – Rs. 21.89 crore – 28.9.2006, and **Sikkim** – Rs. 2.67 crore – 11.12.2002).

7.2.2 Incorrect Reporting of Expenditure

Audit examination revealed that the expenditure reported by SEBs / Utilities to the Ministry / AcCs was not correct, mainly due to the following reasons:

- Expenditure was booked at DPR rates, even though actual procurement cost was lower.
- The reported expenditure was inflated by inclusion of works not in DPR, quantities in excess of DPR provision, incomplete works, works done under normal development schemes, works done with old/ repaired equipment, and centage / consultancy charges.

Audit examination of 294 projects in 29 States with a total project cost of Rs. 10255.21 crore, in respect of which the reported utilisation of funds (as of March 2006) was Rs. 5617.64 crore, revealed instances of incorrect financial reporting, amounting to Rs. 676.09 crore, which constituted 12 per cent of the reported utilisation. A State-wise summary of incorrect financial reporting is given below:

Table 8: Incorrect Financial Reporting**(Rs. in crore)**

S.No	State	Amount of Incorrect Financial Reporting
1	Chhattisgarh	87.49
2	Maharashtra	37.56
3	Kerala	39.64
4	Haryana	76.53
5	Rajasthan	21.66
7	Karnataka	68.06
8	Tamil Nadu	274.89
9	Mizoram	24.58
10	Sikkim	10.56
11	Uttaranchal	35.12
Total		676.09

Details of the instances of incorrect reporting noticed during audit examination are given below:

- For **Chhattisgarh**, GoI released Rs 53.07 crore towards 25 per cent of APDRP funds between April 2002 and October 2003. For claiming further release of 50 per cent of APDRP funds, the SEB had to complete works valued at Rs 106.15 crore (i.e. 25 per cent of the total project cost). Audit observed that, based on a SEB report of February 2005 to MoP that as of December 2004, it had incurred an expenditure of Rs 160.28 crore in identified APDRP schemes, GoI released Rs 106.14 crore in March 2005. Subsequently, the SEB prepared a revised progress report in May / June 2006, in which the progress of expenditure up to March 2005 was reported as Rs 72.79 crore. Thus, the actual expenditure on APDRP up to March 2005 works out to only 17 per cent of the project cost against required achievement of 25 per cent for release of the second instalment.
- In **Maharashtra**, the utilisation certificate furnished by MSEDCL to GoI through NTPC showed the expenditure on purchase of meters under the programme as Rs.77.97 crore but the actual expenditure made was Rs.40.41 crore as of March 2006, as the APDRP cell in the Head office, while calculating the cost of meters purchased based on the details furnished by the Accounts section, wrongly considered the cumulative figures in the calculation of cost of meters purchased.
- In **Kerala**, in respect of consumer meters, the expenditure reported to MoP was Rs. 85.61 crore against the actual expenditure, as indicated in purchase orders of meters, of Rs.45.97 crore i.e. higher by Rs. 39.64 crore.
- In **Haryana**, excess expenditure of Rs 56.35 crore was reported to GoI by utilities showing the procurement of meters at higher rates instead of actual cost incurred. Further, against the reported expenditure of Rs. 1.09 crore as on 31 March 2006 on 33 KV sub-station Barwala Road, Hansi, the actual expenditure as per records of Hansi Operation Division was Rs 0.76 crore. Scrutiny of records of sub-divisions / divisions revealed that the actual progress of replacement of consumer meters in respect of selected circles / towns (Hissar-II, Tohana, Fatehabad, Hansi) was only 15,684 meters valued at Rs. 1.36 crore as per the Divisional Records against the reported figure of 87,722 meters of Rs. 8.29 crore, indicating overstatement of fund utilisation by Rs.6.93 crore. Also, utilisation had been inflated by Rs. 12.92 crore by inclusion of interest during the years 2003-06.

- In **Rajasthan**, expenditure reported under APDRP to MoP was Rs. 831.06 crore up to 31 March 2006 on all the schemes sanctioned under APDRP whereas the actual expenditure as per records maintained at circle level, was only Rs 809.40 crore up to 31 March 2006, indicating over reporting of Rs 21.66 crore. This over reporting pertained to Bhilwara (Rs 17.48 crore), Jhunjhnu (Rs 3.96 crore) and Sikar (Rs 0.06 crore) in Ajmer Discom, and Rs 0.16 crore to Jodhpur Discom.
- In **Karnataka**, a review of the records of expenditure disclosed that BESCOM included the cost of 5,72,611 consumer meters valued at Rs. 56.83 crore pertaining to new installations which were fixed with meters purchased by the customers; this inflated the financial progress and the claims preferred under APDRP. Similarly, in Hubli circle, 86,576 new connections were provided against deposits from customers or purchased by the customers themselves which inflated the financial progress by Rs. 11.23 crore.
- In **Tamil Nadu**, the instances of the work reported as completed but not actually completed and financial achievement as reported but not actually incurred are shown under:

Table 9: Instances of Incorrect Reporting in Tamil Nadu**(Rs. In Crore)**

Name of Circle	CEDC			Virudhachalam		Chennai Metro Circles			
	North	South	WEST			North	South	WEST	Central
Name of items	DT Meters	Distribution transformer	LT Capacitors	Single Phase meters	Three phase meters	Substations			
Quantity as per DPR (Numbers)	226	218	936	4435	1901	8	10	4	7
Quantity reported to MoP as completed as on 31.3.06 (Numbers)	226	218	936	4435	1901	6	6	4	3
Quantity actually completed as on 31.03.06 (Numbers)	126	362	907	4435	1901	3	6	1	2
Cost estimate as per DPR (Rs. in crore)	44.09	791.09	74.88	32.553	34.788	31.04	79.88	39.01	66.03
Cost incurred as per return sent to MoP (Rs. in crore)	36.13	576.34	74.88	32.553	34.788	19.80	64.24	32.75	14.59
Expenditure actually incurred as on 31.03.06 - (Rs. in crore)	32.56	384.13	60.26	*32.553	*34.788	10.03	33.91	18.17	07.78
Expenditure reported in excess (Rs.in Cr.)	03.57	192.21	14.62	-	-	09.77	30.33	14.58	06.81

* Actuals yet to be finalized in Accounts

- Coimbatore Metro Circle in **Tamil Nadu**, reported installation of Digital Interface Data Loggers in sub-stations at a cost of Rs. 3 crore though the same had not been installed.
- In **Mizoram**, seven divisions were allotted Rs. 27.16 crore for executing APDRP works under 4 selected circles. Though the entire amount was debited towards execution of APDRP works, payment vouchers for only Rs. 2.58 crore were available.

- In **Sikkim**, the project cost was inflated by Rs. 10.56 crore by irregular inclusion of various extraneous components not related to APDRP – on account of establishment charges (Rs.8.47 crore), audit and accounts and losses on stock (Rs. 1.36 crore) and tools and plant charges (Rs. 0.73 crore).
- In **Uttaranchal**, the value of completed projects were worked out after including centage charges of Rs. 21.34 crore and consultancy charges of Rs. 0.38 crore, contrary to the accounting principles and decision taken in the 9th Meeting of the Steering Committee (3 August 2005). Similarly, though the materials were to be charged at landed cost, they were issued at issue rates which included cost towards carriage, godown maintenance, handling and wastage etc. resulting in overcharging of the projects by Rs. 13.40 crore.

Further, audit examination revealed numerous discrepancies in the expenditure reported by the States, as detailed below:

- **Rajasthan** – Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPL) had not furnished any UC as of October 2006 for the expenditure incurred upto 31st March 2006. Secretary Energy, Government of Rajasthan reported in March 2006 the expenditure upto January 2006 as Rs. 896.38 crore (including counter part funds). However, the Chairman & Managing Director of RRVPL, in September 2006 reported an expenditure of only Rs. 831.06 crore including counter part fund upto March 2006.
- **Jharkhand** – As per the SEB's records, a sum of Rs 161.97 crore had been utilised up to 31 March 2006 whereas the figure reported to GoI for the same period was Rs 146.26 crore. Further, as per letter dated 11th October 2004 of the Joint Secretary (Distribution), MoP to Secretary Jharkhand State Electricity Board (JSEB), the State of Jharkhand had spent only Rs. 12.77 crore during 2004-05. However, on 14th February 2005 Joint Secretary (Distribution), MoP, while recommending for further release of APDRP funds to JSEB, informed Ministry of Finance that the State had utilised Rs. 104.73 crore. Further, on 16th February 2005, Chairman JSEB, informed the lead AcC i.e. NTPC, that the State had utilised Rs. 102.41 crore as of November 2004.
- **Chhattisgarh** – Utilisation of funds since inception of the scheme up to March 2005 was furnished to the NTPC only in March/April 2006, which was still under scrutiny. UC for the expenditure incurred up to end of March 2006 was not submitted completely. In the absence of complete entries in the work register, UCs could not be vouchsafed by audit.
- In **Punjab**, there was a difference of Rs. 35.38 crore in reported expenditure between figures of two sets of records maintained by the Accounts Wing and the APDRP Cell of the SEB during 2001-06.

7.2.3 Improper maintenance / non-availability of accounting records at State level

Audit examination revealed that proper accounting and related records in respect of APDRP projects were not maintained in almost all the States, which affected the authenticity of the reported expenditure. A State-wise summary of deficiencies noticed in audit examination is as follows:

- In **Chhattisgarh**, a test check of records of 8 divisions revealed that separate work registers were not maintained in 4 divisions, and the entries in the work register, wherever maintained, were incomplete. There were discrepancies in entries relating to

quantity and value of material, between work register and utilisation certificate furnished to NTPC. Further, while works valued Rs 21.34 crore relating to other schemes were transferred to APDRP, the expenditure incurred on these works were not included in the reported APDRP expenditure, due to failure to change scheme codes. Also, there were discrepancies in the details of progress of APDRP works as reported by APDRP cell of the SEB and corresponding expenditure booked by the concerned Regional Accounts Offices.

- In **Uttaranchal**, non-maintenance of separate basic records viz. cash book, stores records for APDRP projects resulted in the project funds being mixed up with general funds, and an amount of Rs. 3.52 crore remained unreconciled. Lack of proper stores records resulted in absence of authentic data regarding materials received/ issued for the project.
- In **Jammu and Kashmir**, five Nodal Officers for APDRP advanced (2003-06) Rs.63.39 crore to the Procurement and Material Management (PMM) wing for supply of material. However, the quantity of material received thereagainst and the balance to be supplied by the PMM wing was not on record, as no separate stock accounts in respect of APDRP were maintained either by the PMM Wing or by the utilities.
- In **Rajasthan**, the purchases of equipments and material for regular and APDRP schemes were combined without any specific mention at any level about the quantity being purchased for various APDRP schemes.

Recommendation

Ministry should ensure that annual Utilisation Certificates, duly supported by detailed Statements of Expenditure, are submitted by the concerned State Governments in the prescribed formats in respect of each APDRP project.

7.2.4 Surplus funds

Audit examination revealed the following instances of surplus funds amounting to Rs. 51.07 crore not returned by the States to the GoI:

- Due to decline in the procurement price, the project cost of single phase meters decreased by Rs. 20.10 crore (UHBVNL) and Rs. 32.23 crore (DHBVNL) in **Haryana**. Thus, GoI had released excess funds (loan and grant) of Rs. 20.50 crore on inflated project cost. The companies had neither refunded the surplus funds to GoI nor taken steps to revise the DPRs downward or formulate any other project to utilise the differential cost.
- In **Andhra Pradesh**, CPDCL received an amount of Rs. 58.63 crore from GoI towards 25 per cent grant for High Voltage Distribution Scheme which was in excess of the eligible amount of grant by Rs. 28.63 crore as the scheme had already been short closed (September 2004) with an expenditure of Rs. 106.38 crore (January 2006). The excess grant was not returned.
- In **Karnataka**, the works amounting to Rs. 10.34 crore relating to Hubli Town under Hubli Circle project in respect of which funds amounting to Rs. 3.88 crore (Rs. 1.94 crore grant and Rs. 1.94 crore loan) had been released in March 2003 and June 2004 by GoI were not taken up as of October 2006 due to non availability of land, upgrading of sub station to 110 / 11 KV and establishment of additional sub station of 220 KV. However, the grant of Rs. 1.94 crore had not been refunded by Karnataka Power Transmission Corporation Limited (KPTCL) / Hubli Electricity Supply Company Limited (HESCOM).

7.2.5 Diversion and Parking of Funds

Audit examination revealed numerous instances of diversion of funds, amounting to Rs. 181.78 crore in ten States, for various unauthorised purposes such as payment of salaries for work charged employees, clearing past liabilities of the SEBs/ Utilities, expenditure on items not related to APDRP, renovation of guest house etc. as detailed below:

Table 10: Instances of diversion of the funds for purposes other than prescribed in APDRP

(Rs. in crore)			
S. No.	Name of the State	Amount	Purpose for which funds diverted
1.	Arunachal Pradesh	0.35	Purchase of Vehicles, fax machine and for meeting committed liabilities
2.	Haryana	32.09 31.25 9.76	➤ Purchase of power ➤ Repayment of loans ➤ Advance payment of loan instalment to Bank
3.	Himachal Pradesh ⁷	0.47	Sub maintenance service overheads, purchase of vehicles and fax machines
4.	Jammu and Kashmir	4.04	Cleaning of equipments, painting, repair of fencing, bush cleaning etc.
5.	Karnataka	38.42 1.59	➤ Payment to parties / contractors not connected with APDRP implementation ➤ Interest earned by investing APDRP funds in short term deposits not treated as APDRP funds.
6.	Nagaland	0.63 0.89 0.40	➤ Salaries of work charges employees ➤ Past liabilities of Likhimro Hydro Electric Project ➤ Renovation of Guest House & construction of dormitory
7.	Orissa	3.95 1.43 6.07 3.67	➤ SOUTHCO – Repairing and maintenance, non-APDRP metering, PMU projects and other expenses ➤ WESCO – O & M work not related to APDRP ➤ NESCO – Material not utilised for APDRP purposes and material less received and utilised in APDRP. ➤ CESCO – Material diverted to other works
8.	Sikkim	0.28 0.29	➤ Cost of templates for erection of towers already included in the erection charges. ➤ Contingency Expenditure for electricity bill forms etc.
9.	Uttar Pradesh	11.89	Payment of interest to PFC
10.	Uttaranchal	13.93 20.38	➤ Interest earned on unutilised project funds and not transferred to project funds ➤ Procurement of materials for works other than APDRP.
TOTAL		181.78	

Further, the State Governments diverted a total of Rs. 432.23 crore by adjustment against various dues of the utilities, which was effectively equivalent to short release of funds for APDRP projects. Details of such diversion are summarised below:

- A sum of Rs. 39.36 crore was sanctioned by the Government of **Kerala** (without corresponding sanction from GoI) in March 2006 as loan (at 9 per cent interest) under APDRP by adjustment against the guarantee commission (Rs. 20 crore) and taxes on consumption and sale of electricity (Rs.19.36 crore) payable by the SEB to the State Government.

⁷ Four circles – Solan, Nahan, Rampur and Bilaspur

- Government of **Chhattisgarh** released only Rs 128.48 crore to the SEB against Rs 169.47 crore received under APDP / APDRP, after adjusting Rs 40.99 crore towards dues payable by the SEB to various central PSUs (Rs 34.58 crore) and principal and interest on APDRP loan of 2001-02 & 2002-03 (Rs 6.41 crore).
- In **Maharashtra** funds amounting to Rs.110.79 crore was released by the State Government to MSEDCL by way of adjustment against other dues payable by the company to the State Government.
- The **Andhra Pradesh** Government released (March 2004) a grant of Rs. 186.17 crore to four Discoms and APTRANSCO as equity. This amount was utilised by the Discoms for payment of dues to APTRANSCO against bulk supply of power to these distribution companies, thus diverting the scheme funds for other purposes.
- In **Meghalaya**, while releasing the grant portion in August 2004 received from GoI, the State Government deducted Rs. 15.29 lakh on account of interest on the loan portion. Though the loan released by GoI in October 2003 was further released by State Government in February 2004, it deducted interest with effect from October 2003 to August 2004.
- In **Madhya Pradesh**, the State Government released the loan portion received from the GoI at a higher rate of interest by 0.50 to 1.00 per cent per annum.
- In **Delhi**, DPCL deducted Rs. 39.63 crore on account of outstanding dues while releasing the grant to the Discoms.

7.2.6 Non-Release / Delayed release of funds by States to SEBs/ Utilities and Non-levy of consequent Penalty

The APDRP Guidelines stipulate that:

- The State Government shall release the funds provided under APDRP to the State Power Utilities within a week of its credit to the State Government account and send a confirmation to the GoI; otherwise, it would be treated as diversion of funds.
- If any State Government/ Utility diverts or is deemed to have diverted such funds, the equivalent amount would be adjusted with 10 per cent penal interest against the next instalment of Central Plan Assistance to be released to that State Government in that year or in the subsequent year.

A review of various reports of the MoP confirmed that one of the reasons for delayed implementation of APDRP projects was delay in release of APDRP funds by the State Governments to the State Power Utilities/ SEBs. However, audit examination revealed that:

- The Ministry was not monitoring the details of delay in transfer of funds by the State Government to the SEBs/ Utilities in respect of each release by the Central Government
- The Ministry did not levy penal interest in even a single case of delayed release of APDRP funds.
- In the absence of any deterrent action, the State Governments continued to delay the transfer of APDRP funds to the implementing agencies, adversely affecting the progress of APDRP projects.

Further, during the test check of records relating to release of funds to SEBs / Utilities by the State Governments, it was observed that in many cases the State Government did not

release the entire funds released by GoI, thereby defeating the purpose for which APDRP was introduced.

As of March 2006, a total of Rs. 412.03 crore were yet to be released by various State Governments: **Maharashtra** (Rs. 75.97 crore), **Nagaland** (Rs. 15.99 crore), **Arunachal Pradesh** (Rs.15.13 crore), **Karnataka** (Rs. 12.52 crore), **Assam** (Rs. 15.00 crore), **Mizoram** (Rs. 7.10 Crore), **Andhra Pradesh** (Rs. 265.10 Crore) and **Sikkim** (Rs. 5.22 crore).

Further, audit examination revealed significant delays in release of APDRP funds ranging from 7 days to 1095 days, by the State Governments, as shown in **Annexure-VII**.

Reply of MoP

In its reply (February 2007), the Ministry stated that:

- They considered the utilisation certificates issued by the CEOs of the utilities as reliable. So far, utilisation reports for Rs. 10,139 crore had been received from the utilities so far.
- The expenditure under APDRP was auditable by the statutory auditors of the utilities, and these utilities were having their own audit procedures and practices of internal and Government audits. The Ministry did not have the resources to audit each and every item of expenditure made by the utilities under the programme. However, AcCs did randomly check the bookings and point out discrepancies found in the utilities
- Excess amounts released from projects which had been short closed by the Steering Committee in November 2006 would be utilised for balance projects.
- Instances of diversion of APDRP funds had not come to their notice.
- There were reports of delay in transfer of APDRP funds by the State Governments to the utilities. However, under the provisions of Additional Central Assistance, APDRP funds could not be directly released to the utilities in the absence of specific requests by the State Governments. Also, longer delays in transfer were noticed in the beginning of the programme, but due to close monitoring, the situation improved later on. Further, in view of these delays, the MoP was proposing taking up of APDRP under Central Scheme during the XI Plan.

The reply of the MoP is not tenable for the following reasons:

- As indicated in para 7.2.1, audit examination showed that out of Rs. 10,139 crore reported as utilised by SEBs / Utilities as indicated in the Ministry's reply, utilisation certificates in the format prescribed in the GFRs had been received only for Rs. 103.92 crore. This format includes a formal certification by the State Government of the amount of funds utilised for the specified projects, a confirmation that the conditions associated with the sanction had been fulfilled and also a certification that certain checks (typically verification with vouchers and books of accounts, measurement books, expenditure registers etc.) had been exercised to see that the money was actually utilised for the purpose for which it was sanctioned.
- The incorrect financial reporting of Rs. 676.09 crore noticed by audit confirm that the MoP's stand of considering the SEB/ Utility's utilisation report (as opposed to utilisation certificate) as reliable is incorrect and inappropriate.
- The statutory auditors of the SEBs/ Utilities are responsible for expressing an audit opinion on the financial statements as a whole, not on the correctness (or otherwise) of the APDRP utilisation reports submitted to the MoP. The MoP and its agencies are

responsible for putting in place an adequate and effective mechanism for verification of APDRP expenditure claims and compliance with stipulated procedures. It need not be done by MoP alone. Lack of adequacy of manpower is an area of concern, in view of the huge amounts released under APDRP.

- In view of the absence of any mechanism for verification of reported APDRP expenditure, instances of diversion of funds would obviously not come to the notice of MoP.

Recommendations

Ministry may insist on immediate onward release of the funds retained by the State Governments, ensuring, that in the process, the State Governments make no adjustments or deductions from APDRP releases. Ministry may also ensure immediate calculation and recovery of penal interest from the State Governments for delay in release of funds. Further, the Ministry may also institute a formal mechanism for monitoring the delay in release of funds by the State Governments.

8 Incentive Mechanism

8.1 Background

The older Accelerated Power Development Programme (APDP) was project based and input focused rather than performance / output oriented. The 'Expert Committee on State-specific Reforms – Structuring of APDRP, Reform Framework and Principles of Financial Restructuring of SEBs' headed by Deepak S. Parekh felt that unless incentive was given towards achieving lasting improvements, the results were not likely to be sustainable in the long run.

The incentive scheme was conceived to make MoAs more successful and conducive for effective implementation. Under the scheme, the State Government would be incentivised upto 50 per cent of the actual total loss reduction by SEBs/ Utilities.

8.2 Incentive Mechanism has not taken off

Against the provision of Rs. 20,000 crore for the 10th Plan Period 2002-07, only Rs. 1575.02 crore (less than 8 per cent of the total outlay) had been released to eight States as of January 2007, as detailed below:

Table 11: Incentive Released as of January 2007

S. No.	State	Claim Years	Total amount released (Rs. in Crore)
1.	Andhra Pradesh	2002-03	265.11
2.	Gujarat	2001-02 and 2002-03	384.46
3.	Haryana	2001-02	105.49
4.	Kerala	2002-03 and 2004-05	84.94
5.	Maharashtra	2001-02	137.89
6.	Punjab	2003-04	77.78
7.	Rajasthan	2001-02	137.71
8.	West Bengal	2002-03, 2003-04 and 2004-05	381.64
Total			1575.02

8.3 Inadmissible Incentive Claims - Rajasthan

Government of Rajasthan (GoR) had lodged a claim for incentive of Rs. 144.45 crore in February 2003 being 50 per cent of losses reduced (Rs. 288.90 crore) during 2001-02

from the base year of 2000-01. The Ministry of Finance had sanctioned an incentive claim of Rs. 137.71 crore in December 2003 on the recommendation of the MoP.

However, audit examination revealed that there was no loss reduction during 2001-02 as compared to the base year of 2000-01, as the cash loss of Rs 1055.39 crore of the base year i.e. 2000-01 had increased to Rs 1179.91 crore during 2001-02. The loss of base year was inflated due to inclusion of expenditure of more than Rs. 284 crore pertaining to a period prior to the base year in respect of the SEB. Further, revenue was not considered on net realization basis and the figures furnished in respect of sundry debtors were also not in accordance with the above provision and hence not correct for the purpose of incentive claim. The cash losses had not decreased, even when the working of individual Discoms was considered separately. Also, the impact of auditor's qualification on the accounts of 2001-02, which resulted in further increase in cash loss, had also not been considered. Thus, an irregular and inadmissible incentive of Rs. 137.71 crore had been paid by the MoF on the basis of inappropriate claims of Rajasthan, which were not adequately verified by the MoP.

8.4 Not Allowing Incentive Claims

Incentive claims of Goa, Tripura, Punjab and Maharashtra were disallowed/ partly allowed on grounds which were not reflected in the guidelines, as summarised below:

- **Goa Electricity Department (GED)** submitted its incentive claim for the years 2001-02 and 2002-03 in February 2004. After examination of claim by M/s CARE, APDRP Cell and Internal Finance Wing of MoP, the Ministry recommended release of Rs. 8.95 crore incentive to the State. However, the MoF decided not to release the claim on the ground that the GED had not been corporatised, and it was not possible to know whether the losses in the case of electricity business had decreased or not. It may be noted that corporatisation was not indicated as a pre-condition for release of incentive in the guidelines.
- **Tripura State Electricity Corporation Limited (TSECL)** submitted its incentive claim of Rs. 33.80 crore for FY 2003-04 in January 2006. The claim was examined and approved by the CARE and the APDRP Cell in the MoP. Though the TSECL had been corporatised in January 2005 and it was found to be eligible for an incentive of Rs. 33.22 crore, the same was not agreed to in the MoP on the grounds that the claim pertained to the year 2003-04, when the distribution of power was being handled by Tripura State Electricity Department, and it had not been corporatised at that time and a similar claim of Goa, where corporatisation had not taken place, had been rejected by the Ministry of Finance.
- **Punjab State Electricity Board** submitted (March 2005) a claim of Rs. 243.10 crore under the incentive scheme for the year 2003-04, which was increased to Rs. 251.94 crore by the MoP. The MoF returned (August 2005) the claim to the MoP as the Punjab Government intended to give free power to the farmers, which was against the spirit of APDRP. However, after persuasion by the Punjab Government, GoI released Rs. 77.78 crore as of January 2007.
- The MoP received annual accounts from **Maharashtra State Electricity Board (MSEB)** for the year 2000-01 and 2001-02 audited and certified by Comptroller and Auditor General of India. The ministry calculated the total loss reduction amounting to Rs. 578.55 crore in the year 2001-02 and hence found Maharashtra eligible for an incentive claim of Rs 289.27 crore. However, the MoF released incentive amounting to Rs. 137.89 crore only and desired to get the accounts scrutinised by a professional

Chartered Accountant for release of incentive. The reasons for release of part incentive were not on record.

8.5 No mechanism for ensuring utilisation of incentives for improvement of power sector

The APDRP Guidelines stipulated that the grant under incentive component was to be utilised in the improvement of the power sector only. However, the MoP had no system to verify or confirm that this grant was being utilised for the improvement of the power sector. In fact, audit examination at the State level revealed utilisation of the incentive for other purposes, as summarised below:

- In **Rajasthan**, the incentive component of Rs 137.71 crore was accounted as revenue grant in the Profit and Loss account of the Discoms, thus reducing the revenue gap and consequently subsidy receivable from the State Government.
- In **Kerala**, out of the incentive received, a sum of Rs. 1.05 crore was paid to the employees of the Board as a gift and Rs. 1 crore was donated to the Malabar Cancer Society. The balance was utilised for meeting working capital requirements.
- GoI provided **Haryana** Government Rs. 105.49 crore as incentive. The same was released to the companies after delay ranging from 1 to 15 months. The utilities also did not formulate any scheme for utilisation of the incentive for improvement of the power sector and appropriated this money towards their revenue expenditure.
- In **West Bengal**, out of Rs. 375.76 crore received as incentive, the SEB utilised (March/October 2005) Rs. 133 crore to pay interest accrued on State Government loans.

Reply of MoP

In reply (February 2007), the MoP stated that:

- Incentive claims of Gujarat (2004-05), Kerala (2004-05), Punjab (2003-04), and Madhya Pradesh (2002-03) amounting to Rs. 898.46 crore are pending release, while claims of Andhra Pradesh (2005-06), Himachal Pradesh (2004-05), Madhya Pradesh (2004-05) and West Bengal (2005-06) are under examination.
- The incentive claim of Rajasthan was scrutinized and discussed at various levels in the MoP and MoF, before establishing eligibility and releasing the incentive.
- Claims of Goa and Tripura were not accepted, as it was not possible to verify reduction of losses from the non-corporatised accounts.
- The incentive component in its present form was proposed to be discontinued during the XI Plan.

The reply of the Ministry shows that the larger objectives of the incentive scheme have not been achieved.

9 Reform Measures

9.1 No accountability of Circles and Feeders

A key administrative intervention under APDRP was ensuring accountability at the circle and the feeder level by:

- Redesignating Distribution Circles as independent profit centres (with adequate delegation of powers) and the Superintending Engineer as the CEO.
- 11 KV feeders to be operated as business units, with the Junior Engineer designated as the feeder manager.
- Ensuring accountability by having MOUs, setting out specific targets to be achieved, executed by the SEBs/ Utilities with the CEOs of the Circles, who, in turn were to execute MOUs with their subordinate officials, who would ultimately execute MOUs with the Feeder Manager.

Audit examination, however, revealed that this intervention was not successful. In **Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Goa, Jharkhand, Kerala, Punjab, Rajasthan, Sikkim, Uttar Pradesh, and West Bengal**, though the SEBs designated the Superintending Engineer of the Circle as Chief Executive Officer (CEO) and issued orders appointing JEs as Feeder Managers, in some States no administrative measures were taken to operate the distribution circle as independent profit centre / complete business unit. In **Arunachal Pradesh, Punjab, Meghalaya, Nagaland, Rajasthan** (partly done), and **Uttar Pradesh**, even the designation of the JEs as Feeder Manager has not been done.

Recommendation

Ministry may ensure that States comply with the letter and spirit of the MOA and ensure target-based accountability at the Distribution circle and feeder level.

9.2 Unbundling of SEBs

Reorganization of SEBs, involving unbundling into separate entities for Generation, Transmission and Distribution and corporatisation of unbundled entities, had not taken place as of March 2006 in **Arunachal Pradesh, Bihar, Chhattisgarh, Goa, Jharkhand, Manipur, Nagaland, Punjab, and Sikkim**.

Further, in **Kerala and Tamil Nadu**, although the State Electricity Boards were functionally segregated into three profit centres namely Generation, Transmission and Distribution, the annual accounts had, however, not been prepared separately for each profit centre. In the absence of separate profit centres for Generation, Distribution and Transmission and determination of transfer pricing etc., the separate Profit and Loss accounts prepared at the circles of Distribution wing merely represented ad hoc management information, and the purpose of distinct profit centres had not largely been achieved.

9.3 Formation of State Electricity Regulatory Commission (SERC)

SERC was constituted in 23 out of 29 States. In **Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland and Sikkim**, SERC / JERC⁸ was not constituted. Further, in **Jammu and Kashmir and Goa**, though the SERCs had been constituted, they were not functional as no Tariff Orders had been issued as of March 2006.

9.4 Formation of State Level Distribution Reforms Committee (DRC)

The Memorandum of Agreement stipulated constitution of state level Distribution Reforms Committee (DRC) within a stipulated time period. The DRCs were, however,

⁸ State Electricity Regulatory Commission/ Joint Electricity Regulatory Commission.

constituted in various States with delays ranging up to 731 days, as detailed in **Annexure-VIII**.

9.5 Ineffective vigilance and legal measures to prevent theft of energy

Theft of electricity, in the form of unauthorized connections from the electricity supply system, tampering, by-passing of meters by the consumers etc. constitutes a substantial part of commercial loss. Hence, vigilance and legal measure to prevent theft are critical to reduce non technical losses / commercial losses. The “Guidelines for reduction of Transmission and Distribution Losses” issued by the CEA and the MOAs prescribe various measures for reducing commercial / non-technical losses, e.g. setting up of vigilance squads, framing suitable policies and mechanisms for detection and follow-up of cases involving theft of energy, making full use of legal provisions for launching prosecution against offenders and conducting periodic review of cases, and imposing severe penalties for tampering with meter seals.

However, audit scrutiny revealed that the MoP’s monitoring was confined to setting up of special courts and special police stations by the States. The Ministry did not have a mechanism for periodically monitoring of the details of cases registered, convictions, penalty recovered etc. in different States. The limited data collected and provided by one of the AcCs (NTPC) showing details of theft cases detected, cases registered / convicted, penalty recoverable / recovered etc. is given in **Annexure-IX**; the gaps in data are purportedly on account of non-availability of complete details even with the utilities. On the other hand, the other AcC (PowerGrid) did not maintain any such data and stated that such information might be available with the Utilities / Discoms.

The data presented in the Annexure shows that though utilities were detecting theft cases, the percentage of registration of cases was very low in **Haryana** (5.79 per cent for DHBVN), **Chhattisgarh** (0.28 percent) and **Kerala** (14.08 per cent). Further, the percentage of conviction was low, ranging from zero per cent to 10.61 per cent (except CESE – **Karnataka** 84 per cent and Jodhpur – **Rajasthan** 47 per cent). Also, the utilities did not accord due cognizance to the financial implications involved, as they were not having such details. In **Jharkhand**, the SEB could realize only Rs. 1.38 crore out of Rs. 13.32 crore recoverable as penalty, for theft cases during 2005-06, which was also a reason for the high AT&C losses of 62.3 per cent in 2005-06.

Audit examination at the State level revealed ineffective vigilance and legal measures to prevent theft of energy, as detailed below:

- Though envisaged under the Electricity Act, 2003, special police stations were set up only in seven states (**Gujarat, Karnataka, Orissa, Rajasthan, Tripura, West Bengal and Delhi**). Also, special courts were not established in **Arunachal Pradesh, Bihar, Goa, Haryana, Jammu & Kashmir, Jharkhand, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tripura and Tamil Nadu**.
- Vigilance squads were not strengthened / set up in **Assam, Rajasthan and Sikkim**.
- In **Chhattisgarh**, only 39 FIRs were lodged during three years ending 2004-05. During 2005-06, 694 FIRs were lodged. However, not a single conviction has taken place so far.

Reply of MoP

In its reply (February 2007), the MoP stated that:

- Only a few States took effective measures resulting in significant reduction of theft. MoP was monitoring action taken by States for constituting Special Courts and Special Police Stations to handle cases related to theft of electricity, and this was proposed to be made as a condition for eligibility for APDRP funds during the XI Plan.

The reply is general, and does not address the specific audit findings.

Recommendation

Ministry may set up a mechanism for monitoring the effectiveness of legal and vigilance measures adopted by SEBs/ Utilities for preventing theft of energy.

10 Project Planning, Management and Implementation

10.1 Project Planning and Approval

10.1.1 Inadequate examination of DPRs by Steering Committee

Audit examination revealed that in 9 meetings⁹ between July 2002 and November 2006, the APDP/ APDRP Steering/ Monitoring Committee approved as many as 641 projects, which work out to an average of 71 projects per meeting, in addition to other items like review and monitoring of project progress. Details of the projects sanctioned during each meeting are available in **Annexure-X**. Clearly, this would not have allowed the Committee to exercise detailed scrutiny of the project, before according approval.

Audit examination revealed that the AcCs were providing brief snapshots of the projects to the Steering Committee. However, it is doubtful if even the snapshots of 71 projects on an average were subjected to detailed scrutiny by the Steering Committee.

10.1.2 Revision of costs without Steering Committee approval

Audit examination of work execution at the State level revealed that frequent modifications were made in the scope of work under the approved DPRs, without obtaining prior or post-facto approval from the GoI.

- In **Bihar**, PowerGrid unilaterally modified and reduced the scope of work and quantity of materials against those originally sanctioned by the Ministry, ranging between 6 to 64 per cent, (despite the fact that the original DPRs were vetted by PowerGrid itself). The SEB, however, was doubtful as to whether the reduced scope would fulfil the objectives of the programme.

⁹ This excludes two meetings, where no projects were approved.

- In **Uttar Pradesh**, the works were being executed by the contractors without finalizing the bills of quantities jointly with the management and these had to be revised several times, even beyond the scheduled completion date.
- In **Maharashtra** (Jalgaon town), due to discrepancies in activity schedule, activities amounting to Rs. 3.82 crore were deleted from the scope of tender after receipt of snap bid relating to the work of supply, erection, testing and commission of HT / LT line work etc. Similarly, in Pune town, the 68 KM, 22 KV/11KV re conductor work was revised to 46.5 KM and the actual work executed was 32.30 KM.
- In **Sikkim**, there was cost overrun of **Rs. 20.32 crore** in 19 works over and above the projected cost of Rs. 68.78 crore as per DPRs and sanctioned by the GoI, primarily owing to higher rates quoted by the contractors and also due to subsequent increase in the scope of works.

Reply of MoP

In reply (February 2007), the MoP stated that positive variations were limited to the sanctioned value by AcCs during reconciliations, while in the case of negative variations, the projects were short closed. Further, in November 2006, it was decided by the APDRP Steering Committee that any escalation in the cost of the sanctioned projects would be borne by the utilities.

The reply does not address the fact that variations (whether positive or negative) are indicative of deficient estimation. Further, the lack of adequate systems for validation and reconciliation of reported expenditure have been highlighted in paragraph 7 of this report.

10.1.3 Deficiencies in Individual DPRs

Audit scrutiny revealed significant deficiencies in DPRs in **Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tripura** and **Sikkim** covering issues such as incorrect cost estimation, incorrect quantity estimation, excess use of material, unrealistic setting of targets etc. as summarised in **Annexure XI**.

10.2 Project Implementation

10.2.1 Implementation by AcCs

Audit observed that instead of providing guidance and assisting the SEBs/ Utilities in executing the APDRP works on their own and thus ensuring capacity building, PowerGrid (one of the Lead AcCs) took up the implementation work in **Bihar** (11 Circles), **Goa** (North Goa, South Goa), **Meghalaya** (Western Circle, Jowai Town and Shillong), **Uttar Pradesh** (Raibareli and Sultanpur Town), **Tripura** and **Gujarat** (work of SCADA in Baroda). As per the Agreements between PowerGrid and the respective State Governments, PowerGrid charged Implementation/ Execution charges @ 13.5 per cent to 15 per cent of the Project Cost.

This led to a serious conflict of interest, as on the one hand, the MoP was relying almost exclusively on the AcCs for vetting of DPRs and independent review of projects before

approval, as also monitoring and review of progress of implementation, while on the other hand, PowerGrid was executing the work as an implementing agency in several States.

Reply of MoP

In reply (February 2007), the MoP stated that PowerGrid had informed them that they had taken up execution work of APDRP only on specific requests from some States, in view of their difficulties. Further, PowerGrid had a separate AcC Cell in their Corporate Centre, which was in no way connected with site execution of their work.

The reply is not tenable, since in such States, the MoP should have arranged for a different AcC.

10.2.2 Non adoption of Turnkey contracting / Distorted Turnkey Packaging

As per the GoI guidelines of February 2001 and the MOA, SEBs had to invite tenders for turnkey implementation of the APDRP projects with a view to maintain a rigid completion schedule and for identification of single point responsibility for execution. The project execution mechanism should have been finalized by the SEBs / Utilities and informed to the Ministry within six months of signing the MoA. However, audit observed that most SEBs / Utilities executed the works departmentally or on semi-turnkey basis. Even where turnkey contracting was adopted, the projects were split into separate packages, which negated the purpose of turnkey contracting viz. identification of single point responsibility for adherence to a rigid time schedule. A State-wise summary of deficiencies noticed during audit examination is given in **Annexure XII**.

Non-adoption of turnkey contracting was also highlighted in the 'Report for Restructuring of APDRP' as one of the reasons for slow progress of work.

10.2.3 Instances of Delay

Various cases of abnormal delays ranging, between 10 – 36 months, after approval of the DPRs, resulting in consequential delay in completion of the projects, were noticed in **Madhya Pradesh, Maharashtra, and Uttar Pradesh** as detailed in **Annexure XIII**.

10.2.4 Execution of items outside APDRP scope

Audit scrutiny revealed that works valuing **Rs.324.92 crore** were executed in **Himachal Pradesh, Jammu & Kashmir, Jharkhand, Kerala, Maharashtra, Orissa, Punjab, and Tamil Nadu** and which were not covered under the scope of APDRP e.g. replacement of functioning meters, underground cable system for power supply, works related to the transmission network etc., as detailed in **Annexure XIV**.

10.2.5 Execution of items outside DPRs

Audit also showed that various works/ items of works, valuing **Rs. 43.10 crore**, which were not covered / included in the approved DPRs, were executed by the SEBs/ Utilities in **Assam, Haryana, Himachal Pradesh, Jammu & Kashmir, Orissa, Punjab, Mizoram, and Uttar Pradesh** as detailed in **Annexure XV**.

10.2.6 Economy in procurement and execution

Cases of lack of economy in procurement and execution in **Assam, Andhra Pradesh, Maharashtra** and **Sikkim** were observed, as a result of which the SEBs/ Utilities incurred an avoidable expenditure of **Rs.11.19 crore**, as indicated in **Annexure XVI**.

10.2.7 Excess payments to contractor

Audit scrutiny revealed cases of excess payments, amounting to **Rs.13 crore**, to contractors in **Andhra Pradesh, Assam, Arunachal Pradesh, Himachal Pradesh, Mizoram, Orissa, Sikkim, Tripura** and **West Bengal** as detailed in **Annexure XVII**.

10.2.8 Other cases of inefficient/ ineffective execution

Various other cases of ineffective and inefficient execution of works/ items of work viz. non-utilisation of material due to non completion of related works, installation of old/ repaired equipments, irregular award of work, improper reporting of completion of works, extension of scheduled completion period for reasons attributable to inefficiencies of the management etc. were observed during test check of records in Audit in **Assam, Andhra Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Maharashtra, Mizoram** and **Uttar Pradesh** as detailed in **Annexure XVIII**.

11 Information Technology (IT) enabling

According to the APDRP guidelines, IT and Computer Aided Tools for revenue increase, outage reduction, monitoring and control played a vital role in distribution management. IT applications would be used in such processes in the distribution sector to ensure higher revenues as a result of segregation of T&D losses, and controlling commercial losses, especially for metering, meter reading, billing, collection and outage reduction. However, audit examination revealed poor progress in IT works, in particular those relating to customer indexing, digital mapping, and Supervisory Control and Data Acquisition (SCADA), as detailed below:

- In **Rajasthan**, out of a proposed expenditure on IT interventions of Rs 56.81 crore constituting 5.87 per cent of total expenditure of Rs 967.85 crore of selected schemes, actual expenditure during the period from 2003-04 to 2005-06 was only Rs 0.81 Crore which was less than 2 per cent of the planned expenditure.
- In **Haryana**, the utilities had not formulated and implemented an integrated programme for execution of works relating to computerization and IT, though Rs. 18.11 crore were to be spent on consumer indexing, GIS mapping, call centres, and data logging of 33 KV sub stations.
- In **Kerala**, audit scrutiny revealed that the LT Billing system lacked the provision to capture the parameters relating to Energy Audit, the data relating to installation of capacitors by industrial consumers, meter reading exception report, consumption comparison report, invoice comparison report in respect of spot bills etc. as also the facility to generate reports of revenue such as Monthly Report of Revenue required to be forwarded to the Division.
- In **Tamil Nadu**, the progress of LT computerized billing and IT enabling including data loggers, was only 23.76 per cent and 24.13 per cent in physical terms and 42.22 per cent and 27.58 per cent in financial terms respectively.

- In **Jharkhand**, GIS mapping and setting up of online MIS for decision making covering technical commercial and management functions had not been done as no provision for computerization was made in the work order issued by the Board. Even though the billing process was computerized, it would have limited utility until consumer indexing and GIS mapping was taken up, and linked with billing data.
- In **Uttaranchal**, though UPCL spent Rs. 1.40 crore on consumer indexing, it could not take up energy audit at any DT in the absence of any consumer mapping details.
- In **Punjab**, implementation was very slow as only Rs. 6.62 crore out of Rs. 64.31 crore were incurred on IT upto March 2006.
- In **Assam**, though online billing through computerization was to be done, the same had not been implemented, and linking consumer index to the computerized billing database was done in one circle, out of 14 circles.
- In **Karnataka**, financial progress in respect of IT related works was a meagre 39.14 per cent.
- In **Gujarat** (test checked Himmatnagar Project), though an expenditure of Rs. 53.35 crore was incurred on the project till 31 March 2006, no expenditure had been incurred on consumer indexing work.
- In **Tripura** and **Sikkim**, IT systems for addressing customer complaints / grievances as trouble call management centres, computer cell etc. were not yet developed.
- In **Sikkim**, though the entire provision of Rs. 0.72 crore was exhausted, computerized billing could be implemented in only two out of 24 revenue sub-divisions. Further, computer indexing was complete in only 6 out of 24 revenue sub-divisions.
- In **Jammu and Kashmir**, against a project outlay of Rs. 21.18 crore for modernization works such as computerized billing, communication facilities, and SCADA, a meagre amount of Rs.82.75 lakh (4 percent) had been spent as of March 2006, which was mainly on installation of computer systems in Nodal Offices and Chief Engineers offices at Jammu and Srinagar.

Reply of MoP

In reply (February 2007), the MoP stated that:

- They had constituted an IT task force, which recommended a clear cut road map for distribution utilities for adoption of IT, based on their present status and had laid emphasis on the implementation of computerized billing, data logging, MIS, SCADA etc.
- The utilities felt that modernization activities could be taken up only after the existing distribution network was brought to a certain level, and also that the payback period for such investments was higher. Consequently, they accorded secondary treatment to IT enabling. Utilities had now started adopting IT and other technology options in selected areas. However, the grant under APDRP covered only 25 per cent of the cost, with the rest to be arranged as loan, and the utilities already had a high loan burden.

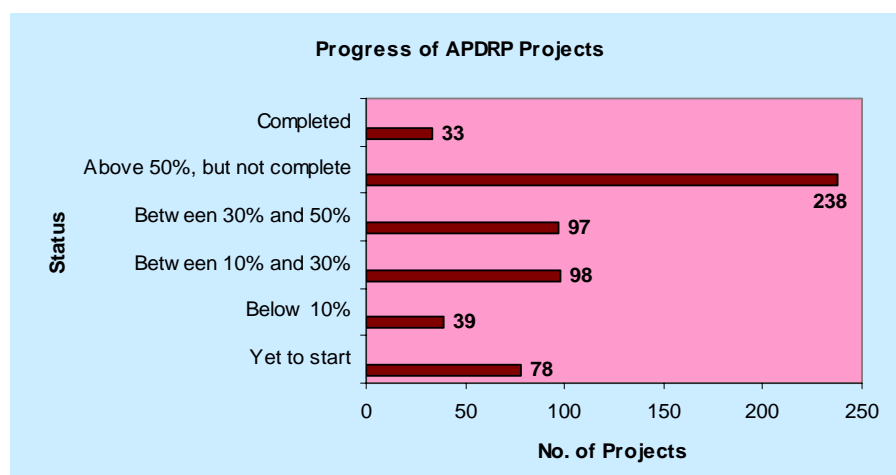
- They (the MoP) proposed to give higher importance to IT, especially in the context of energy accounting and audit, during the XI Plan.

The reply confirms lack of adequate and effective efforts by the MoP in ensuring the actual implementation of IT tools, and consequently, the lack of effective energy accounting and auditing, which is critically dependent on IT.

12 Monitoring, Evaluation and Reporting

12.1 Summary of reported financial progress

While the APDRP guidelines stipulated that the projects were to be completed within at most 36 months of the date of sanction, the financial progress of APDRP projects, as reported by the Ministry¹⁰ was way behind schedule, as depicted below:



An analysis of delays in completion reveals the following position:

Table 12: Details of completion against targeted dates

Sl. No.	Date of Projects Sanctioned	Number of Projects Sanctioned	Scheduled Completion Date (assuming a maximum of 36 months) ¹¹	Number of Projects completed as of October 2006	Percentage of completed projects
1.	16.07.2002	57	7/05	05	9
2.	25.09.2002	72	9/05	03	4
3.	20.11.2002	203	11/05	21	10
4.	20.05.2003	66	5/06	04	6
5.	28.11.2003	08	11/06	NIL	0
6.	20.09.2004	93	9/07	NIL	NA ¹²
7.	23.03.2005	69	3/08	NIL	NA ¹¹
8.	03.08.2005	15	8/08	NIL	NA ¹¹

¹⁰ Based on reported utilisation of funds (and not physical progress).

¹¹ While individual APDRP projects have separate schedules for completion, these are not tracked by the MoP. Hence, the maximum timeframe of 36 months has been used for computing delay.

¹² Completion date not yet over.

State-wise details of financial progress are enclosed in **Annexure-XIX**, which is summarised below:

- Of the 33 completed projects, 16 projects were in Andhra Pradesh, and 3 each in Tamil Nadu and West Bengal.
- In respect of all projects, **Andhra Pradesh, Delhi, Gujarat, Himachal Pradesh, Karnataka, Sikkim, Tamil Nadu**, and **Uttaranchal** reported a relatively high utilisation of funds, while **Madhya Pradesh, Manipur, Jammu & Kashmir Orissa** and **Tripura** reported very poor utilisation of funds.

The delay in progress of works and failure to complete works in time would result in non-achievement or partial achievement of the desired objectives, and further time and cost over-runs. Analysis of the reasons for slow progress revealed that **there was no shortage of funds for implementation**, as nearly 54 per cent of the 10th Five Year Plan provision of Rs. 20,000 crore was still available for sanction. Instead, as discussed elsewhere in the report, the delays were mainly due to poor planning and execution, and lack of commitment and involvement of the implementing agencies.

Reply of MoP

The MoP replied (February 2007) that:

- The execution of projects was delayed due to various reasons on the part of the State Governments not transferring the APDRP funds in timely fashion to the utilities, and delayed action on the part of the implementing utilities. The low allocation of budget by the Government during 2005-06 and 2006-07 also affected the implementation to some extent.
- Some of the projects where implementation had not started long after sanction had been closed by the Steering Committee in its meeting in November 2006, and some other projects had been short closed due to various reasons.
- Many of the projects showed 90 per cent completion on the basis of financial progress even after completion of the project on physical term for want of final reconciliation and non-payment of final bills for want of completion of performance guarantee period.

This reply is not tenable, as majority of projects were sanctioned between 2002 and 2003, and in case these projects had indeed been completed in all respects, issues like final reconciliation and performance guarantee should have been resolved well in time.

12.2 Lack of direct linkage between physical and financial progress

The MoP's monitoring and reporting of progress of APDRP projects in terms of percentage completion was based on the reports of utilisation of funds from the State Governments vis-à-vis the project outlay, rather than on actual physical progress. While the MPRs (Monthly Progress Reports) from the State Governments did give details of physical progress, the Ministry's status reports did not involve compilation of the data on physical progress, but was restricted to financial utilisation. This gives a misleading picture of the status of implementation of APDRP.

Reply of MoP

The MoP replied (February 2007) that the reports were being compiled by the AcCs, both on financial and physical basis, and being examined by them, while the physical data, being voluminous, was being examined by the Ministry and the Steering Committee from time to time. NTPC stated (January 2007) that the condition for release of funds was based on financial, and not physical progress.

The response is not satisfactory, since there needs to be clear and direct linkage between physical and financial progress at the Ministry's level.

Recommendation

Ministry's monitoring and reporting mechanism should capture both physical and financial progress, facilitating direct linkage and comparison, and corrective action in case of wide variations between physical and financial progress.

12.3 Inspection of APDRP Projects

The APDRP Steering Committee, in its sixth meeting in April 2004, showed concern about the quality of equipments being procured and execution of the projects under APDRP and desired that the lead AcCs should closely monitor the progress of implementation of APDRP.

On enquiry by audit regarding inspection by the AcCs of the APDRP projects, one AcC (NTPC) intimated that the inspection reports were handed over to the Head of concerned utility for corrective action, and, as such, these could not be provided to Audit (except a few sample reports without name of the project and utility). In its further response (January 2007), NTPC requested audit to collect the inspection reports from the respective utilities. Records relating to inspections, if any, carried out by the other Lead AcC (PowerGrid) – were not provided to Audit.

The MoP did not have a consolidated record of all such inspections by the AcCs, and audit could not ascertain whether any corrective action was taken on the findings / recommendations of such inspection reports by the Ministry and SEBs/ utilities. In response to an audit memo, the MoP stated that the inspection reports were flagged only during the Review Meetings at the Ministry level. However, a review of the minutes of such meetings indicated only one reference by NTPC to the lack of turnkey approach in Madhya Pradesh and a dispute between NTPC and the SEB in Chhattisgarh on issue and finalisation of NITs and no reference to any inspection reports by the AcCs.

12.4 Very few projects evaluated

Evaluation of the APDRP projects by an independent agency was an integral part of the scheme. Initially, projects which were at least 50 per cent complete were to be selected for evaluation and the work of evaluation was assigned to five consultants namely TERI, SBI CAPs, TCS, IIM-Ahmedabad and ASCI. However, the evaluation covered only 67 APDRP projects in 11 States (**Andhra Pradesh, Delhi, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Rajasthan, Sikkim, Tamil Nadu and Uttaranchal**) out of the total of 583 approved projects in 29 States, of which 271 projects were reportedly more than 50 per cent financially complete as of March 2006.

12.5 Monitoring by State Level Distribution Reforms Committee (DRC)

A State Level Distribution Reforms Committee was required to be constituted within one month of signing of the Memorandum of Agreement with the MoP. The committee was to meet once in two months and review the progress of project implementation, compliance of MOU / MOA conditions, performance against targets and Benchmarks. Audit scrutiny at the State Level further revealed that the required number of meetings of DRC to review the progress of project implementation etc. was not held, with the shortfall in holding the specified number of meetings ranging up to 80 per cent in various States. Details are given in **Annexure VIII**. The CEO of the Circle, along with AcCs, was to monitor and review the achievements on technical, commercial and benchmarks every month. The records of such reviews along with the reasons and action proposed for overcoming shortfall were to be intimated to the MoP, but the same was not done and the MoP did not have any such records.

Recommendation

Ministry may take steps to ensure (a) that all DPRs are subjected to critical examination by the Steering Committee for technical and financial feasibility before approval (b) the independent, advisory role of AcCs is clearly demarcated as opposed to implementation responsibilities, and (c) there is a well-defined mechanism for inspection of APDRP projects by AcCs and review of corrective action thereon.

13. Conclusion

APDRP was launched in 2002-03 with a total provision of Rs. 40,000 crore – Rs. 20,000 crore each for the investment and incentive components – for the 10th Five Year Plan Period. As of March 2006, only about 30 per cent and 8 per cent of the provisions on the investment and incentive components have been released. Financial management under the programme has been poor and the expenditure reported by the States is unreliable, in the absence of Utilisation Certificates and Statements of Expenditure. Audit examination detected several cases of incorrect financial reporting, short release / diversion of funds by the State Governments, with the Ministry of Power taking no corrective action in this regard.

The main objectives of APDRP are far from being achieved. Against the targeted reduction of 9 per cent per annum in AT&C loss, a reduction of only 1.68 per cent per annum, between 2001-02 and 2004-05, has been achieved, as indicated in a recent report of MoP Task Force. Audit scrutiny further revealed serious deficiencies in the authenticity of data regarding AT&C Loss being reported to the MoP. Energy auditing and accounting has not taken off, primarily on account of lack of system metering (in particular Distribution Transformer metering) and inadequate computerisation efforts. The efforts to improve accountability at the circle and feeder levels through a chain of target-based MOUs have not been successful. The incentive mechanism has not been successful, and most of the claims pertain to the years 2001-02 to 2003-04, indicating that actual cash loss reduction in most States has been poor.

Progress in implementation of APDRP projects was poor, with only 33 out of 583 projects reported as financially completed as of March 2006. There were significant deficiencies in the project approval and monitoring processes at the MoP. Audit examination also threw up numerous cases of deficient DPRs, project execution and

implementation, and lack of economy and efficiency in procurement and contracting.

The Ministry needs to take major and effective steps to exercise stricter monitoring and control over implementation of APDRP, in particular on implementation of 100 per cent metering, energy accounting and audit and IT enabling to ensure that the envisaged objective of distribution reform is achieved.

New Delhi
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