Chapter 2

Performance Audits

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Performance Audit

Department of Water Resources

Performance Audit of Accelerated Irrigation Benefit Programme

Executive Summary

Department of Water Resources (DoWR) has mandate to plan, develop, utilise and manage water resources. Department implements irrigation projects with funds provided by Government of India (GoI) and State Government.

GoI launched Accelerated Irrigation Benefit Programme (AIBP) in 1996-97 to accelerate implementation of large irrigation projects which are beyond resource capability of State Government and expeditious completion of projects which were in advanced stage of completion. Implementation of AIBP funded irrigation project was last reviewed by Audit and findings included in the Report of Comptroller and Auditor General for the years ended March 2003 and March 2009. Persistent deficiencies pointed out in earlier Audit Reports prompted this Performance Audit (May to July 2014) covering eight major/medium and 13 minor irrigation projects (MIPs) over 2009-14. Broad objectives of audit were to assess effectiveness of planning process, financial management and execution of projects as per programme guidelines, manual provisions and approved Schedule of Rates (SoR).

Performance Audit revealed that despite being pointed out earlier, projects still suffered time and cost overrun due to delay in acquisition of land, finalisation of drawing and design and clearance of project site. With escalating expenditure on projects, proportion of benefits likely to accrue steadily declined and some projects ran the risk of becoming unviable. Instances of calculated BCR not holding good rendered projects viability questionable.

Extra expenditure on account of estimates deviating from SoR, deficiencies in tendering process, etc. was noticed. Monitoring and internal control needed improvement. Financial implication by way of cost escalation and other deficiencies worked out to ₹ 3,157.97 crore. As a result of delay in completion of projects, people of the State were deprived of assured irrigation facility to that extent.

2.1 Introduction

Major and Medium irrigation projects are Capital intensive in nature. The State Governments with limited resources find themselves unable to meet the desired fund required for all the projects. Project completion gets delayed and a large number of projects in the country have spilled over from one plan to another plan. Further, funds spent on these projects are locked up and the

country is not able to derive the desired benefits. This was a matter of great concern for the Union Government. Against the above backdrop the Accelerated Irrigation Benefit Programme (AIBP) was launched by the Government of India (GoI) in the year 1996-97 to provide financial assistance to State Government for accelerating the pace of irrigation development in the country which are beyond the resource capability of the State Government and expeditious completion of the projects which were in advanced stage of completion.

2.1.1 Organisational set up

Department of Water Resources (DoWR) headed by Principal Secretary to Government of Odisha implemented AIBP funded projects in the State. Execution of the projects was supervised by Engineer-in-Chief (EIC) with assistance of five[3] Chief Engineers and Basin Manager (CE&BM), nine[4]Chief Construction Engineers/Superintending Engineers (CCEs/SEs) and 32[5] Executive Engineers (EEs).

2.1.1.1 Audit objectives

AIBP funded projects were reviewed earlier for periods from 1998-99 to 2002-03 and again for 2004-05 to 2008-09 and findings were included in Audit Reports of Comptroller & Auditor General of India for the years ended March 2003 and March 2009 respectively. Audit was again taken up and the present Performance Audit was intended to assess whether;

- Planning process comprehensively identified projects based on proper survey and consultation in implementation and accordingly prioritised works.
- Financial Management supported achievement of stated objectives of projects.
- Programmes were implemented in accordance with scheme guidelines/ manual provision/SoR and intended objectives were achieved.
- Monitoring and internal control systems were adequate.

2.1.1.2 Audit criteria

Audit criteria were sourced from the following:

3 CE & BM, Baitarani Subarnarekha Budhabalanga Basin, CE, Kanupur Irrigation Project, CE, Lower Indra & Lower Suktel Irrigation Project, CE, Minor Irrigation and CE&BM, RVN Basin.

4 CCE, Anandpur Barrage Project, CCE, Upper Kolab Irrigation Project, CCE, Lower Suktel Irrigation Project, SE, Subarnarekha Irrigation Project, SE, Kanupur Irrigation Project, SE, Sambalpur Irrigation Circle, SE, KBK Circle, SE, Southern Circle and SE, KBK (MI) Circle.

5 EEs, Jambhira Division No. I, Jambhira Division No. II, Subarnarekha Irrigation Division No. I, Subarnarekha Irrigation Division No. II, Betnoti Canal Division, Salandi Canal Division, Anandpur Barrage Division, Bidyadharapur Canal Division, Kanupur Head Works Division, Rehabilitation Camps & Building Division, Kanupur Canal Division, Telengiri Head Works Division, Telengiri Canal Division, Ret Irrigation Division, Rukura Irrigation Division, Lower Indra Canal Division No. I, Lower Indra Canal Division No. II, Lower Indra Dam Division, Earth Dam Division, LSIP, Chhelegada Head Works Division, Chhelegada Canal Division, RRC Division No. I, RRC Division No. II, RRC Division No. III, RRC Division No. IV, RRC Division No. V, RRC Division No. VI, MI Division, Bolangir, MI Division, Rayagada, MI Division, Khariar, MI Division, Bhawanipatna and MI Division, Jeypore.

- Scheme guidelines, Annual Plans, Perspective Plans, Regulations, orders/instructions of GoI/Government of Odisha (GoO).
- Investment appraisals indicating Benefit Cost Ratio (BCR).
- Detailed project reports, standard specifications, SoR and contract conditions.
- Policy guidelines, master plan and norms for implementation of projects.
- Orissa Public Works Department (OPWD) Code and Manuals.

2.1.1.3 Scope and methodology

Performance Audit was conducted from May to July 2014 covering period 2009-14. Eight[6] major/medium projects and 13 Minor Irrigation Projects[7] (MIPs) were selected out of 12 major/medium and 60 MIPs respectively using Stratified Random Sampling method, taking into consideration allocation of funds under budget/actual expenditure on projects with geographical representation. Audit objectives, criteria as well as scope and methodology were discussed in an entry conference held with Principal Secretary to Government on 25 April 2014.

Draft Performance Audit Report was issued (August 2014) to Government and findings were discussed in an exit conference in November 2014. Views of Government have been considered while finalising report.

Audit findings

2.1.2 Planning and survey of projects

2.1.2.1 Target of irrigation

As against target of providing irrigation to 1.65 lakh hectares (ha) of culturable command area (CCA), Department could provide irrigation to 0.66 lakh ha (average 40 *per cent*) ranging from 11 to 68 *per cent* during period 2009-14 as detailed below.

Table No. 2.1 Percentage of irrigation achievement

(In hectares)

Year	*Target fixed for Irrigation potential*	*Achievement of Irrigation potential*	*Shortfall in achievement*	*Percentage of achievement*
2009-10	29,500	18,766	10,734	64
2010-11	38,550	26,100	12,450	68
2011-12	41,046	10,080	30,966	25
2012-13	37,030	4,179	32,851	11
2013-14	19,000	7,035	11,965	63
Total	**1,65,126**	**66,160**	**98,966**	**40**

Source: Data received from EIC (Water Resources)

6 Subarnarekha Irrigation Project, Kanupur Irrigation Project, Lower Indra Irrigation Project, Anandpur Barrage Project, Lower Suktel Irrigation Project, Ret Irrigation Project, Rukura Irrigation Project and Telengiri Irrigation Project.

7 Kankubadi, Ankamara, Mangolajore, Subarnarekha, Jarhiaguda, Budrapara, Suliabahal, Batharla, Daitarimunda, Andhiraijore, Tukuguda, Lakitigurha and Asanga.

The short fall in achievement of targets was mainly due to taking up of work without land acquisition, delay in preparation of drawings and designs, delay in payment of R&R assistance, large scale deviations due to improper survey and investigation and non synchronisation of various project works etc. as discussed in succeeding paragraphs. Non completion of these projects in time not only led to cost and time overrun but also deprived the people the benefit of assured irrigation facilities.

2.1.2.2 Construction of projects with improper planning

Under AIBP, GoI has been providing assistance in the form of grant to ensure timely construction of projects. Orissa Public Works Department (OPWD) code, provided that department conduct pre-construction survey, investigation and planned execution of projects in a systematic manner so that basic requirement such as land, forest and environmental clearance, ayacut planning[8], designing of various components and resettlement and rehabilitation of people affected by projects in coordination with other departments are completed on time.

Audit noticed that due to improper planning, execution of projects was affected and this resulted in time and cost overrun as detailed below.

Table No. 2.2 Details of projects taken up with revised cost

Sl. No.	*Name of the project*	*Original proposal*			*Present status*	*Impact of delay*	*Response/Remarks*
		Year	*Cost (₹ in crore)*	*Year of completion*			
1.	Subarnarekha Irrigation Project (SIP)	1996-97	1,013.68	2001-02	Project had not been completed due to problems in land acquisition, rehabilitation and resettlement of project affected persons, designing various components and large scale deviations on realignment of canal.	Project cost increased to ₹ 5,629.64 crore (555 *per cent*) in 2012-13. After incurring expenditure of ₹ 2,431.15 crore (March 2014), irrigation to only 18,381 ha (17 *per cent*) as against the target of 1,09,627 ha has been achieved.	Government stated (October 2014) that CWC has approved the revised cost and extended the target date of completion to March 2017 and beyond.
2.	Lower Indra Irrigation Project (LIIP)	1999-00	211.70	2003-04	Project had not been completed due to delay in land acquisition, defective design, passing of flood water due to closing of river gap without completion of	Project cost was increased to ₹ 1,624.49 crore (767 *per cent)* in 2012-13. Even after delay of 10 years over completion period and incurring an expenditure of ₹ 1,218.69 crore	Government stated (October 2014) that overtopped dam base is nearing completion.

[8] Estimated area to be irrigated.

Sl. No.	Name of the project	Original proposal			Present status	Impact of delay	Response/Remarks
		Year	Cost (₹ in crore)	Year of completion			
					spillway and subsequent scouring of dam base and defective execution of work by contractor.	by March 2014, the project has not been completed and no irrigation could be achieved.	
3.	Lower Suktel Irrigation Project (LSIP)	1999-00	217.13	2003-04	Displaced families in submerged area agitated due to non payment of compensation to them and hence the project works could not be started by contractors and contracts were closed and awarded to Orissa Construction Corporation (OCC). Besides, the project could not be completed due to delay in finalisation of canal alignment.	Project cost revised to ₹ 1,041.81 crore (480 *per cent)* in 2008-09. After incurring expenditure of ₹ 428.36 crore up to March 2014, the project works remained at stand still.	Government stated (October 2014) that the works have been taken up since April 2013.
4.	Ret Irrigation Project	2003-04	86.14	2007-09	Due to delay in finalisation of design, project could not be completed.	The project cost revised to ₹ 433.39 crore (503 *per cent)* in 2012-13. After incurring expenditure of ₹ 182.30 crore up to March 2014, the project remained incomplete.	Government stated (October 2014) that the design of major portion of GAD of spillway have been received and the work is in full progress.
5.	Telengiri Irrigation Project	2003-04	106.18	2007-08	Project remained incomplete due to non finalisation of design of spillway. Further, mouth portion of main canal could not be completed due to non acquisition of land.	The project cost has been revised to ₹ 474.04 crore (446 *per cent)* in 2009-10. After incurring expenditure of ₹ 325.72 crore, the project remained incomplete.	Government stated (October 2014) that after finalisation of design of the spillway the work will be taken up.
6.	Rukura Irrigation	2009-10	155.48	2013-14	Due to delay in finalistion of	The project cost has been revised	Government stated (October 2014) that

Sl. No.	*Name of the project*	*Original proposal*			*Present status*	*Impact of delay*	*Response/Remarks*
		Year	*Cost (₹ in crore)*	*Year of completion*			
	Project				design of spillway and problems in rehabilitation of project affected people, project could not be completed.	to ₹ 256.09 crore (165 *per cent)* in 2012-13. Project could not be completed even after incurring expenditure of ₹ 119.77 crore as of March 2014.	the General Arrangement Drawing was received in March 2014. The project will be completed with extension of time upto March 2016.
7.	Kanupur Irrigation Project (KIP)	2003-04	428.32	2007-08	Due to delay in finalisation of design and large scale deviations, spillway of the project could not be completed. Earth dam execution was in haphazard condition.	The project cost has been revised to ₹ 1,801.25 crore (421 *per cent)* in 2013-14. Till March 2014, an expenditure of ₹ 1,018.28 crore was incurred on project.	Government stated (October 2014) that the CWC have approved the revised cost with extension of time upto March 2017 and beyond.
8.	Anandpur Barrage Project (ABP)	2005-06	482.26	2009-10	Due to non finalisation of design and drawings, the Barrage across Baitarani river could not be completed. Main canal work had been taken up only in 9 km out of 73 km.	The project cost had been increased to ₹ 1,603.40 crore (332 *per cent)* in 2010-11. Till March 2014, an expenditure of ₹ 525.73 crore had been incurred.	Government stated (October 2014) that delay in completion of the Barrage need not be considered due to non finalisation of drawing as lot of inputs are required to be supplied to CWC for finalisation of design.

As may be seen from the above, projects could not be completed due to improper planning which not only led to cost overrun from ₹ 2,700.89 crore to ₹ 12,864.11 crore (average increase by 476 *per cent)* but also time overrun thereby depriving people of the benefit of irrigation even after incurring substantial expenditure.

2.1.2.3 Execution of works without land acquisition

As per Para 3.7.4 of OPWD Code, no work should commence unless land for the purpose was available. Department was to prioritise land acquisition in coordination with Revenue Department. Test check of two[9] out of eight major/medium irrigation projects revealed as follows:

- Process for acquisition of land in 33 villages under submergence area of Ichha reservoir was initiated in 1987-88 by DoWR. Land Acquisitions of ten out of 33 villages were completed and compensation was paid at approved rate of 1987-88. Subsequently, based on proposal of EE, Rehabilitation Division (June 1996), Special LAO withdrew proposal as the lands were not required for works as

9 Subernarekha Irrigation Project and Lower Suktel Irrigation Project.

per decision of CE&BM, Baitarini, Subernarekha and Budhabalanga Basin**.**

However, scrutiny of records revealed that EE again requested (August 2012/May 2013) for acquisition of land in eight villages which were earlier withdrawn based on proposal of said EE. Accordingly, land was acquired in 2012-13 and LA compensation amounting to ₹ 8.24 crore was paid against the original required amount of ₹ 1.81 crore.

Thus, failure of EE to assess requirement of land correctly led to extra payment of ₹ 6.43 crore.

Government assured (November 2014) that reasons for delay would be investigated.

- Executive Engineer, Lower Suktel Irrigation Project had submitted proposal for acquisition of 727.10 acre of land in village Garjan for construction of Lower Suktel Irrigation Project. Cost of the land was estimated at ₹ 2.88 crore. Revenue and Disaster Management Department (R&DM) issued notification for acquisition of land in November 2006.

  Scrutiny of records revealed that EE subsequently (May 2010) requested for withdrawal of above notification and issue of fresh notification for acquisition of 331 acre of land (January 2011).

  Based on this, revised notification was issued by R&DM Department in December 2010 and Special LAO requested DoWR to deposit ₹ 11.37 crore including additional items such as house and well. This was sanctioned by DoWR in December 2011 which includes 12 *per cent* interest, 30 *per cent* solatium, deposit of revenue and miscellaneous expenditure at 10 *per cent*. The estimated cost of 331 acre of land including the cost of house and well was ₹ 8.88 crore during initial period (November 2006).

  Thus, improper assessment of requirement of land led to avoidable extra cost of ₹ 2.49 crore[10] towards LA compensation.

2.1.2.4 Non completion of work

Salandi Sanskar Project, one of the eight projects test checked, basically a flood protection scheme of river Salandi, a part of integrated Anandpur Barrage Project was approved by Planning Commission in October 2003 at an estimated cost of ₹ 99.14 crore for completion by 2007-08. Project provided for raising and strengthening of embankment over a length of 67.4 km by 1.22 m over the maximum water level, widening the river bed to 98 m from RD.52.80 km to RD.61.10 km and

Encroachment of river Salandi

[10] ₹ 11.37 crore - ₹ 8.88 crore.

to 52 m from RD.61.10 km to tail end and to restore two branches of Salandi river for stabilisation of 7,111 ha of Culturable Command Area (CCA).

Scrutiny of records revealed that against designed bed width between 98/52 m to discharge peak flood, actual execution was restricted to bed width between 70/30 m to pass only medium flood water for want of land. Even restricted bed width could not be achieved due to encroachment and construction of buildings inside river bed. Similarly, renovation to its branches could not be completed for want of land due to which stabilisation of ayacut had not been achieved. Besides, due to persistent problem, no provision of funds was made in the budget for the year 2014-15 to complete the work.

Thus, due to poor planning, the desired objective of Salandi Sanskar Project could not be achieved even after incurring expenditure of ₹ 73.11 crore.

Government stated (October 2014) that the river bed was excavated as per availability of Government land to pass medium flood water as short term measure in phase-I and full design section would be excavated after land acquisition process is completed. But project remained incomplete and there was no provision of fund to achieve full design section.

2.1.2.5 Execution of Head works pending acquisition of land for distribution system

Under AIBP, 60 MIPs were sanctioned during 2007-09 at a cost of ₹ 137.65 crore for completion between 2009-10 and 2010-11. Of the 60 projects, only three projects were completed at a cost of ₹ 3.02 crore. Of the balance 57 projects, head works for 27 projects sanctioned at an estimated cost of ₹ 53.93 crore were completed with an expenditure of ₹ 48.48 crore and distribution system to carry water for irrigation purpose could not be completed due to non acquisition of land. This resulted not only in blockage of ₹ 48.48 crore for more than one to three years but also deprived people of the area of benefit of irrigation. Further, 22 projects with approved cost of ₹ 44.43 crore to provide irrigation to 5,715 ha though awarded could not be completed even after incurring expenditure of ₹ 46.40 crore on head works.

Semelmunda Diversion weir

Similarly, three MIPs in KBK districts at estimated cost of ₹ 12.26 crore though sanctioned to provide irrigation to 1,121 ha of CCA were dropped after incurring expenditure of ₹ 44 lakh due to agitation by local people. Thus taking up of work without proper planning led to unfruitful expenditure of ₹ 44 lakh.

In remaining five projects, civil works could not commence even after incurring expenditure of ₹ 2.94 crore as the land had not been acquired even after payment.

While accepting factual position, Government stated (November 2014) that in most of the cases, head works had been completed and distribution works remained incomplete due to non completion of land acquisition.

2.1.2.6 Laxity in eviction of people in project area leading to non completion of works and extra payment of R&R assistance

OPWD Code provides that no work should commence unless land for the purpose was available. Further, in case the construction of project required displacement of families from the project area, payment of ₹ 1.08 lakh to displaced families was to be made as per Rehabilitation and Resettlement (R&R) Policy 1994 which was revised in May 2006 with enhancement of assistance from ₹ 1.08 lakh to ₹ 4.86 lakh per family with provision for enhancement of 20 *per cent* at interval of every two years, It was noticed that there were delays in identification and enumeration of project affected persons to release R&R assistance and department failed to evict people from submerged area leading to non completion of works and extra payment of R&R assistance as discussed in paragraph No.2.1.2.7.

2.1.2.7 Delayed/Avoidable payment of R&R assistance

- Detailed Project Reports (DPRs) of four[11] major/medium projects provided for payment of R&R assistance amounting to ₹ 41.77 crore to 3,868 displaced families as per R&R policy 1994. Payment was not made till May 2006 although projects were sanctioned during 2002-04. In the meanwhile, number of displaced families increased to 6,476 due to minors attaining age of 18 years who became eligible for R&R assistance as per policy. Accordingly, DoWR sanctioned ₹ 299.17 crore between August 2008 and March 2014 for payment to 6,476 displaced families. Project Director (PD) had not made payment within two years, Government sanctioned ₹ 27.78 crore between November 2012 and May 2013, towards 20 *per cent* enhanced rehabilitation assistance to 2,787 displaced families leading to avoidable payment of ₹ 285.18 crore.

- Subernarekha Irrigation Project was taken up under AIBP in 1996-97. During the above period, department had not identified displaced families. Survey was conducted in 2008-09 and 2,388 displaced families were identified and an amount of ₹ 155.90 crore was sanctioned by DoWR during 2008-14 towards R&R assistance.

  Scrutiny of records revealed that amount of R & R assistance during initial period (1996-97) would have been ₹ 25.79 crore.

  Thus, delay in payment of R&R assistance resulted in avoidable extra payment of ₹ 130.11 crore[12] towards R&R assistance including ₹ 6.44 crore towards 20 *per cent* hike for further delay in payment by more than two years by the Project Director.

[11] KIP, Rukura, Ret and Telengiri.
[12] ₹ 155.90 crore - ₹ 25.79 crore.

Government assured (November 2014) that reasons for delay and displacement of people from project area in phases would be investigated.

2.1.3 Deficiencies in survey and investigation

As per para 3.2.3 of OPWD Code survey and investigation is to be done for preparation of Detailed Project Reports (DPRs) before execution of any project for completion in a time bound manner and also to achieve efficiency, economy and effectiveness. Review of records on feasibility of projects revealed that there were deficiencies in survey and investigation resulting in time and cost overrun besides idle investment as detailed below;

2.1.3.1 Continuance of project with unresolved issues

Subarnarekha Main Canal of 46.50 kilometer (km) length is feeder channel for SIP. Works of concrete lining of canal and restoration of canals with service road were awarded to six contractors between December 2006 and April 2011 for completion between June 2008 and December 2013. Though four completed (December 2013) their works within the extended time, two contractors stopped (June 2012/April 2013) work (after execution of 68 *per cent* of work) due to repeated collapse of canal since December 2006. The collapse of canal is because of presence of kaoline soil, which the Department had not identified initially due to improper survey and investigation. Despite the above problem, Department had not taken any action (March 2014) for completion of balance restoration and lining of canal works.

Collapsed portion of SMC from RD 7950 to 8720 M

Government stated (October 2014) that during execution of the work the existence of kaoline soil underneath was found and the restoration work will be taken up after finalisation of design by Central Water Commission. But the work remained incomplete for more than eight years.

Similarly, construction of Jambhira Left Main Canal including structures with cement concrete lining and service road was awarded to a contractor at a cost of ₹ 87.14 crore in January 2009 for completion by January 2011. Due to change in alignment of canal to accommodate permissible forest land, length of canal was increased by 555 m, contractor had not excavated the canal for 480 m and extension of time was granted up to June 2013. The Department closed the contract in March 2014 and made payment of ₹ 108 crore to contractor.

Scrutiny of records (May 2014) revealed that at the time of closure of contract, contractor had not executed canal embankment for 1,065 m, Cement Concrete lining for 2,554 m, service road for 20 km and 22 structures. The contract was closed without levy of penalty as the delay was not attributable to the

contractor. No step was taken by department for completion of balance work even after lapse of one year. Since the balance works including the extra length will be executed as per current SoR, the increase in cost cannot be ruled out.

2.1.3.2 Execution of works without taking remedial action

The Geologist, while conducting the survey and investigation of Kanupur Irrigation Project (1991-94) pointed out to the Department that there exist two continuous persistence pebble layers in dam axis. Since, the layers were found highly pervious and seepage of water flow through buried channel would pose serious problem after impounding of water in the reservoir, it would have to be addressed before construction of dam. The project was approved for ₹ 428.32 crore to provide irrigation to 29,578 ha of CCA in 2003-04 for completion by 2007-08.

Scrutiny of records revealed that construction of earth dam of the project was taken up in September 2007 for completion in March 2010. The work was taken up without considering the above findings of the Geologist. The work was in progress (March 2014). The construction of spillway of the project was taken up in November 2007 for completion by May 2010. During excavation of foundation of spillway, EE found existence of above two continuous persistence pebble layers and requested (January 2012) Geologist to examine the same and suggest remedial measures to be taken. After visiting the site Geologist suggested various remedial measures (May 2013) including reservoir mapping for locating pebble layers. However, EE had not taken any remedial measure to rectify the defects (March 2014).

Government while accepting factual position stated (November 2014) that the observation of Geologist was not overlooked and the Senior Engineers of DoWR and the officers of Geological Survey of India inspected the site in April 2014 and suggested remedial measures for treatment of pebble layers. The treatment is under process. But the fact remains that Department had started construction of dam without remedial measures, though the existence of pebble layers was detected since 1991-94 by the Geologist.

2.1.4 Execution of project in different stages leading to extra cost

Construction of earth dam of KIP was taken up in November 2007 for completion by November 2010. Though work for Small Hydro Electric Project (SHEP) was included in Detailed Project Report (DPR), construction of head regulator and SHEP with a gap of 120 m of earth dam was not included in the estimate due to non finalisation of drawing and design and was subsequently awarded (March 2014) through a separate agreement after nearly six years. The execution of work through separate agreement after six years resulted in not only extra cost of ₹ 4.22 crore compared to the agreement rate of earth dam but also delayed the completion of project**.**

2.1.5 Non synchronisation of project work

In Kanupur Irrigation Project, excavation of spill channel was awarded to a contractor at a cost of ₹ 12.23 crore in March 2011 for completion by March 2013. This contract provided for disposal of excavated earth measured at 8.56 lakh cum at a distance of two km. At the same time, another contract for construction of earth dam from RD 00 m to RD 1,100 m was awarded to another contractor (September 2007) which required transportation of 14.86 lakh cum of earth from outside at the rate of ₹ 100 per cum. The contractor had transported 11.50 lakh cum of earth as of March 2014 for construction of dam for which the department paid an amount of ₹ 11.50 crore. On the other hand, first contractor had disposed of 6.35 lakh cum of excavated earth which could have been utilised in construction of the earth dam as the distance between the two works was two km. Due to non utilisation of 6.35 lakh cum of earth obtained from spill channel in construction of dam, the second contractor was paid ₹ 6.35 crore towards utilisation of the above quantity of earth from burrow area.

Thus**,** non synchronisation of the project works resulted in non utilisation of useable earth obtained from excavation of spill channel for construction of earth dam and led to extra cost of ₹ 6.35 crore. This is likely to increase further as the work was in progress.

Government stated (November 2014) that available excavated earth from spill channel would be utilised in river gap closing and assured synchronisation of project work in future.

2.1.6 Adverse Benefit Cost Ratio

Cost Benefit Analysis (CBA) estimate and total up equivalent money value of benefits and costs to community of projects to establish whether they are worthwhile. As per AIBP guidelines Benefit Cost Ratio (BCR) must be greater than one for a project to be viable. Analysis of costs incurred and benefits expected to accrue out of test checked projects indicated that above parameters were not fulfilled and some projects ran the risk of becoming unviable.

Scrutiny of records revealed that the department had not uniformly adopted parameters for calculation of BCR. While in seven test checked projects the department had included land development cost and two *per cent* depreciation of capital cost for calculating BCR, in one project, it had not included land development cost and taken depreciation of capital cost at one *per cent*. Further, value of Perennial crops over and above the benefits projected by Deputy Director of Agriculture (DDA) was also taken for calculation of BCR only in one case.

Contingencies such as cost escalation due to delay in land acquisition and finalisation of drawing and design were also not taken into account in all cases.

Bartansil MIP (the only completed MIP amongst test checked projects) had envisaged providing irrigation to 2000 hectares in Kharif and 428 hectares in Rabi. Based on this projection, the BCR as per final approval of the project worked out to 2.13. On verification annual irrigation until 2012-13 was found to be 780 hectares in kharif only. Considering this actual achievement the BCR would work out to 0.68.

Accepting factual position Government stated (November 2014) that BCR for all MI projects would be reviewed critically and attempts may also be made to explore ways of enhancing benefits by exploring alternative and gainful uses of water.

2.1.7 Financial management

2.1.7.1 Budgetary control

AIBP Projects are being implemented with GoI's financial assistance in the form of grants. The State Government releases funds for implementation of projects first and submits claims to GoI for reimbursement. Details of budget provision for major/medium and MIPs during the period 2009-10 to 2013-14 besides re-appropriation, revised budget, expenditure and savings/surrender of funds are given below;

Table No. 2.3 Budget provision vis-à-vis expenditure

(₹ in crore)

Year	*Budget provision*	*Re-appropriation/ Appropriation*	*Revised Budget Provision*	*Expenditure*	*Unused funds*	*Percentage of unused funds*
2009-10	1130	-51.03	1078.97	943.24	135.73	12.58
2010-11	1155	-8.61	1146.39	990.04	156.35	13.64
2011-12	1236	-81.46	1154.54	867.75	286.79	24.84
2012-13	1059	-55.40	1003.60	861.05	142.55	14.20
2013-14	1215.99	-41.43	1174.56	860.58	313.98	26.73
Total	***5795.99***	***-237.93***	***5558.06***	***4522.66***	***1035.4***	

Source:-Data received from EIC (WR) & CE (MI)

From the above statement following may be observed:

- Though DoWR had reduced budget provision by way of re-appropriation, percentage of unused funds ranged from 13 to 27 even after this**.**

- As against revised budget provision of ₹ 5,558.06 crore for 2009-14 actual expenditure was ₹ 4,522.66 crore and the resultant savings were ₹ 1,035.40 crore. The savings or surrenders were mainly due to poor implementation of projects in view of delay in acquisition of land, non eviction of people from project areas, non finalisation of design and drawings, default in execution of works by contractors as discussed in the preceding/succeeding paragraphs.

- Project expenditure during 2009-14 included ₹ 578.92 crore kept in saving/current bank accounts or civil deposits.

Government stated (October 2014) that construction activities of the projects are disrupted frequently due to which proportionate progress could not be achieved resulting in savings in the allocated resources.

2.1.7.2 Non receipt of central assistance

The funds under AIBP scheme were to be released from year to year based on budget provision made by State Government. GoO submitted to GoI

reimbursement claims of ₹ 3,161.07 crore as against ₹ 3,364.77 crore for expenditure incurred in projects during 2009-14. Of the above, a sum of ₹ 1,822.87 crore was received till March 2014 and balance amount of ₹ 1,541.90 crore was not released by GoI. Reasons for non release were due to deficiencies in proposals such as extension of time and non compliance to the observation of Ministry of Finance (GoI).

It was further revealed that during 2013-14, GoO submitted claims for ₹ 193.81 crore in respect of five projects for Central Assistance (CA). CA for one project was not released as it required time extension and CA for four other projects namely AB Project, Upper Indravati, LIIP and Ret Irrigation Project could not be released due to applicability of Fiscal Responsibility and Budget Management (FRBM) norms. Moreover, reimbursement of arrears of CA on expenditure incurred by State Government in previous year was not permissible as per AIBP guidelines. Thus, GoO could not avail CA for the above amount.

Government stated (October 2014) that due to FRBM ceiling, central assistance proposal during 2013-14 processed for Odisha by MoWR could not be released by Ministry of Finance (GoI). Government further stated that there would be no deficiencies in sending proposal for release of CA in future and delay on the part of GoO would also be avoided.

2.1.7.3 Non availment of Central Assistance

As per AIBP guidelines, the completion period of MI Projects was two years and if projects were not completed within this stipulated period no CA is available for balance work. As mentioned in paragraph 2.1.2.5, fifty seven projects could not be completed within stipulated period of two years. Out of these**,** 18 projects were stipulated for completion in 2010 and 39 in 2011. However, all these projects were incomplete till the date of audit. As completion of projects were delayed by more than two years, DoWR could not avail CA amounting to ₹ 68.16 crore and balance work are to be completed from its own resources.

2.1.7.4 Excess establishment expenditure

As per conditions of AIBP guidelines, the establishment expenditure is to be limited to eight *per cent* of the cost of head works (excluding cost of land) and 10 *per cent* of the cost of distributaries. Scrutiny of records of seven test checked major/medium irrigation projects revealed that Department had incurred expenditure of ₹ 1,394.16 crore on works during 2009-14 excluding cost of land. As per guidelines, establishment expenditure should be ₹ 125.47 crore against which expenditure of ₹ 289.69 crore was incurred resulting in excess establishment expenditure of ₹ 164.22 crore. The excess would be borne by GoO.

2.1.7.5 Diversion of AIBP funds

CE&BM, Baitarani Subernrekha Budhabalanga Basin diverted AIBP fund of ₹ 20.65 crore during 2009-14 earmarked for SIP to three Drainage Divisions

and one Drainage Circle, to meet expenditure towards salaries. Since drainage divisions were not executing AIBP works, diversion of fund was irregular.

Government stated that the above amount was not reimbursed for the purpose of AIBP funding. But the fact remains that project cost was inflated to that extent.

2.1.7.6 Expenditure in excess of administrative approval

Note (I) below para 3.2.4 of OPWD code stipulates that no work is to be executed or liability created in absence or in excess of 15 *per cent* over the cost approved by Administrative Department. It was noticed that in MIPs[13] approved for ₹ 32.07 crore, EEs incurred expenditure of ₹ 50.02 crore against admissible amount of ₹ 36.87 crore resulting in irregular expenditure of ₹ 13.15 crore. Though, the excess ranged between 22 and 114 *per cent,* no revised approval was obtained from CE (MI).

Government stated (November 2014) that revised estimates were under preparation by field offices, would be approved shortly. But the Department had already incurred expenditure in excess of administrative approval.

2.1.7.7 Non crediting of revenue to Government account

As per executive instructions issued by Revenue and Excise Department, GoO in September 1998, advance of compensation amount received from Government Departments including Departments of GoI be deposited under the Head "8443-Civil Deposits-111- other Departmental Deposits". Compensation amount when required is to be paid by withdrawing the same from the above heads of accounts. Further, Rule 25 of Chapter 3 of General Financial Rules (GFR) prescribed that any revenue earned should be credited to Government Account.

Scrutiny of records revealed that in violation of above instructions, AIBP fund of ₹ 357.20 crore was kept in SB Account by PD, R&R. Apart from this, though the department had earned interest amounting to ₹ 40.22 crore on SB Account as shown in closing balance of Cash Book, the same was not credited to Government Account till March 2014.

Government stated (October 2014) that interest was being credited to the Government account regularly. However, ₹ 40.22 crore was not yet deposited.

2.1.7.8 Non submission of utilisation certificate

Department had deposited ₹ 45.64 crore of AIBP funds for construction of two high level bridges, one road, two railway crossings and heightening of 132 KV line with EEs of Roads and Buildings Divisions, South Eastern Railways and Odisha Power Transmission Corporation during 2009-14. EE,

[13] Nagapada, Ankamara, Brahmanijore, Dabalajore, Karanjianalla, Kankubadi, Jagamguda, Badatema, Tunpar, Baghri, Jatakhalia, Dobenchecharnalla and Talijore.

R&B Division, Kantabanji submitted utilisation certificate only for ₹ 10.48 crore.

Government stated (October 2014) that action was being taken to pursue the matter for completion of the works and submission of utilisation certificate.

2.1.7.9 Payment of additional cost

As per Land Acquisition Act, 1894 as amended from time to time, in case of payment made after one year of issue of preliminary notification for acquisition of land, interest at 12 *per cent* per annum towards additional compensation is to be paid to land owners.

DoWR sanctioned ₹ 292.52 crore for acquisition of 6,464.805 acre of land in 66 villages of two projects[14] between January 2007 and July 2013 as detailed in ***Appendix-2.1.1***. The Special LAOs working for the projects under DoWR could not disburse compensation amount to land owners within one year which warranted sanction of revised estimates by adding 12 *per cent* interest per annum amounting to ₹ 319.88 crore.

Thus, delay in disbursement of compensation by Special LAOs led to avoidable extra payment of ₹ 27.36 crore.

Government stated (October 2014) that estimates were revised and payment made accordingly.

2.1.7.10 Non recovery of Government dues

Instances of non-recovery of Government dues such as royalty and cess were noticed during review of records on execution of project works. Details in this regard are given in succeeding paragraphs;

As per GoO, Revenue Department circular of 2004, royalty on earth taken from burrow area should be recovered at ₹ 10 per cum which was to be increased by 40 *per cent* after completion of three years.

- For construction of canals of SIP and LIIP, Department awarded 19 works between 2007-08 and 2010-11. The contractors transported 81.29 lakh cum of earth from burrow area for construction of embankment of canals. For utilisation of 81.29 lakh cum of earth, royalty amounting to ₹ 15.93 crore was, however, not recovered resulting in loss of revenue to Government and also extension of undue benefit to contractors.

Government stated (October 2014) that as prorata was not included in estimate, royalty was not recovered. But contractor had quoted the rate including all taxes and duties payable by them.

- As per condition 9 (C) of the Detailed Tender Call Notice (DTCN) royalty will be deducted from the contractor's bill as applicable from time to time as amended by Government. Rates quoted by contractor shall be deemed to be inclusive of all taxes. In three packages of test

[14] Kanupur Irrigation Project and Lower Suktel Irrigation Project.

checked projects, agreement provided for recovery of royalty at prevailing rate and any increase in royalty would be reimbursed to contractor separately. Accordingly, a sum of ₹ 3.01 crore was reimbursed. The above reimbursement was due to inclusion of defective conditions in agreement.

Government stated (October 2014) that reimbursement was made as per clause 23 of the special conditions of agreement. But this condition was contradictory to conditions of DTCN.

Further, as per GoO Gazette Notification of December 2008, one *per cent* of the work value was to be deducted from the bills of the contractor towards labour welfare cess. It was, however, noticed that in six works[15] test checked, cess amounting to ₹ 1.34 crore was not recovered and ₹ 2.78 crore recovered from bills of contractor was refunded without any valid reason.

Government stated (October 2014) that cess was not recovered as the same was not included in the sanctioned estimate. But non recovery of cess was violation of Government order of December 2008.

2.1.7.11 Non recovery of compensation for delay in execution of work

As per conditions of contract the contractor shall pay compensation of an amount equal to 0.05 *per cent* per day for delay in execution of work subject to maximum of 10 *per cent* on the contract value.

Department had awarded 15 canal excavation works of three[16] major/medium irrigation projects to different contractors at a cost of ₹ 152.44 crore between July 2003 and October 2011 for completion between October 2004 and April 2013. Although contractors could not complete the works within the contractual/EoT period, penalty as per conditions of contract amounting to ₹ 15.24 crore being 10 *per cent* of contract value was not levied, which resulted in extension of undue financial benefit to contractors.

Similarly, none of 10 works as discussed in paragraph 2.1.9.3 (fifth bullet) were completed even after expiry of extension of time and delay ranged between 24 and 112 months. Despite default in execution, no penalty was levied. Maximum penalty on ₹ 443.37 crore at the rate of 10 *per cent* would work out to ₹ 44.34 crore.

Government stated (October 2014) that action had been initiated to impose penalty for defaulting execution.

2.1.7.12 Release of payment without verifying interim reports

In May 2007, work of survey, planning, design and processing for land acquisition in respect of macro irrigation system in command area of Salandi Left Main Canal of Anandpur Barrage Project was awarded to three contractors for ₹ 2.48 crore for completion in six months. Works were not

[15] SIP Main Canal (one work) and Jambhira Left Main Canal (two works), Ret Irrigation Dam Project (one work) and Kanupur Dam (two works).

[16] SIP, LIIP and Anandpur Barrage Project.

completed in any reach and EE, Salandi Canal Division paid ₹ 1.90 crore to contractors without verifying interim reports.

Scrutiny of records revealed that on verification of interim reports submitted by the contractors, CCE, Anandpur Barrage Project observed that the correctness of levels and alignment of canals have not been verified by the Junior Engineers/Assistant Engineers before making payment to the contractors. Further, though the contractors failed to complete the work within the scheduled time, the EE had neither taken any action for timely completion of the works nor levied penalty of ₹ 0.25 crore as per the provision of the contracts. Further, due to non submission of survey reports, land acquisition for project works were delayed resulting in extra cost of ₹ 2.53 crore in acquisition of 64.08 acre of land.

Accepting factual position Government stated (October 2014) that necessary action would be initiated shortly to close the contracts with levy of penalty for delay in submission of reports on land acquisition.

2.1.7.13 Non completion of deposit works

In 2006, ₹ 13.70 crore was deposited with Divisional Forest Officer (DFO), Khariar to carry out catchment area treatment plan by 2008-09 before impounding of water in reservoir to prevent siltation in LIIP. Till May 2014, no work was done and matter was also not followed up by the DFO.

Similarly, a sum of ₹ 5.28 crore was deposited with DFO, Khariar to take up canal bank plantation, wild life management plan and compensatory afforestation. Although more than eight years had passed no works were executed and deposit amount lay with DFO (July 2014).

Government stated (October 2014) that correspondence had been made with DFO, Khariar to take up the work immediately.

2.1.7.14 Non completion of tree felling work

A sum of ₹ 2.45 crore was deposited with Odisha Forest Development Corporation (OFDC), Khariar between August 2006 and August 2010 for felling and transportation of 28,025 trees from the reservoir area. OFDC felled 11,681 trees. Balance amount of ₹ 1.43 crore (proportionate expense for trees not felled) was not refunded by OFDC. No action was taken by Department for receipt of unutilised amount.

Government stated (October 2014) that the matter was being taken up with OFDC for early completion of work.

2.1.7.15 Release of undue payments

Notification for acquisition of 476.90 acre of different Kissam[17] land in Chudapali village for Lower Suktel Irrigation Project was issued in January 2004 by Revenue and Disaster Management Department. Estimate was sanctioned for ₹ 12.88 crore in September 2006. As the Special LAO failed to

[17] Kissam means – Types of land.

disburse the amount, revised estimate was sanctioned (January 2010) for ₹ 15.41 crore. Further scrutiny of revised estimates revealed that Special LAO while preparing revised estimates changed kissam of 9.56 acre of Berna Mamuli land to gharabari (homestead) and cost of land increased by ₹ 2.53 crore which was not scrutinised by DoWR.

Government stated (November 2014) that change in classification of kissam is not ordinarily allowed after 4(1) notification, unless there is an order from the Collector under town planning Act. In this case, classification of land from Berna Mamuli to gharabari does not fall within the ambit of law. The matter is under investigation.

2.1.7.16 Work remained incomplete due to non eviction of people even after payment of R&R assistance

R&R assistance was paid to 2,937 affected families of LIIP prior to 2006 as per R&R Policy 1994. Since these families could not be evicted even after payment of R&R assistance, DoWR sanctioned ex-gratia of ₹ 58.74 crore (November 2008) at ₹ two lakh to each family. Similarly, ex-gratia of ₹ five crore was paid to 250 families in Titilagarh Irrigation Project. Despite this, these families continued in reservoir area.

The number of displaced families increased to 9,412 as of March 2014. The department sanctioned ₹ 297.10 crore during 2008-14. Following irregularities were noticed in payment of R&R assistance.

- Project Director, LIIP submitted proposal (January 2012) for sanction of R&R assistance to 207 families. Of the above DoWR sanctioned R&R assistance of ₹ 10.76 crore to 145 families in February 2012.

  Scrutiny of above payments (July 2014) revealed that despite Department's disallowance of claims, two ineligible families had been paid R&R assistance of ₹ 10.94 lakh by Project Director between May and August 2012.

Government stated (October 2014) that steps were being taken to recover the amount.

- The Department sanctioned ₹ 1.31 crore for payment of R&R assistance to 33 families of two villages. On further enquiry by PD (August 2012), before making payment to the families, it was found that all were ineligible. Despite this, neither were sanction orders cancelled (July 2014) nor was the amount refunded to CE.

Government stated (October 2014) that steps were being taken for cancellation of sanction order.

- Eleven families in two villages were paid compensation amount of ₹ 23.50 lakh between May and September 2011. During enquiry, PD found that the families were ineligible and they were directed to refund the amount. Though ₹ seven lakh was refunded, no concrete steps were taken for recovery of balance amount of ₹ 16.50 lakh till the date of Audit (July 2014).

- Displaced Families (DFs) after receipt of R&R assistance should vacate submerged area. Due to non eviction of DFs in time, R&R assistance of ₹ 24.40 lakh was paid in 2012 to beneficiaries who had attained the eligible age of 30 years in the interim although R&R assistance had already been paid to their families in August 2009.

Government stated (October 2014) that the matter is under investigation.

2.1.8 Implementation of projects

Review of records on implementation of projects revealed instances of inflated estimates leading to quoting of higher rates, deficiencies in tendering process and excess payment to contractors as discussed in following paragraphs.

2.1.8.1 Execution of works with incorrect estimates leading to extra cost

Para 3.4.10 of OPWD code stipulates that estimates should be prepared in most economical manner. Works Department prepares SoR and all departments including DoWR are required to prepare estimates based on SoR. Scrutiny of analysis of rates of estimates of eight projects revealed that the rates specified in the SoR were not taken while preparing the estimates. The EEs had also included excess quantity of materials, higher lead for transportation of materials, involving extra expenditure of ₹ 148.70 crore as detailed in ***Appendix 2.1.2***.

Accepting factual position Government stated (November 2014) that specific approval from deviation from SoR/Analysis of Rates would be obtained from competent authority in future.

2.1.9 Deficiencies in tendering process

Scrutiny of records revealed that there was extra expenditure on account of various deficiencies in tendering process as discussed in following paragraphs.

2.1.9.1 Extra cost on retender

- For excavation of Telengiri Main Canal, CCE, Upper Kolab Project (UKP) invited online item rate bids for three reaches in double cover system through *e*-procurement in March 2012. Estimated cost of the work in these reaches was ₹ 23.51 crore. After receiving bids, Tender Committee cancelled (June 2012) technical bids on ground that combined evaluation criteria had not been incorporated in bid documents as per condition of 3 (C) of prequalification bid. Subsequently, CCE invited fresh bids in October 2012, after incorporating such criteria with revised estimated cost of ₹ 26.34 crore. Increase in cost was due to revision of SoR.

  Thus, failure of CCE, UKP to incorporate combined evaluation criteria in tender document in initial tender resulted in extra cost of ₹ 2.83 crore at the tender stage.

Government stated (October 2014) that the tenders were cancelled by tender committee and the extra cost was due to revision of estimates as per latest revised cost.

- For excavation of canals of three distributaries of left main canal of LIIP, the CE, LI & LS Irrigation Project invited online tender in September 2010, at an estimated cost of ₹ 15.23 crore. The tenders were cancelled by tender committee (March 2011) on ground of receipt of single bid in two cases and receipt of only two bids in one case. Fresh tenders were invited with revised estimated cost of ₹ 19.83 crore between November 2012 and November 2013 after delay of 19 to 31 months and the works were awarded at a cost of ₹ 18.94 crore. Thus, delay in finalisation of bid resulted in extra cost of ₹ 3.71 crore[18] due to revision of SoR.

Government stated (October 2014) that tenders were cancelled by tender committee for non acquisition of land and non production of original documents. But the reasons attributed for cancellation of tenders by the tender committee were single/two response as seen from Tender Committee meeting proceedings.

2.1.9.2 Extra cost on execution of Balance works

Excavation of left main canal from RD 29.01 km to RD 36 km of LIIP was awarded to a contractor at a cost of ₹ 15.83 crore in February 2009 for completion by August 2011. During execution, there were deviations in quantity of cement concrete, earth work and random rubble stone dry packing and this was mainly due to inadequate survey and investigation at initial stage. Due to this, contractor could not complete the work and his contract was closed in January 2012 after executing works valuing ₹ 18.48 crore. Balance works estimated to cost ₹ 27.16 crore was awarded to another contractor at a cost of ₹ 23.34 crore in March 2014, after delay of more than two years.

Had the works been awarded after detailed survey and investigation the cost of the work would have been ₹ 18.29 crore as per the agreement rate of original contract and the department could have avoided extra cost of ₹ 5.05 crore (₹ 23.34 crore - ₹ 18.29 crore).

Government stated (October 2014) that during inspection of higher authorities it was proposed to provide additional structures, accordingly balance work was awarded to another contractor.

2.1.9.3 Extra cost on award of works to Odisha Construction Corporation (OCC)

- Works of earth dam and spillway of LSI Project were awarded to OCC at their offered rates of ₹ 140.73 crore and ₹ 59.90 crore in December 2011 and April 2013 respectively. Estimates for works were prepared as per prevailing SoR with enhanced cost of labour and materials. As such the cost of materials such as stone, chips and sand should have matched with SoR rates.

[18] ₹ 18.94 crore - ₹ 15.23 crore.

Scrutiny of offered rates of OCC revealed that rates adopted by OCC for stone, chips and sand were more than departmental rates. Adoption of higher rates of materials than departmental rates by OCC and its acceptance by the department resulted in extra cost of ₹ 12.76 crore and extension of undue benefit to OCC.

Government stated (October 2014) that the work had been approved by tender committee on the basis of market rate. Justification for adoption of rates exceeding rates fixed by the Rate Board was, however, not on record.

- For fabrication, erection and transportation of radial gates of Spillway of Telingiri Irrigation Project, OCC offered rate (May 2010) for ₹ 20.38 crore, on basis of request (February 2010) of CCE, UKP. As offered rate was inclusive of drawing and design charges, same was not accepted by CCE. Subsequently, OCC offered ₹ 22.88 crore in February 2012 excluding drawing and design charges and same was accepted. Acceptance of tender at a subsequent date resulted in extra cost of ₹ 2.50 crore.

Government stated (October 2014) that drawing and design charges were deleted resulting in savings to Government. Justification for higher cost involved on cancellation of original offer was, however, not furnished.

- Work of supply, fabrication, erection and transportation of radial gates for KIP and Anandpur Barrage Project was awarded to OCC at their offered rate in March 2010. Work involved transportation of spillway gates weighing 8,524 MT. OCC adopted hire charges for crane at ₹ 3,200 per hour in their offered rate as against ₹ 825 per hour provided in SoR and the same was accepted by Department without negotiation Thus, adoption of excess hire charges than SoR rate resulted in extra cost of ₹ 2.40 crore.

Government stated (October 2014) that the rate ₹ 825 per hour towards transportation was as per SoR. But the rate ₹ 3,200 per hour was derived realistically. However, justification for adoption of hire charges exceeding rates fixed by the Rate Board was not on record.

- For fabrication, erection, design, supply and transportation of radial gates for spillway of KIP and AB Project, Department accepted offered rate of OCC for ₹ 149.72 crore in March 2010 for completion by March 2013. Offered rate of OCC was inclusive of drawing and design charges at one *per cent.* Since offered rate of OCC in respect of Telengiri Irrigation Project was not accepted as it included drawing and design charges, acceptance of the above offer of OCC without exclusion of drawing and design charges resulted in excess payment of ₹ 1.72 crore to OCC including 15 *per cent* overhead charges.

Government stated that drawing and design charges was included in the offer which was approved by the tender committee. But no justification for inclusion of drawing and design charges was furnished.

- DoWR allotted 10 works to OCC between November 2001 and March 2012 for ₹ 443.37 crore and paid interest free works advance of ₹ 180.76 crore between March 2005 and March 2013. But OCC could not complete the work and executed works valuing ₹ 56 crore and submitted adjustment

bills and balance amount of ₹ 124.76 crore remained unadjusted with OCC (March 2014).

Government stated (October 2014) that advance to OCC is being regulated as per guidelines of DoWR. But advance amount paid to OCC was not being utilised as per time schedule and works were also not completed.

2.1.10 Inadmissible payment of escalation charges

For payment of escalation, percentages of different components were mentioned in agreement and totals of all components should be 100 *per cent*. Escalation payments were made to contractors as per above provisions. In Anandpur Barrage Division there was provision for payment of escalation on different components such as cement and steel at 57 *per cent*, other materials 23 *per cent*, labour 12 *per cent* and POL at eight *per cent*.

Scrutiny of records revealed that percentage of cement and steel adopted by EE was at 68 against 57 as provided in the agreement. As such EE had erroneously calculated percentages of different components for payment of escalation.

Thus, fixation of percentage of cement and steel at 68 *per cent* against 57 *per cent* provided in the agreement resulted in undue benefit of ₹ 3.59 crore to contractor.

Government stated (October 2014) that fairly accurate percentage was mentioned in the agreement after due approval. But this did not seem to be the case for steel and cement.

2.1.11 Excess payment to contractor

(i) Technical specification forming part of agreements stipulated that excavation of compacted earth in vertical chimney shall be done mechanically. For construction of earth dam of four projects[19] in respect of excavation for vertical chimney, manual means was adopted in the analysis of rates.

Scrutiny of records revealed that manual means of excavation was more expensive compared to mechanical means. The contractor adopted mechanical means for excavation of vertical chimney as per technical specification which was confirmed by EE.

Excavation of vertical chimney by mechanical means

Thus, unwarranted adoption of manual means in estimates despite provision of execution of work through mechanical means in the agreement led to extra cost of ₹ 1.12 crore towards excavation of 5.36 lakh cum of earth and extension of undue benefit to the contractors.

[19] SIP, KIP, Rukura and Ret Irrigation Project.

Government stated (October 2014) that as per BOQ for the purpose of vertical chimney, the earth work was to be excavated either manually or mechanically.

(ii) Construction of four works[20] was awarded between February 2009 and December 2010 for ₹ 102.34 crore. Agreements were executed at lower tender premium ranging between 4.59 and 22.22 *per cent* of estimated cost.

Scrutiny of records revealed that during execution of works, extra items were found for which EEs entered into supplementary agreements at current SoR as per agreement condition. Had these items been included in agreements at initial stage and works awarded after detailed survey and investigation, extra items for ₹ 12.65 crore could have been included in the agreements and executed at lesser rate of ₹ 10.92 crore as per agreement rate. Thus, execution of works through supplementary agreements resulted in extra expenditure of ₹ 1.73 crore (₹ 12.65 crore - ₹ 10.92 crore).

Government stated (October 2014) that estimates were prepared based on the trial pit data. But during execution the classification was altered.

2.1.12 Provision of excess lead and transportation charges

OPWD Code stipulates execution of works in economical manner which warrants adoption of shortest and direct routes for collection of construction materials and also for disposal of unusable excavated materials at nearest available dumping yard. Instances of non-adherence of the above codal provisions and resultant extra expenditure are given in succeeding paragraphs;

(i) For construction of dam/canals of three projects[21], estimates provided for 34.84 lakh cum of earth to be brought from nearby burrow areas with distance ranging between five and 10 km. It was, however, noticed from estimates of other reaches of the project that burrow areas were available within a distance ranging between one and five km. Despite availability of burrow area within one to five km the department provided excess lead ranging between four and five km. Thus, provision of excess lead not only inflated the estimate of projects by ₹ 18.37 crore towards transportation of 34.84 lakh cum but also undue financial benefit of ₹ 13.09 crore had already been passed on to contractors towards transportation of 31.09 lakh cum of burrow earth.

(ii) For construction of dams/spillways of three projects[22] estimates provided for excavation and disposal of 11.46 lakh cum of excavated earth obtained from excavation of spillway and cut off trench of earth dam in the spoil bank/dumping yard at a distance ranging between two and three km. From estimates for other works of Division it was noticed that spoil bank was available within a distance of one and two km. Provision of excessive lead led to payment of excess transportation charges ranging between ₹ 13.49 and ₹ 22.97 per cum. Thus, provision of excess lead for disposal of excavated

20 Kanupur Canal RD.39,450 to 50,790, Bongamunda Branch Canal, LI left Canal from RD.29 km to RD.36 km and Rukura Earth Dam.
21 SIP, Rukura and LIIP.
22 KIP, Ret and Rukura.

earth obtained from excavation of spillway and cut off trench of earth dam in the estimates resulted in extra cost of ₹ 1.84 crore towards disposal of 11.46 lakh cum of excavated earth.

(iii) As per estimates, for construction of spillway/canal lining/ service road of three projects[23], 8.50 lakh cum of stone/chips/sand were required to be transported from distances ranging between 29 km and 105 km. It was noticed from the adjoining reaches of the projects that the above minor minerals were available within distance ranging from five to 42 km.

Thus, adoption of excess lead not only inflated the estimated cost by ₹ 11.15 crore for transportation of 8.50 lakh cum of materials but also led to undue benefit of ₹ 11.60 crore to contractors including tender premium**,** out of which an amount of ₹ 6.40 crore had already been passed on to them towards transportation of 4.07 lakh cum stone/chips/sand.

Government stated (November 2014) that identification and correctness of lead provided would be rechecked.

2.1.13 Avoidable expenditure

During review of execution of projects, instances of avoidable expenditure were also noticed. Details are given in following paragraphs.

(i) As per conditions of contract, earth and other materials obtained out of canal excavation were to be utilised for construction of canal embankments. After utilising available materials on site, earth from burrow area could be brought for completing balance works. In three[24] projects, 15 works were awarded to eight contractors for excavation of canals**.** It was, however, noticed that against the requirement of 53.27 lakh cum, Department burrowed 49.53 lakh cum and utilised 3.74 lakh cum of the excavated earth against availability of 19.30 lakh cum and the balance quantity of 15.56 lakh cum remained unutilised. Thus, non utilisation of 15.56 lakh cum of available earth obtained from canal excavation resulted in avoidable expenditure of ₹ 12.76 crore. Against this, contractors executed 18.41 lakh cum and utilised 3.74 lakh cum and balance quantity of 14.67 lakh cum remained unutilised resulting in extra expenditure of ₹ 11.80 crore.

Government stated (October 2014) that normally the cutting surplus suitable earth is utilised for construction of embankment. Unsuitable cutting surplus earth was dumped in the spoil bank as per suggestions of quality control authority. But no quality control report showing unsuitability for utilisation in embankment was shown to audit.

(ii) Estimate for AB Project provided requirement of 80 kg of steel per cum of CCM_{20}[25] and 110 kg per cum of CCM_{25}[26].Contractor had executed 1.61 lakh cum of CCM_{20} and 0.01 lakh cum of CCM_{25}. As per provision made in estimate, total requirement of steel was 1.30 lakh quintals. As against this,

23 KIP, SIP and Ret.
24 LIIP, KIP and AB Project.
25 Cement concrete of strength $M_{20.}$
26 Cement concrete of strength $M_{25.}$

department paid for 1.47 lakh quintals. This resulted in extra expenditure of ₹ 9.55 crore.[27]

Government stated (October 2014) that the quantities provided in the estimate were not final. However, audit noticed that excess payment was not approved by competent authority.

2.1.14 Monitoring and internal control

In order to strengthen the monitoring mechanism of AIBP projects and other selected projects with the objective of expeditious completion of ongoing major and medium irrigation projects, a State Level Project Monitoring Committee was formed in June 2005 under the Chairmanship of the Secretary, Department of Water Resources.

The terms of reference of the committee were as follows:

(i) Committee will review

- implementation of programme vis-à-vis the progress in respect of different components of projects i.e. physical, financial etc.
- creation of deployment of technical and supporting posts, etc. as per the requirement in the concerned projects.

(ii) The committee will advise/recommend to the Government to take quick decision on different matter to remove bottlenecks. The recommendation of the committee on interdepartmental issues will be placed before the State Level Committee on Interdepartmental problem concerning Irrigation Projects. The committee will meet quarterly and render suitable advice to the Project Level Committee (PLC) and send its report to the Technical Committee at the national level.

(iii) The committee or a sub-committee to be authorised by the committee will visit each project at least twice a year.

(iv) The committee will review any other matter as felt important from time to time.

Scrutiny of the records revealed that SLC had not visited any project site. As per guidelines, committee was to meet twenty times (2009-14) to render advice to PLC and send reports to Technical Committee at National level. But it was noticed that only one meeting was held (October 2011) by the Committee. However, no action was taken by DoWR on the recommendation made by the Committee.

Government accepted (October 2014) that State Level Project Monitoring Committee had not visited the projects and not met quarterly.

2.1.14.1 Inaccurate reporting

As per information furnished by Chief Engineer (MI), 25 projects were shown as completed. Further, 23 projects were also shown as completed in the

27 {147112.148 - (161077.774 x 0.80+1379.462 x 1.10)} x (₹ 5708.40 per quintal).

Annual Report of 2012-13 of Department. However, as per the records of the divisional offices, only three projects were completed. This indicates mismatch of the projects shown as completed and projects actually completed.

While accepting factual position, Government stated (November 2014) that erroneous completion of 25 projects had been shown in the Annual Report.

2.1.15 Conclusion

Performance Audit revealed that though various deficiencies in implementation of the scheme were pointed out earlier effective steps and adequate remedial measures were not taken by the Department. As a result, GoI's objective of accelerating execution and completion of irrigation projects remain largely unfulfilled due to delay in land acquisition, laxity in clearing of project areas even after payment of R&R assistance, etc. Efficiency in expenditure by Department needed improvement as percentage of unused funds ranged from 13 to 27.

Delay and defects in design of various components of projects, preparation of estimates in deviation from SoR and deficiencies in tendering process had already escalated cost of projects. Contract management was ineffective in cases resulting in excess payment to contractors.

Delay in execution of projects deprived farmers of the benefits envisaged. Instances of calculated BCR not holding good rendered viability of projects questionable.

Monitoring and internal controls were inadequate since SLC or any sub-committee appointed by the SLC had not visited any project site. The time and cost overrun of projects indicate lack of effective monitoring.

2.1.16 Recommendations

- May consider adopting standard parameters transparently for calculation of BCR for the projects.

- Meetings of the SLC and project site visits etc. may be held regularly to ensure timely completion of the projects through monitoring and evaluation of the projects.

Department of Forest and Environment

Environment Audit on Air and Water Pollution in Odisha

Executive Summary

Among the environmental degradation, air and water pollution is of global significance. Air Pollution affects human life, flora and fauna, climatic changes to a great extent. Due to industrialisation and urbanisation, environment get contaminated, threatened, damaged and destroyed, which has a direct impact on quality of life of all living organisms.

It was observed that Comprehensive Environmental Pollution Index scores remained at critical level at Angul-Talcher, Ib-Valley and Jharsuguda. Operation of Stone Crusher Units without Consent to Establish (CTE)/ Consent to Operate (CTO), delay in upgradation of Pollution Control Equipment (PCE) by thermal power plants (TPPs) to achieve the desired stack emission norm were observed. State Transport Authority also failed to check vehicular pollution in the State.

There were deficiencies in monitoring of water quality. Untreated sewage of Urban Local Bodies (ULBs) of State were being discharged to nearby water bodies accompanied with untreated effluents of industrial units due to absence of Effluent Treatment Plants (ETPs). Water samples of three tributaries of Mahanadi near Cuttack and Bhubaneswar were checked in State Pollution Control Board (SPCB) laboratory and showed non compliance of norms in respect of Bio-chemical Oxygen Demand (BOD), Dissolved Oxygen (DO) and Total Coliform (TC). This apart, relaxation of norms in consent administration, non implementation of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Online Emission Monitoring Systems (OEMS) indicated areas for improvement by SPCB. Besides, absence of complete database of all sources of pollution, their timely monitoring and issue of conditional consents have resulted in need to put in far more concerted efforts.

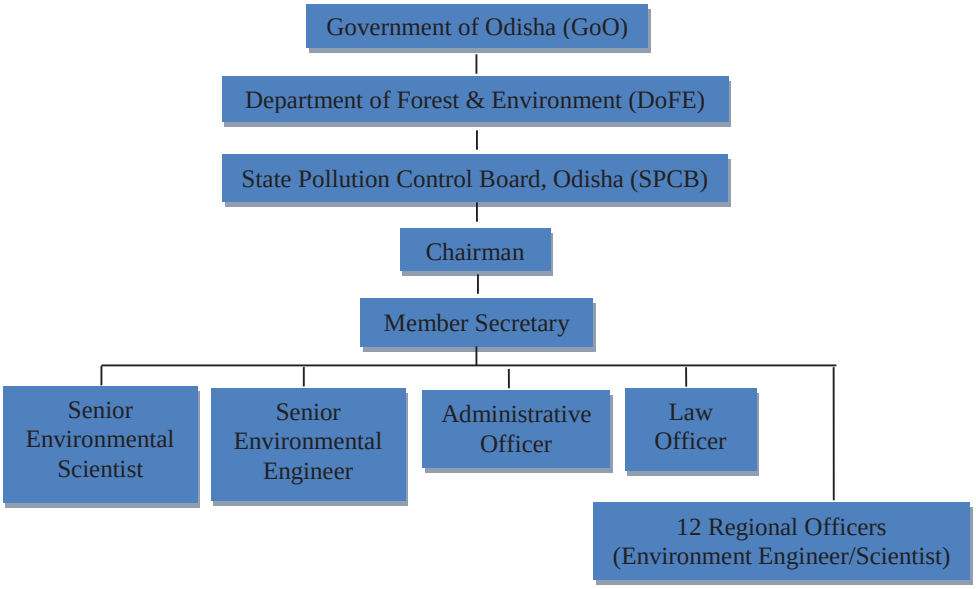
2.2 Introduction

National Environment Policy (NEP) 2006 expressed national commitment to a clean environment. Principal objectives of NEP include conservation of critical environmental resources and integration of environmental concerns into policies and projects for economic and social development. Further, one of the principles of this policy clearly states that environmental protection shall form an integral part of the developmental process to achieve sustainable development and cannot be considered in isolation.

The Ministry of Environment and Forests (MoEF) is the nodal agency in the administrative structure of the Government of India (GoI) for planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. In Odisha, State Pollution Control Board (SPCB) was constituted (15 July 1983) in pursuance of sub-section (1) of Section 4 of the Water (Prevention and Control of Pollution) Act, 1974 to implement

environment programmes under administrative control of Department of Forest and Environment (DoFE).

Organisational structure for regulation of environment in Odisha is outlined below:



2.2.1 Role of State Pollution Control Board

SPCB is mainly concerned with monitoring of water quality deterioration and responsible for prevention and control of pollution under Water Act, 1974. SPCB is entrusted with the responsibility of implementation of environmental laws including guidelines and instructions issued by MoEF and Central Pollution Control Board (CPCB) from time to time. SPCB monitors various industries/organisations/units through Consent Administration (CA) i.e. issue of Consent to Establish (CTE) and Consent to Operate (CTO) through its Head Office (HO) as well as its 12 Regional Offices[28] (ROs). Industries/units which run under CA were grouped into three categories i.e. Red, Orange and Green as per their pollution emission level. Red categories, which include 17 category of industries[29], are highly polluting industries, Orange categories are less polluting and Green category industries are low polluting industries. HO monitors 17 category industries, sponge iron plants, mines and industries having investment of more than ₹ 50 crore and ROs monitor industries having investment of less than ₹ 50 crore.

2.2.2 Rationale of selection of performance audit

With regard to air pollution, Odisha has been identified[30] as one of twenty-four (24) important hot spots of industrial pollution in the Country as average

28 Angul, Balasore, Bhubaneswar, Berhampur, Cuttack, Jharsuguda, Kalinga Nagar, Keonjhar, Paradip, Rourkela, Rayagada and Sambalpur.

29 1. Aluminium Smelter, 2. Cement, 3. Chlor Alkali, 4. Copper smelter, 5. Distillery including fermentation industry, 6. Dyes and Dye intermediates, 7. Fertilizer, 8. Iron and Steel, 9. Oil Refinery, 10. Pesticides, 11. Petrochemicals, 12. Pharmaceuticals, 13. Pulp and Paper, 14. Sugar, 15. Tanneries, 16. Thermal Power Plants and 17. Zinc Smelter.

30 News letter published by International Centre for Environment Audit and Sustainable Development (iCED) for quarter ending December 2013.

concentration of Particulate Matter[31] (PM) in the area is much higher in comparison to both World Health Organisation (WHO) and Indian Standards. Similarly, with regard to water pollution, discharge of effluents from industries, agricultural fields including municipal discharges has contaminated rivers of State causing serious health issues for human beings as well as posing threat to aquatic animals.

Thus, it was considered relevant to examine provisions of various environmental laws along with role of SPCB in prevention, control and abatement of air and water pollution in Odisha.

2.2.3 Audit objectives

Objectives of this Performance Audit were to assess whether:

- Adequate measures were taken for compliance to Environmental Laws for checking Water and Air Pollution;
- Proper Management Information System (MIS) was developed for evaluating impact of pollution on environment;
- Effective monitoring mechanism was framed for timely identification and remediation of sources of pollution; and
- Infrastructure and funding was adequate.

2.2.4 Audit criteria

Audit criteria adopted for assessing achievement of audit objectives were drawn from the following:

- Acts and Rules[32] relating to prevention, control or abatement of air and water pollution;
- National/State Water Policies framed by GoI/GoO;
- National Environment Policy, 2006;
- National Green Tribunal Act, 2010;
- Directions issued by CPCB on air and water pollution;
- Scrutiny of minutes and agenda papers of meetings of SPCB, examination of files relating to consent administration;
- Examination of records of SPCB and various Departments namely DoFE, DoWR, Transport Department (TD), Agriculture Department (AD) and Housing and Urban Development Department (H&UDD);
- Media reports on air and water pollution;

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31 Particulate Matter is one of the air pollutant along with other sources of pollutants like Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Ozone (O_3), Lead (P_b), Carbon Monoxide (CO), Ammonia(NH_3), Benzene(C_6H_6), Benzo(a) Pyrene (B_aP), Arsenic(As) and Nickel (Ni) for which standards has been fixed by the Government of India.

32 The Water (PCP) Act, 1974, The Air (PCP) Act, 1981, The Water (PCP) Cess, Act, 1977 and The Environment (Protection) Act, 1986.

- Study Reports prepared by CPCB/SPCB and other technical institutions like Indian Institute of Technology (IIT), National Environmental Engineering Research Institute (NEERI), etc.

2.2.5 Scope and methodology of audit

Environment audit of Air and Water pollution in Odisha was conducted during May to August 2014 covering overall functioning of SPCB during 2009-14 including its four[33] out of 12 ROs. Further, random sampling was employed to select red and orange category industries under selected four ROs including 100 *per cent* selection of industries falling under 17 category as well as having investment of more than ₹ 50 crore for scrutiny of records. Accordingly, 36 and 74 industries were selected for scrutiny of records at four ROs and SPCB respectively. Audit methodology included collection of data through examination of records, response to questionnaires and audit queries, joint physical verification alongwith departmental representatives and collection of water samples including photographic evidence.

Audit objectives, Audit criteria, scope and methodology were discussed with Principal Secretary to Government, DoFE and representatives from other departments namely Textiles, Industries, Energy, Water Resources, Transport and Steel & Mines during 'Entry Conference' held on 25 April 2014.

Subsequently, audit findings were reported to the State Government and SPCB in September 2014 and discussed in an Exit Conference held in November 2014. Views of the Government have been considered while finalising this report.

Audit findings

Air pollution

2.2.6 Assessment of air pollution

2.2.6.1 Identification of critical/severe polluted industrial clusters by CPCB

CPCB in association with IIT, New Delhi carried out (December 2009) environmental assessment of industrial clusters across the country based on Comprehensive Environmental Pollution Index (CEPI). As per CEPI, industrial clusters with score above 70 were identified as critically polluted and those between 60 and 70 were severely polluted. Total 88 industrial clusters were identified in India out of which 43 were critically polluted areas (CPAs) and 32 severely polluted. In Odisha two industrial clusters i.e. Angul-Talcher and Ib Valley-Jharsuguda were among 43 CPAs. MoEF instructed (January 2010) CPCB along with SPCB to submit a time bound Action Plan (AP) for improvement of the environmental quality in these identified 43 clusters/areas during which restriction was imposed on all projects requiring environmental clearance (EC).

Accordingly, SPCB prepared (December 2010) APs for abatement of pollution in these two CPAs and on approval of the same by CPCB, moratorium on

[33] Angul, Jharsuguda, Keonjhar and Paradip.

them was lifted (March-July 2011). However, SPCB failed to ensure strict adherence to deadlines fixed in APs for undertaking pollution control measures in both the CPAs as discussed under para 2.2.6.2, 2.2.7.6, 2.2.7.8, and 2.2.7.12. During subsequent monitoring (February-April 2013) of 43 CPAs, CPCB also indicated that CEPI scores in respect of eight CPAs including Jharsuguda area were increasing and accordingly moratorium was imposed (September 2013) on these CPAs till further orders. MoEF directed (June 2014) CPCB to reassess CEPI score in all the 43 CPAs in order to take decision on reimposing moratorium on any such CPAs.

2.2.6.2 Issue of CTO by SPCB without ensuring adherence to the prescribed PM emission norms

MoEF launched (March 2003) Charter on Corporate Responsibility for Environmental Protection (CREP) which enlisted action points for pollution control in Thermal Power Plants (TPPs). As per CREP, all TPPs were to reduce PM emissions to 100 mg/Nm^3 by 31 December 2005 through installation of pollution control equipment. Further, as per APs prepared (December 2010) by SPCB for Angul-Talcher as well as Ib Valley-Jharsuguda areas, PM emission standard for TPPs located in these areas was revised to 50 mg/Nm^3 to be achieved by 31 March 2012. SPCB did not issue timely directions to achieve the prescribed norms in following cases.

- SPCB granted (April 2007) CTO to National Aluminium Company Limited (NALCO)[34] with a condition to achieve emission norm of 150 mg/Nm^3even though it was to achieve 100 mg/Nm^3 as prescribed under CREP. This CTO was valid upto 31 March 2011. Subsequently, SPCB while granting CTOs[35]during 2013-14 fixed emission norm ranging from 80 to 100 mg/Nm^3against AP standard of 50 mg/Nm^3. However, audit observed that actual stack emission from units 1 to 8 ranged from 114 to 576 mg/Nm^3during 2009-12 and 54 to 274 mg/Nm^3during 2012-14 against prescribed standard of CREP (100 mg/Nm^3) and AP (50 mg/Nm^3) respectively. It was also observed that NALCO operated all the units without CTO for two years (April 2011 to April 2013).

  Government stated (October 2014) that CREP guidelines were meant for only voluntary compliance by corporate houses and target date fixed under AP was too ambitious considering time available for such retrofitting. But MoEF had launched CREP guidelines for highly polluting industries with the purpose to go beyond compliance of regulatory norms in order to ensure clean and safe environment through its implementation under a mutually agreed time targeted programme. Further, AP was prepared by SPCB as per instruction (January 2010) of MoEF to improve the environment quality by ensuring achievement of pollution control measures by concerned entities within target date specified in it.

34 NALCO is an aluminium producing Government Company located in Angul district of Odisha having 10 Captive Power Plants (CPPs) of 120 MW each.

35 CTO dated 11.04.2013 valid upto 30.09.2013, CTO dated 28.09.2013 valid upto 31.03.2014 and CTO dated 04.04.2014 valid upto 30.06.2014.

- SPCB granted CTOs[36] valid upto 31 March 2011 in favour of Talcher Thermal Power Station (TTPS)[37]with condition to achieve emission norm of 150 mg/Nm^{3}even though it was to achieve 100 mg/Nm^3 as prescribed under CREP. Subsequently, SPCB while granting CTOs[38] during 2012-14 fixed emission norm of 100 mg/Nm^3 against AP standard of 50 mg/Nm^3. However, audit observed that actual emission ranged from108 to 291 mg/Nm^3 during 2009-12 and 64 to 291 mg/Nm^3 during 2012-14 against prescribed standard of CREP (100 mg/Nm^3) and AP (50 mg/Nm^3) respectively. Further, TTPS operated unit five and six from 01 April 2009 to 09 February 2010 and unit one to six from 01 April 2011 to 29 May 2012 without obtaining CTO from SPCB.

  Government stated (October 2014) that excess emission from unit one to four occurred due to non availability of good quality coal with low ash content, continuous operation of the plant at its rated capacity and ageing of units leading to overloading of dust on PCEs, thus affecting their performance. It also stated that retrofitting of unit five and six will be completed by December 2015 to achieve emission norm of 50 mg/Nm^3. But, considering the above reasons for higher emission, SPCB should have ensured timely upgradation of PCEs attached to unit one to four. Further, retrofitting of PCEs of unit five and six could not be completed within target date (31 March 2012).

- Odisha Power Generation Corporation Limited (OPGC)[39] being located in Jharsuguda was to achieve emission norm of 50 mg/Nm^3 by 31 March 2012 as per AP prepared (December 2010) by SPCB for Ib Valley Jharsuguda area. However, SPCB granted CTO to OPGC with condition to achieve emission standard of 100 mg/Nm^3. Audit observed that actual emission from TPPs of OPGC ranged between 92 to 140 mg/Nm^3 during 2012-14.

  Government stated (October 2014) that upgradation/ retrofitting of PCEs in existing plants was a huge job which could not be completed within target date. But audit noted that timely compliance by OPGC to achieve emission norm of 50 mg/Nm^3 was not achieved as it started upgradation work of respective PCEs after delay of two years and three years for unit one (August 2013) and unit two (July 2014) respectively from date of issue (February 2011) of such direction by SPCB.

2.2.6.3 Lack of uniformity in fixation of targets of emission standards

Bhushan Power and Steel Limited (BPSL) at Sambalpur and Bhushan Steel Limited (BSL) at Dhenkanal, which are integrated steel plants, obtained CTOs upto 30 June 2014 from SPCB. Both steel plants had production capacity of 500 tonnes of sponge iron per day. However, different emission standards

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36 Unit I to IV – CTO dated 12.01.2007 valid upto 31.03.2011, Unit V to VI – CTO dated 07.07.2008 valid upto 31.03.2009 and CTO dated 10.02.2010 valid up to 31.03.2011.

37 TTPS, owned by NTPC Limited (a Government Company), located in Angul district of Odisha has 6 units of Thermal Power Plants (TPPs) with total capacity of 460 MW.

38 Unit 1 to 6 – CTO dated 30.05.2012 valid upto 31.03.2013, CTO dated 25.04.2013 valid upto 31.03.2014, CTO dated 31.03.2014 valid upto 30.06.2014.

39 OPGC located in Jharsuguda District of Odisha is a Government Company and has 2 units of TPP of 210 MW each.

were fixed for BPSL (50 mg/Nm^3) and BSL (100 mg/Nm^3) in respect of PCEs attached to power plant. Subsequently, SPCB issued CTO (June 2014) to BSL with emission standard of 100 mg/Nm^3 which was valid upto 31 March 2015.

Government stated (October 2014) that standard for PM emission from DRI kiln stacks could not be changed in the consent order of BSL due to oversight.

2.2.6.4 Air pollution due to non raising of stack height

As per CPCB recommendations (July 2007), minimum stack height should be 20 metre in case of cashew seed processing industries for better dispersion of pollutants into atmosphere resulting in minimum possible ground level concentrations. However, scrutiny of records in respect of one cashew processing industry under Keonjhar RO revealed that stack height of the unit was 11 metre from ground level.

While accepting the fact, Government replied (October 2014) that necessary directions have been issued by SPCB to the unit to raise stack height to 20 metre by 15 December 2014.

2.2.6.5 Ineffective Monitoring of vehicular pollution by State Transport Authority (STA)

Section 20 of Air Prevention and Control of Pollution (PCP) Act, 1981 prescribed standards for emission from automobiles. For plying of vehicles on road, the Central Motor Vehicle Rules, 1989 U/s 115 (7) and 116 provides for a valid "Pollution Under Control" (PUC) certificate to be issued by an agency authorised for this purpose by State Government every six months and checks to be exercised by Police/MV Department.

As of March 2013, 42.23 lakh transport and non transport vehicles plied in the State. Vehicles running more than 15 years were considered vintage and more polluting. Such vehicles constituted about 20 *per cent* of total number of vehicles in the State as on 31 March 2013. As on 31 March 2014, STA managed pollution testing by 73 sets of Pollution Testing Equipment (PTEs) deployed in 49 Regional Transport Officers (RTOs)/check gates along with 24 firms/individuals for checking of pollution standard of vehicles and issue of PUCs. This apart, 87 private testing centres (PTCs) were also authorised by STA for this purpose. During audit, it was noticed that eight[40] out of 31 RTOs had no PTC provision and 16 check gates[41] were yet to receive PTEs. The department had neither fixed any targets for checking of pollution standards of vehicles nor maintained any records for issue of PUC in 49 RTOs/Check gates and 24 firms/individuals. The number of PUC certificates issued by private authorised agencies was also not monitored by STA.

Government stated (October 2014) that SPCB imparts training on vehicular emission monitoring and noise monitoring to the police personnel as and when required and also participates as technical expert in procurement process of the STA for such monitoring instruments.

40 Boudh, Deogarh, Malkangiri, Rairangpur, Jajpur, Talcher, Bhubaneswar-II and Bhanjanagar.

41 Chikiti Balarampur, Surula, Upperjonk, Bileipada, Nalda, Champua, Borriguma, Chatwa, Raighar, Bahalda, Chakasulipada, Samardara,Taparia, Taparia(A), Telijhar and Laxmidunguri.

Water Pollution

2.2.7. Assessment of water pollution

Basic objective of Water (PCP) Act, 1974 is to maintain and restore wholesomeness of national aquatic resources by prevention and control of pollution. A summary of use based classification system developed by CPCB is given in ***Appendix -2.2.1***. Audit observed following.

2.2.7.1 National Water Quality Monitoring Programme (NWMP)

CPCB established a network of monitoring stations on aquatic resources across the country since 1977-78 under Global Environmental Monitoring System (GEMS). SPCB monitors water quality of nine[42] major river basins in Odisha through 92 water quality monitoring stations[43] (WQMS) as detailed in ***Appendix -2.2.2***.

Audit observed deficiencies in respect of monitoring of water quality of above locations as discussed in following paragraphs.

2.2.7.2 Insufficient monitoring stations

Out of eleven river basins, SPCB carried out water quality monitoring of nine. SPCB did not monitor water quality of tributary rivers and streams. Though Water Quality Monitoring Guidelines of CPCB envisaged additional downstream stations to assess extent of influence of an outfall and locate point of recovery, audit observed that distance between monitoring locations was upto 144 km (Joda to Anandpur in river Baitarani) and 80 km (Bonaigarh to Rengali along river Brahmani). As there are major Iron and Manganese deposits of State in Joda to Anandpur and influence of industrial activities like Rourkela Steel Plant and domestic waste water discharge of Rourkela in patch of river Bonaigarh to Rengali, there was requirement of additional stations, as per above guidelines. Considering insufficiency of existing stations, CPCB asked (March 2011) SPCB to submit proposal for additional 50 WQMSs by SPCB. However, no such proposal was submitted by SPCB between 2011 and till date of audit against the additional 50 stations, reasons for which were not available on record.

Government Stated (October 2014) that CPCB sanctioned (January 2009) only 25 out of 42 stations against the proposals submitted in December 2007. Since proposals of other 17 stations were not considered, proposals for additional stations were not submitted during 2011.

2.2.7.3 Non monitoring of water quality of forty seven major ponds

It was observed that though SPCB identified (1993) 50 major ponds in the State for assessment of water quality on the basis of their use and importance, water quality of only three ponds (two in Puri and one in Bhubaneswar) was monitored. Hence, as of date (July 2014) monitoring of water quality of the rest could not be taken up.

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42 Mahanadi, Brahmani, Baitarani, Rushikulya, Nagavali, Subarnarekha, Budhabalanga, Kolab and Vansadhara.

43 78 stations under National Water Monitoring Programme (NWMP) and 14 under State Water Monitoring Programme (SWMP).

Government stated (October 2014) that considering importance as well as size, water quality monitoring of above three ponds is being undertaken.

2.2.7.4 Functioning of Odisha Wetland Development Authority

GoI operationalised (1985-86) National Wetland Conservation Programme (NWCP) in collaboration with concerned State Government. Under NWCP, conservation and management of wetlands is primary responsibility of the States/UTs, who are custodians of the area. After identification of wetlands under the programme, State/UTs are required to submit long term comprehensive Management Action Plans (MAPs) for a period of three -five years, preferably five years, coinciding with five year plan period of GoI.

Odisha Wetland Development Authority (OWDA) was constituted (September 2010) under Societies Registration Act 1980 to facilitate conservation and management of wetland of State. Objectives of OWDA include catchment area treatment, protection measures, weed control and pollution abatement. As per information furnished (August 2014) by DoFE, though OWDA had prepared brief of MAPs in respect of all identified[44] wetlands, no detailed study for abatement of pollution was done till date as envisaged in NWCP guidelines to take intensive conservation measures.

2.2.7.5 Pollution in River Brahmani

Brahmani, second major river in Odisha, is formed by combined waters of South Koel and Sankh rivers at Vedvyasa near Rourkela in Sundargarh district. The river with a basin area of 22,516 Sq. Km. has become life line of 51.11 lakh population covering 461 km in nine districts[45] of State. It has 14 tributaries[46]and a dependable water resource of 14,011 million M^3. Major towns located on the bank of Brahmani river are Rourkela, Angul and Talcher.

As per AP, Talcher town generated effluent of about 10 Million Litre per Day (MLD). Further, AP fixed 31 December 2012 as target date for completion of Sewerage Treatment Plant (STP) for Talcher town. But, same was not completed till date. Untreated sewage of Talcher Municipality discharged to river Brahmani included excess quantity of suspended solids of 160 mg/l (Standard 100 mg/l) and BOD 52 mg/l (Standard 30 mg/l). SPCB issued show cause notice (SCN) during May 2011 to Executive Officer, Talcher Municipality.

Government stated (October 2014) that letters had been issued (May 2012/June 2013) to Talcher Municipality to take appropriate remedial measures to minimise pollution level of river Brahmani. But inspite of that, no such measures have been adopted by Talcher Municipality till date (November 2014).

2.2.7.6 Delay in upgradation of individual ETP in respect of chromite mines

CPCB instructed (January 2008) SPCB to submit its views on pollution due to chromite mining in Sukinda valley area. Accordingly, SPCB conducted

44 Chilka, Kuanria, Kanjia, Daha and Ansupa.
45 Sundergarh, Deogarh, Sambalpur, Angul, Keonjhar, Dhenkanal, Jajpur, Kendrapara and Cuttack.
46 Koel, Kuradhi, Mankara, Samakol, Ramlala, Karo, Sankh, Rukura, Gohira, Tikira, Singdajhor, Nigra, Barjor and Nandira.

(January 2008) a study and identified improper surface runoff management from overburden areas and other areas of mines containing Hexavalent Chromium (Cr^{+6}) and improper operation of ETPs in said area. SPCB engaged (September 2010) IIT, Kharagpur to carry out a feasibility study on establishment of ETP in Sukinda valley. Based on recommendations (January 2012) of IIT, SPCB directed (March 2012) all chromite mine owners to submit time bound AP for upgradation of their individual ETPs. Accordingly, nine out of 11 working chromite mine owners agreed (May 2013) to upgrade their ETPs during period ranging from September 2013 to June 2014. However, only four out of nine have done so till date (September 2014).

Analysis report of SPCB revealed (April 2014) that presence of Cr^{+6} at ETP outlets of nine working mines, surface water of Dhamsala Nallah and ground water of Sukinda Valley area ranged between 0.002 to 0.01 mg/l, 0.05 mg/l and 0.01 to 0.304 mg/l respectively against prescribed standard of 0.001 mg/l.

Government stated (October 2014) that upgradation of ETPs in respect of balance five mines is expected between December 2014 and September 2015.

2.2.7.7 Pollution of Ib River

Jharsuguda and Brajaraj Nagar towns are situated near river Ib, a tributary of river Mahanadi. This area was one of Critically Polluted Industrial Clusters (CPIC) of Odisha. SPCB in AP estimated generation of sewage of 10 MLD and eight MLD respectively and discharge of untreated sewage of these Municipalities as one of the factors for pollution of Ib river. Accordingly, target date of 31 December 2012 was fixed for construction of sewerage line and STP. However, audit observed that the same was not taken up till date of audit.

While accepting the fact, RO, Jharsuguda stated that Odisha Water Supply and Sewerage Board (OWSSB) is preparing DPR for "Decentralised Sewerage System" and "Comprehensive Storm Water Drainage System".

2.2.7.8 Pollution of river Nagabali

As per NWP 2007, effluents should be treated to acceptable levels and standards before discharging them into natural streams. Minimum flow should be ensured in perennial streams for maintaining ecology and social considerations. Principle of polluter pays should be followed in management of polluted water.

Audit observed that one paper industry was allowed to draw water from river Nagabali for 31,960 M^3 per day against which it consumed about 37,000 M^3 of water per day which exceeded consented limit despite lean flow in river as identified by SPCB since 2007. Further, against permitted limit to discharge waste water of 23,800 M^3 per day to river, the industry discharged waste water of 36,000 M^3 per day in violation of consent condition. Thus, effluent discharged from paper mill was not likely to get diluted adequately due to lean flow.

To address this problem, industry was asked by SPCB to upgrade STP and retain effluent in retention ponds and discharge treated effluent after meeting

prescribed parameters to irrigation and plantation within their own premises. Further, instructions were issued (2007-10) to discharge effluent only at night so that the river water could be used by local people during day time. The industry, however, did not install STP on plea of fund crisis and sought permission for consumption of more water for higher production involving high volume of effluent discharge and waiver of installing of STP. Member Secretary, SPCB in his sanction order (January 2014) issued conditional CTO after receipt of Bank Guarantee (BG) for fulfillment of conditions stipulated by SPCB.

Thus, against mandate of NWP, industry disturbed normal flow of water and polluted river water affecting riparian rights of inhabitants in downstream.

Government stated (October 2014) that in order to prevent degradation of water quality of river Nagabali, industry should have diverted its treated effluent for irrigation purposes but it could not be implemented successfully in view of lack of efforts from Water Resources Department as well as the industry.

2.2.7.9 Pollution of river Kuakhai, Kathajodi and Daya

Joint physical verification was done of rivers Kuakhai, Kathajodi and Daya and water samples collected from locations of points before city, point where city sewage mixed with river and from downstream of river as per prescribed norm for BOD, Dissolved Oxygen (DO) and Total Coliform (TC), which are indicators of high levels of organic pollution in rivers and indicate whether water can sustain aquatic life and presence of harmful, faecal related bacteria, viruses and protozoa which cause illness.

Untreated waste water of Cuttack city being discharged to river Kathajodi at Khan Nagar

Audit observed that two natural nallahs – Budu Nalla at Mancheswar and Gangua Nalla at Samantarapur were converted into sewer lines to carry untreated city sewage of Bhubaneswar to drain into rivers Kuakhai and Daya respectively. The sewage of Cuttack City was also found directly discharged to river Kathajodi near Khan Nagar without any treatment. Quality of water in these rivers after they leave the cities should meet class B criteria (Bathing standards) as designated by CPCB. Water samples were collected and checked in SPCB laboratory which showed BOD, DO and TC in high quantities as detailed in ***Appendix -2.2.3.***

Gangua Nallah mixes with river Daya carrying waste water of Bhubaneswar city

Government stated (October 2014) that installation of sewerage network and waste water treatment system in both Cuttack and Bhubaneswar cities are in progress in which provisions have been made for collection and treatment of waste water.

2.2.7.10 Pollution of Kisinda Jhora as well as crop damage in nearby villages due to excess emission of fluoride by NALCO Smelter

Aluminium smelter of NALCO is the major source of fluoride emission generated mostly due to washings and surface runoff and floor washings. As per CREP (March 2003), fluoride consumption was to be achieved at 10 kg per tonne of aluminium produced by December 2005. AP also recommended (December 2010) precautionary measures for aluminium industries which included revamping Fluoride Treatment Plant (FTP) and construction of secured engineering landfill, which were to be implemented by 31 March 2012.

In the meantime, due to repeated incidence of damage of plants and crops in agricultural fields near NALCO smelter plant, GoO entrusted (July 2006) Environment Protection Training and Research Institute (EPTRI), Hyderabad to study reasons for such crop damage. The study established that higher level of fluoride in air, water and vegetation was main reason for crop damage and recommended developing proper work schedule for management of spillage at generating points to minimise fluoride contamination in air, surface and groundwater. Following lapses were observed in complying with deadlines prescribed under CREP and AP for minimising fluoride emission.

- Though eight years passed from CREP deadline (December 2005), NALCO could not achieve fluoride consumption standard of 10 kg/Tonne of aluminium produced. During 2012-13, consumption of fluoride was 12.90kg/Tonne of aluminium produced.
- SPCB fixed (April 2004) standards for emission of fluoride from bake oven and pot room at 0.10 kg and 0.30 kg per MT of aluminium produced respectively. But, excess emission ranging from 0.11 to 0.166 kg and 0.36 to 0.49 kg per MT of aluminium produced respectively was found during 2009-14.
- Though SPCB directed (April 2009) NALCO to install fume treatment centre (FTC) in bake oven-I by 31 March 2010, same was not done even after lapse of four years.
- NALCO constructed a landfill of inadequate capacity for disposing 40,000 Tons of spent pot lining (SPL[47]) and another landfill for 50,000 Ton of SPL was under construction stage though AP fixed 31 March 2011 as target date for construction of secured engineering landfill. SPCB had also not assessed the required capacity of landfill for disposal of SPL till date (August 2014).

47 SPL is contaminated graphite/ceramics cell waste generated in the primary production of aluminium. This waste has been identified as an extremely problematic hazardous waste because it contains concentrations of cyanide and fluoride and gives off noxious and flammable gases when in contact with moisture. These contaminants readily leach into surrounding soils and groundwater during both short term and long term storage and can cause potential contamination of drinking water reserves.

Even though NALCO was designed for zero discharge, SPCB had been granting permissions through CTOs (April 2009 onwards) to discharge effluents of 2640 KLD to Kisinda Jhora during rainy season. However, in absence of measuring device, actual volume of discharge was not available with SPCB. Further, NALCO had not implemented proper surface runoff management system (SRMS) and did not enhance capacity of defluoridation plant in order to cater to excess flow of surface runoff. As per analysis of SPCB, effluents contained fluoride component ranging from 4.20 to 8.00 mg/litre (standard-2 mg/litre). Similarly, fluoride content at inlet point of defluoridation plant ranged from 6.3 to 22 mg/litre. Besides this, PM emission from bake oven ranged from 50.55 -146 mg/Nm^3 which was higher than prescribed limit of 50 mg/Nm^3 to be achieved by December 2005.

Since NALCO failed to implement pollution control measures, SPCB issued (August 2011/ April 2014) SCNs for non compliance of various suggested measures. Inspite of specific conditions in EC to stop operation in case of failure of any pollution control system, NALCO continued to operate without installing FTP.

Government, while accepting unsatisfactory compliance by NALCO, replied (October 2014) that BGs have been obtained to ensure installation of FTC and implementation of SRMS by December 2014 and May 2017 respectively. But SPCB took belated action in obtaining BGs during 2014-15 though it was decided during March 2003 to obtain the same from defaulting industries to ensure timely compliance.

2.2.7.11 Discharge of effluents by TTPS to Nandira nallah

SPCB granted (June 2005) CTE to TTPS and revised the same (February 2009) with conditions that unit shall discharge entire ash slurry into abandoned mine pit of M/s Balanda Colliery of MCL and the unit shall install Ash Water Collection and Recirculation System (AWRS) at mine pit end for complete recirculation of decanted effluent through a dedicated pipeline to plant. As per AP, all TPPs were to adopt zero discharge by 31 March 2012. However, effluents from TTPS were discharged outside in violation of directions of SPCB as mentioned below:

- ***Ash pond overflow***

TTPS had not commissioned AWRS at mine pit end which resulted in discharge of supernatant water of about 1200 m^3/day to nallah.

- ***Industrial effluent***

A drain from Jagannathpur village side and another drain below coal conveyor belt enter into factory premises and join industrial waste water drain. There was also discharge of sullage from E and F Type quarters to above two drains. This waste water along with treated water from STP was discharged to Nandira nallah. Further, plant runoff of TTPS about 2000 KLD near STP area were also discharged to nallah during monsoon. Though SPCB suggested (May 2012) diversion of Jagannathpur village drain from plant boundary, same was not implemented till date. No further action has been initiated by

SPCB in this regard. Besides this, there were four unauthorised outlets along the boundary of plant which discharged industrial effluents to Nandira nallah. Effluent standards ranged from 128-532 mg/litre, 31- 44 mg/litre and 12.40 - 18 mg/litre in respect of SS, BOD and oil and grease (O&G) as against prescribed standard of 100 mg/l, 30 mg/l and 10 mg/l respectively.

Government replied (October 2014) that AWRS was installed and commissioned but could not be operationalised due to capacity inadequacy of return water storage. It also replied that discharges through unauthorised outlets were mostly domestic effluent and were of lesser significance. But, in absence of a system to measure actual quantity and quality of discharge from unauthorised outlets, SPCB's stand on lesser significance does not seem prima facie acceptable particularly when TTPS was to adopt zero discharge by 31 March 2012 as per AP.

Status of industrial waste water/effluent generated, treated and discharged by various industries, though called for by audit, has not been furnished by SPCB till date.

2.2.7.12 Discharge of fluoride and ash contaminated water to river Mahanadi

CPCB observed (September 2007) that effluent management system of a fertilizer plant at Paradip was very poor and seepage from guard pond needed to be controlled. Further, Inspection reports of SPCB during May 2013, July 2013 and March 2014 disclosed that contaminated storm water from internal drains in factory premises from all sections led to an earthen pond and there was provision of outlet for discharge of overflow to river Mahanadi. Water quality of pond was acidic in nature and contained high concentration of fluoride ranging from 33.6 mg/l to 1140.0 mg/l against standard norm of two mg/l. It had not provided adequate control measures to treat overflow of water to river Mahanadi or any treatment facility at contaminated storm water drain before entering into earthen pond.

Besides this, while granting (June 2008) CTO, SPCB stipulated that fly ash generated from TPP of industry should be suitably disposed off and it shall submit a detailed action plan for disposal of ash. However, during inspection (July 2013) by SPCB, it was revealed that the unit disposed off substantial quantity of fly ash on bank of river Mahanadi without providing any retaining wall and garland drain/settling pits thereby contaminating Mahanadi river due to washout from dump. The industry had also not submitted AP for proper disposal of ash. The facts were also confirmed during joint verification (July 2014) of industry by audit team with SPCB officials.

Government stated (October 2014) that industry has submitted (January 2014) BG to complete required pollution abatement measures by October 2014.

2.2.7.13 Discharge of mercury contaminated water to river Rushikulya

A chlor-alkali plant in Odisha manufactured liquid chlorine and caustic soda using mercury cell technology since 1967. Waste water from manufacturing process was treated and discharged to an earthen pond on bank of river Rushikulya known as guard pond. SPCB granted Consent (December 2006) to

the industry with a condition that all mercury bearing effluent should be totally recycled and in no case should treated effluent be discharged to Rushikulya river or nearby water bodies. Standard norm of mercury was fixed at 0.01 mg/l. However, during surprise check of this industry under Environment Surveillance Squad (ESS) programme, CPCB observed (February 2008) that water bodies around industry, especially area between river Rushikulya and industry were contaminated with mercury ranging between 0.018 mg/l and 0.052 mg/l. Thus, SPCB instructed (July 2008) industry to submit a time bound AP to switch over to membrane cell technology from existing process of mercury cell technology. Industry reported (January 2011) that existing mercury cell unit was permanently closed since December 2010. However, it was observed that mercury content was again found (January 2013) by CPCB at 0.72 mg/l in ETP outlet, 0.02 mg/l in pond water and 0.11 mg/l in tube well water. Further, SPCB did not prepare Draft Project Report (DPR) to determine technology for remediation of contaminated site of industry till date of audit even though it was decided so (September 2011) in its 103rd Board Meeting.

In reply, Government stated (October 2014) that remediation of mercury contaminated site is yet to be taken up for which CPCB had signed (August 2014) a contract with consultants. But appropriate safeguard measures were not taken by the industry to prevent access of public and animals and to prevent surface run off as was observed (January 2013) by CPCB.

2.2.7.14 Release of fluoride contaminated water

One industry in Angul operated under valid CTO up to 31 March 2003 and further CTO was not granted due to discharge of waste water to outside drain without treatment. It was noticed (November 2006) by SPCB that fluoride level was higher by 117 times against standard of 2 mg/l.

SPCB again refused (December 2008) to issue CTO for 2006-11 and requested Collector, Angul to take appropriate steps towards closure of industry. However, SPCB did not follow it up with District Administration for its closure and instead continued to issue SCNs from time to time.

Government stated (October 2014) that during inspection (September 2014) non compliance were observed and accordingly, direction of closure was issued (October 2014) with a request to the Collector & District Magistrate, Angul to ensure its closure. But the industry continued to operate without obtaining CTO since April 2003.

2.2.7.15 Water Pollution by ULBs

As per the National River Conservation Directorate (NRCD), out of total measurable pollution in rivers from various point sources, around 75 *per cent* is contributed by municipal sewage from towns located along banks of rivers and remaining 25 *per cent* by industrial effluents. There are 109 Urban Local Bodies (ULBs) in Odisha. Audit observed the following:

- To improve sewerage system and resultant abatement of environmental pollution, NRCD sanctioned improvement of sewerage system of Puri town during August 2002 under National River Conservation Plan (NRCP). Accordingly, fund amounting to ₹ 80.45 crore was provided

along with Administrative approval (October 2002) by H & UDD to complete work by March 2012. Sewer line of 123.07 km out of 134.29 km was laid (June 2014) and STP with a capacity of 15 MLD was commissioned during June 2013. However, system was not made operational till June 2014 due to non construction of a sewerage pumping station.

- STP at Matgajpur, Cuttack with capacity of 33 MLD commissioned during January 2007 did not work properly due to inadequate sewerage flow owing to operation & maintenance problem resulting in discharge of untreated water to river Mahanadi. As per draft city sanitation plan of Cuttack projected waste water generation was 92.13 MLD in 2014 for which existing capacity of STP (33 MLD) was not adequate to treat waste water of city.

Defunct Sewerage treatment plant at Matgajpur, Cuttack

- Integrated sewerage system for Bhubaneswar city was estimated at ₹ 754.23 crore with provision of laying of 412.20 km of sewer line and construction of 6 STPs with total capacity of 190.7 MLD. Work was taken up during February 2008 and was scheduled for completion by March 2012. However. 167.52 km out of 412.20 km of sewer line were laid and out of six STPs, not a single one was constructed as of June 2014.
- Construction of STPs has not been started for Rourkela and Sambalpur even though DPRs with estimates of ₹ 582.66 crore and ₹ 448.33 crore respectively have been prepared for the said work.
- During August 2012, GoO accorded permission for preparation of DPRs for 13 towns[48] but not a single DPR was prepared as of July 2014.
- No action was taken for improvement of sewerage system and establishment of STPs for balance 91 ULBs.

Hence, improvement in sewage system and function of STPs for abatement of water pollution was not effective in a single ULB.

Accepting the fact, Government stated (October 2014) that regular monitoring and meetings are being conducted with authorities of ULBs and H&UDD to expedite the process of installation of STPs and proper treatment of waste water before release to water bodies.

2.2.7.16 Water pollution by hotels

As per Section 25 of Water (PCP) Act, 1974, no person shall, without previous consent of SPCB establish or take any steps to establish any industry, operation or process or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a

48 Jajpur, Balasore, Baripada, Joda, Keonjhar, Sonepur, Phulbani, Koraput, Rayagada, Bhawanipatna, Jharsuguda, Bolangir and Kendrapara.

stream or well or sewer or on land. Environment (Protection) Rules, 1986 also provided standards to be complied by hotel industries while discharging effluents to outside.

As per information furnished (September 2014) by RO, Bhubaneswar 300 hotels in Puri were discharging their sewage without any treatment for which SCN/directions were issued during May to August 2014. Besides, STPs did not exist in case of 35 hotels in Bhubaneswar.

CTO file of a hotel at Puri revealed that it was issued (August 2006) with SCN due to inadequate waste water treatment facility. Afterwards, closure notice was issued twice during November 2006 and March 2008. Audit observed that SPCB issued (May 2014) direction to apply for CTE/CTO without ensuring necessary compliance to previous closure directions. As a result the hotel continued to operate in violation of closure notices since last eight years.

Government stated (October 2014) that total 556 number of hotels are operating in Odisha out of which 485 number of hotels are running without CTO/ not brought under consent administration.

2.2.7.17 Water pollution by hospitals

As per Bio-Medical Waste (Management and Handling) Rules, 1998 every healthcare establishment (HCE) handling bio-medical wastes in any manner, except those providing treatment/service to less than one thousand patients per month, shall obtain authorisation from the competent authority. It also stated that liquid waste, being a category of bio-medical waste, generated during diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto shall be treated and disposed off in such a manner that it will comply with the standards prescribed in the said Rules.

SPCB advised (March 2014) HCEs having 100 beds and above to obtain consent for discharge of waste water. As per information furnished by SPCB, out of 75 hospitals in the State with bed capacity ranging from 100 to 1707, only two were operating under valid consent as well as having ETPs to treat liquid waste. Further, SPCB has not prepared the list of HCEs, which are providing treatment to one thousand or more patients in order to monitor them for disposal of liquid waste through grant of consent.

Government stated (November 2014) that instructions had been issued for inventorisation of hospitals for consent management to take pollution abatement measures.

2.2.7.18 Discharge of effluents by Animal Slaughter Houses/Meat Processing Industries

CPCB instructed (July 2002) SPCBs to issue directions regarding installation of ETPs by Animal Slaughter Houses (ASHs)/Meat Processing Industries (MPIs). Due to non compliance of the said directions, CPCB again directed (April 2011) SPCB to furnish status of ASHs/MPIs including details of ETPs installed and also to propose action plan to cover all ASHs under CA. In reply SPCB stated (May 2011) that these industries were very small in number and

operating in an unorganised manner as a result of which those were not brought under CA.

GoO constituted (October 2012) a "State Committee for Slaughter Houses (SCSH)" to (i) identify and prepare a list of all ASHs/MPIs, (ii) recommend appropriate measures for dealing with solid waste and water/air pollution, (iii) carry out surprise and random inspections of ASHs/MPIs, and (iv) identify on an ongoing basis, unlicensed slaughter houses, however small it may be, in region and to close down the same.

SCSH conducted two meeting as on December 2013 but ASHs/MPIs had not been identified and brought into CA of SPCB.

Government stated (October 2014) that there were no ASH or MPI units operating in the State. In all urban areas there are vending zones where meat/non vegetarian food are sold and installation and operation of ETPs may not be practically feasible. It was also stated that water pollution of such activities cannot be tackled effectively unless those are housed in an organised manner by developing appropriate infrastructure.

2.2.8 Compliance of environmental laws in Odisha

2.2.8.1 Non compliance of Environmental (Protection) Act by mining industries

On the basis of provisions contained in Environment (Protection) Act, 1986, GoI issued Environment Impact Assessment (EIA) Notification (January 1994) which specified a list of projects which require prior Environmental Clearance (EC) because of its pollution load on environment. Mining projects having lease area of five ha or more are required to obtain EC from GoI as per said notification.

It was observed that SPCB did not bring mining industries into CA even though it was decided (September 2002) in its 71st Board Meeting to fix minimum frequency for verification of different categories of industries. This resulted in operation of 198 mines without obtaining CTE/CTO of SPCB and without obtaining EC from GoI during 2000-2010. When Department of Steel and Mines, GoO asked SPCB (July 2011) to take action against these mines, SPCB confirmed (September 2011) operation of 180 mines without CTE/CTO. As there was no other option, SPCB levied (2011-12) pollution charges amounting to ₹ 3.29 crore against these mines but impact of pollution load on environment remained unnoticed. Realising importance of time bound inspection and monitoring of mines, SPCB decided (February 2014) to conduct inspection once in every quarter.

Thus, in absence of time bound inspection and monitoring of mines by SPCB impact of pollution load on environment could not be assessed upto February 2014.

Government stated (October 2014) that inspection of mines as per targets were difficult because of severe manpower constraint. It was also stated that after improvement in manpower position in ROs, a decision would be taken to conduct inspection of mines every quarter.

2.2.8.2 Non compliance to directions of National Green Tribunal

National Green Tribunal (NGT) Act was passed (June 2010) for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith or incidental thereto. NGT, while issuing its order (May 2013) instructed CPCB and SPCB to take suitable action against industries running without CTO from Competent Authorities as they were treated as large scale dereliction of legal obligation.

But, as per information furnished (September 2014) by SPCB, 2,116[49] number of industries under different ROs operated without obtaining CTO.

Government stated (October 2014) that suitable actions are being taken in shape of show cause notices, closure directions and legal action against defaulting industries / organisations.

2.2.8.3 Utilisation of Fly Ash

In order to protect environment, conserve top soil and prevent dumping and disposal of fly ash discharged from coal or lignite based TPPs, GoI issued notifications (November 2009) for utilisation of 100 *per cent* fly ash within first five years for power plant already in operation before notification and within first four years for plants started operation after notification.

However, as per information furnished by SPCB, net accumulation of fly ash during 2005-06 to 2008-09 was 36.99 Million Metric Tonne (MMT) which was further increased by another 52.21 MMT during 2009-10 to 2013-14 resulting in total accumulation of fly ash to 89.2 MMT. Though utilisation of fly ash increased from 43.93 to 61.5 *per cent* during 2009-10 to 2013-14, average yearly accumulation of fly ash remain unchanged (ranged between 9.44 MMT to 10.78 MMT).

Audit observed that only 14 out of 33 TPPs in Odisha achieved 100 *per cent* utilisation of fly ash during 2013-14. Further, it was noticed that OPGC utilised only 16 *per cent* of 10.5 lakh MT fly ash generated during the year 2013-14. Thus, fly ash utilisation by TPPs had not been achieved as per instruction of GoI.

Accepting the fact, Government stated (November 2014) that with the insistence of SPCB, fly ash has been included (November 2014) in the schedule of rates by the Works Department, GoO and it was decided in the meeting chaired by Chief Secretary to maximise use of fly ash in canal lining and road works.

2.2.8.4 Issue of conditional CTO by SPCB

CPCB directed (June 1993) SPCB that CTO shall be granted to an industry only after complete installation of requisite PCEs and no conditional CTO

49 Balasore-141, Berhampur-317, Bhubaneswar-175, Kalinga Nagar-395, Keonjhar-265, Paradip-56 and Sambalpur-767.

shall be issued basing on Notifications of 16 January 1991 and 12 February 1992 of GoI. This was again reiterated (February 2000) by CPCB.

Audit observed that SPCB issued conditional consent to industries /projects.

Government stated (October 2014) that SPCB had persuaded the violating industries to comply with the stricter norms by allowing them to operate through BG mechanism or through appropriate directions under consent administration. But the decision was not implemented in all cases till CPCB again directed (February 2014).

2.2.9 Performance of State Pollution Control Board

2.2.9.1 Non development of Management Information System

SPCB monitors 516 industries directly and 6999 industries through its ROs. In absence of computerised MIS, information like number of industries due for verification, number of industries verified, number of units running without obtaining CTE/CTO, number of units against which water cess was due etc. could not be verified in audit.

In RO, Angul there were 1180 different category of industries like Stone Crushing Units (SCUs), Hot Mix Plants (HMPs), Mineral Stack Yard (MSY)/Railway Sidings (RS), Aluminium Plants, etc. running under consent administration of SPCB as on 31 March 2014. However, present status of all above industries has not been furnished to audit till date.

Government stated (November 2014) that SPCB will very soon develop MIS software once resource persons will be in place for which process has been initiated.

2.2.9.2 Running of industries/units without CTE/CTO

Scrutiny of records in selected ROs revealed that industries as indicated below were running without obtaining CTE/CTO from SPCB.

- Out of total 12 Hot Mix Plants (HMPs) under Angul RO, four HMPs were running with a valid CTE/CTO. In respect of remaining eight HMPs, no information was available. In order to know status of plant (i.e. whether plant was running without a valid consent) a Joint Verification of one HMP at Badkera, Angul was conducted in July 2014 by audit team along with an officer of RO, Angul. Though, the unit was refused (June 2010) issue of CTE by RO because of its close proximity to National Highway (NH) No. 42 it was found prima facie to be running as materials like bitumen and chips were stocked in the premises.

Government stated (October 2014) that out of eight HMPs, six were not in operation since long, one HMP was dismantled and HMP at Badkera, Angul has been again directed to shift its unit.

- 15 out of 28 Mineral Stack Yards (MSYs) under Angul RO were running without a valid CTE/CTO. Further, inspite of specific condition in CTO for transportation of

Transportation of minerals through open Railway wagon at Mancheswar Railway Station, Bhubaneswar

material through wagons by covering them with tarpaulin sheets, it was seen during physical visit to Mancheswar railway station that transportation was made without covering wagons and thereby causing air pollution.

In reply Government stated (October 2014) that 22 out of total 28 MSYs were not in operation. But, SPCB did not close them down with the assistance of District Administration.

- GoO issued (August 2010) order to close down all Stone Crushing Units (SCUs) which were operating without complying with siting criteria and without approval of SPCB. In said order, District Administration was also directed to assist SPCB in effecting closure of all such SCUs. Scrutiny of records revealed that 744 out of 1932 SCUs were issued with closure notice. However SPCB sealed 159 SCUs till April 2014 and remaining 585 SCUs were operational. During Joint inspection (03 July 2014) to verify status of four sealed SCUs, it was noticed that two SCUs were in sealed condition. The third sealed SCU was operating a Hot Mix Plant (HMP) without obtaining CTE from SPCB. In case of fourth sealed SCU the unit was found to be in working condition as the seal was broken.

Government stated (October 2014) that role of District Administration is vital for implementation of closure direction.

- SPCB granted (April 2001) CTE in favour of one Community Health Centre (CHC) in Angul for one year with a specific condition that hospital shall have waste management facilities like incinerator/ autoclave/ microwave system by 31 December 2002. However, grant/ renewal of CTO could not be considered in favour of hospital due to inadequate waste management practice adopted for biomedical wastes. In this regard, SCNs were also issued twice (June 2004 / April 2008) to CHC. Despite this, CHC continued to operate for more than 12 years without obtaining CTO. No further action was taken by SPCB other than issue of SCN.

Government stated (October 2014) that the unit has been issued show cause notice in September 2014 for refusal of authorisation.

2.2.9.3 Renewal of CTOs despite issue of closure directions

- SPCB granted (July 2007) CTE to one unit for manufacture / production of Ferro Manganese of 11200 Tonnes per annum (TPA) and afterwards CTO was granted (November 2009) which was valid up to 31 March 2010. The unit applied (March 2010) for renewal of CTO till 31 March 2011. SPCB inspected (October 2010) the unit for renewal of CTO and issued (May 2011) directions for closure. In the meantime, the unit again applied (March 2011) for renewal of CTO up to 31 March 2013, which was granted (June 2011) with validity up to 31 March 2012 despite earlier issue of direction for closure. In the interim, the unit had continued operation without valid CTO during 2010-11 and no further action was initiated to find out present status even after lapse of two years since last inspection (April 2012).

Government stated (October 2014) that the unit has been directed (October 2014) not to resume its operation without obtaining valid CTO from SPCB.

- CTE was granted (April 2007) to one unit for manufacture/ production of KB bricks 10,000 numbers/ day with a condition to obtain CTO at least 3 months before commercial production. During inspection, SPCB found (December 2013) the unit operating without obtaining CTO and hence issued closure direction. However, the unit was not closed as on date of audit.

  Government stated (October 2014) that a reminder has been sent (September 2014) to Collector, Angul to ensure closure of the unit.

2.2.9.4 Holding of inadequate number of Board Meetings by SPCB

As per section 8 of the Water (PCP) Act, 1974 and section 10 of the Air (PCP) Act, 1981 SPCB shall meet at least once in every three months and observe such rules of procedure in regard to transaction of business as may be prescribed.

It was observed that SPCB conducted 10 Board Meetings against requirement of minimum 20 during 2009-14. Further, out of total 17 members, five to 11 members remained absent in each meeting.

While confirming facts, Government stated (October 2014) that above issue was addressed in 107th Board Meeting (November 2013) to ensure participation of members in subsequent meetings. Reply, however, is silent regarding non holding of adequate number of meetings as per the relevant Acts.

2.2.10 Utilisation of grants and other funds

2.2.10.1 Assessment of water cess

The Water (PCP) Cess Act, 1977 came into existence for levy and collection of cess on water consumed by industries and local authorities, with a view to augment resources of CPCB and SPCBs, for prevention and control of water pollution. As per Section 3 read with Section 6(4) and Section 8 of the Act, the State Government shall collect the cess from the persons liable to pay and deposit the same to the Consolidated Fund of India. Time bound assessment and collection of water cess (WC) is required to initiate pollution abatement programme as per mandate.

Scrutiny of records revealed that SPCB had not maintained database of all industries with details of consumption of water. As a result WC was not levied on all industries consuming water in the State and after physical verification of limited numbers of industries/units, SPCB assessed WC of ₹ 25.91 crore only and collected ₹ 25.14 crore during 2009-14. Further, submission of WC return was also not being monitored by SPCB as envisaged in the Act. From scrutiny of records of one industry, it was observed that WC return was not being submitted since inception by the industry which implied that industry had not paid any WC.

Government accepted the fact of non availability of industry-wise database of WC and stated (November 2014) that information relating to industry-wise assessment and collection of WC would be available soon.

2.2.10.2 Utilisation of Odisha Environment Management Fund

In order to arrest environmental and ecological degradation through environmental amelioration activities in sustained manner, a corpus fund named OEMF was created (December 2006) by GoO. DoFE was the nodal department for management of OEMF fund.

Scrutiny of records revealed that out of total fund of ₹ 44.87 crore received from various industries/units as on 31 March 2014, only ₹ 4.60 crore was spent towards various plantation activities upto 2010-11. However, no pollution abatement measures were taken up by DoFE since 2011-12 which defeated purpose of creation of OEMF.

In reply, Government stated (November 2014) that recently a decision was taken to release funds from OEMF for taking up such measures like upgradation/installation of STPs in ULBs of small cities.

2.2.11 Adequacy of infrastructure

2.2.11.1 Failure of SPCB to bring CPCB identified activities / projects under consent administration

CPCB directed (June 2012) SPCB to maintain uniformity in categorisation of industries for grant of consent and inventorisation and provided modified list of red (85), orange (73) and green (86) categories of industries in order to revise old list available with it. However, audit observed that SPCB was yet to bring 124 industries[50] under CA.

Government stated (October 2014) that SPCB is awaiting final report of the working group which has been constituted (February 2014) by CPCB to review the categorisation in a more scientific manner.

2.2.11.2 Non inclusion of Building and Construction Projects into Consent Administration

MoEF issued a notification (September 2006) called Environment Impact Assessment (EIA) Notification 2006 which stipulated that building and construction projects having built up area of more than or equal to 20,000 M^2 and townships and area development projects covering an area of more than or equal to 50 hectares are required to obtain EC. Accordingly, SPCB in its 98th Board meeting (February 2009) decided to bring this under CA and formulated Policy guidelines to regulate such projects.

It was revealed that EC was granted to construction projects with conditions that (i) installation of STP was to be ensured before project was commissioned for operation, (ii) necessary measures should be taken to mitigate odour problem from STP and (iii) green belt and avenue plantation of trees over at least 20 *per cent* of area shall be done.

50 13 Red, 53 Orange and 58 Green category.

Though CTE was issued to different construction projects, CTO was not issued (July 2014) to these projects due to non fixation of fee structure by SPCB. This resulted in non-verification of compliances relating to pollution made by these projects.

Government stated (October 2014) that issue of CTOs to these projects is now under active consideration of SPCB.

2.2.11.3 Interlocking of production system with pollution control devices

CPCB directed (23 June 1999) SPCB to issue necessary directions to all industries located in the State to report on arrangement made for interlocking production system with pollution control devices and to install separate meters for consumption of electricity for operation of such devices.

It was noticed that SPCB had not issued such direction to industries. Further, though CTO provided for installation of energy meters and maintenance of records for verification, SPCB did not mention this aspect in the inspection reports.

In reply Government stated (October 2014) that deliberate operation of large sized process units without operation of PCEs were hardly observed and hence, condition of interlocking of PCEs with process equipment is gradually losing its relevance. It was also stated that relying on energy meter reading to ascertain operation of PCEs was not feasible since the system was not tamper proof and also it was difficult to cross check huge meter reading data. GoO also assured that this problem will be solved by 31 March 2015.

2.2.11.4 Non implementation of Continuous Ambient Air Quality Monitoring Stations and Online Emission Monitoring Systems

CPCB advised (January 2009) SPCB to incorporate conditions in CTE/CTO like (i) establishment of well equipped laboratory facilities including Air Quality and Water Quality Monitoring Stations and (ii) uploading of data about key parameters like critical pollutants and local ambient air / water quality on websites of industrial units falling in Category "A" of EIA Notification 2006 and further directed (12 January 2011) SPCB to instruct all large and medium industries, which are either located in identified critically polluted areas or falling in 17 category of highly polluting industries to install continuous stack emission/effluent quality monitoring systems by March 2011 with a portal to CPCB and SPCB.

Government stated (October 2014) that in line with recent directions (February 2014) from CPCB, SPCB has obtained BGs from 17 category industries to ensure commissioning of such online systems by 31 March 2015.

2.2.11.5 Delay in operationalisation of Online Consent Management and Monitoring System

MoEF awarded project of "Online Consent Management & Monitoring System" (OCMMS) to National Informatics Centre (NIC) to be implemented by SPCBs. Project was meant for online processing of CTE/CTO applications

for all categories of industries/entities/operations falling under purview of Water and Air Act. Accordingly, SPCB entered into an agreement with NIC for implementation of said project. Estimated time for complete operationalisation of project was four months.

SPCB while implementing the system faced various constraints such as uploading accompaniments to applications, non processing of both air and water consent applications simultaneously, non acceptance of special characters (<, >, @, #, $, etc.) and tables. In order to solve these issues, NIC proposed (February 2014) further upgradation of system within one year.

Government replied (October 2014) that action has been initiated to improve specific areas like computer infrastructure, manpower, training and user awareness.

2.2.12 Conclusion

CPCB identified Angul-Talcher and Ib Valley-Jharsuguda area as CPAs for which time bound APs were prepared by SPCB for increasing the quality of the environment. But as observed by CPCB, air/water quality could not be improved in those areas. SPCB needed to take concerted action to ensure timely installation of PCEs and STA left several gaps in checking vehicular pollution in the State leading to air pollution. Similarly, non installation of STP/ETP by ULBs/Hotels/ Hospitals/Industries etc. also contributed to water pollution in various water bodies. Further, in absence of complete database of all sources of pollution and proper MIS, SPCB could not discharge its role effectively in taking appropriate pollution abatement measures and some industries/units were found operating without CTE/CTO.

2.2.13 Recommendations

Audit recommends coordinated action to consider:

- Development of a complete and up to date database of all sources of pollution and pollutant industries for effective monitoring by bringing them under consent administration;

- Implementation of real time based air quality and water quality monitoring stations.