

## **Chapter 2**

### **Performance Audit**

#### **2.1 Implementation of Command Area Development activities in Karnataka**

## CHAPTER 2

### PERFORMANCE AUDIT

#### WATER RESOURCES DEPARTMENT

##### 2.1 Implementation of Command Area Development activities in Karnataka

###### Executive Summary

Command Area Development Programme was introduced by the Government of India in 1974 with the objective of bridging the gap between irrigation potential created and irrigation potential utilised through micro-level infrastructure by utilisation of water for irrigation. The Command Area Development activities in Karnataka involve execution of On Farm Development works such as construction of field irrigation channels, field drains, land levelling, reclamation of water logged areas, correction of system deficiencies of outlets up to distributaries, *etc.* It also involves Extension Services such as undertaking field trials, crop demonstrations and training of staff and farmers, *etc.*

The expenditure on Command Area Development activities is shared by the Centre and the State in the ratio of 50:50 for On Farm Development works and 75:25 for extension services. During 2009-14, the State Government allocated ₹ 2,037.99 crore in the budget for implementation of the programme in six Command Area Development Authorities and three *Neeravari Nigams*.

A Performance Audit on the implementation of Command Area Development activities in Karnataka was conducted during February to July 2014, covering the period 2009-14. The major audit findings were as follow:

- ❖ A gap of 4.10 lakh hectares existed between the irrigation potential created and utilised, as of March 2014, due to non-construction of field irrigation channels. Field irrigation channels were constructed only in an area of 2.25 lakh hectares (30 *per cent* of target) against cumulative target of 7.48 lakh hectares for 2009-14.
- ❖ Financial management was deficient as the State Government allocated grants in excess of that sought by the implementing agencies. As a result, ₹ 1,206.52 crore, constituting 59 *per cent* of allocation, was surrendered/lapsed during 2009-14.
- ❖ In 16 Projects, 2.71 lakh hectares were not irrigated though field irrigation channels were constructed, resulting in crop loss amounting to ₹ 915 crore.
- ❖ Government of India did not reimburse ₹ 130 crore incurred by the State Government during 2009-14 in respect of centrally assisted projects due to shortfall in achieving targets as per memorandum of understanding. Also, Central assistance of ₹ 733 crore was not utilised due to shortfall in achieving the targets in all 15 projects.
- ❖ The objective of Participatory Irrigation Management, to ensure farmers participation in water management and maintenance of command area, remained unfulfilled, as the water management was not being managed by the water users' co-operative societies.

### **2.1.1 Introduction**

The Command Area Development Programme was launched in Karnataka in 1974 for integrated and comprehensive development of the Command Areas of Major and Medium Irrigation Projects. For this purpose, the Karnataka Command Area Development Act was enacted in 1980 and Command Area Development Authorities (CADAs) for Tungabhadra project (Munirabad), Malaprabha and Ghataprabha Projects (Belagavi), Cauvery Basin Projects (Mysuru), Upper Krishna Project (Bheemarayanagudi), Bhadra Project (Shivamogga) and Irrigation Project Zone (Kalburgi) were constituted between 1974 and 2000. As of March 2014, there were 101 major and medium irrigation projects with a gross command area of 35 lakh hectares (ha) in Karnataka. Out of this, 76 projects were under CADAs and the remaining 25 projects were under *Neeravari Nigams*.

The functions of CADAs include land levelling, construction of field irrigation channels (FIC) and field drains (FD), reclamation of water logged areas, and adoption of *Warabandi*<sup>6</sup> etc.

The Command Area Development and Water Management (CADWM) programme is being implemented as State sector schemes with effect from 2008-09. The programme was modified during July 2010 and December 2013. As per the modified guidelines, a memorandum of understanding (MoU) for each project has to be concluded by Government of Karnataka (GoK) with Government of India (GoI) for strict implementation as per the targets mentioned therein. The GoK had also obtained assistance from NABARD<sup>7</sup> from the year 2011-12 to meet its share of expenditure for two<sup>8</sup> of the components of Command Area Development (CAD) activities out of 16 components included under CADA. During the period 2009-14, an expenditure of ₹ 831.47 crore was incurred on CAD activities in Karnataka.

Actual irrigation takes place on completion of development of the command area of a project, this helps in increased crop production as well as food security for people. It also plays a vital role in improving the socio-economic condition of farmers.

### **2.1.2 Organisational structure**

At the Government level, the Additional Chief Secretary, Water Resources Department (WRD), is responsible for overall implementation of CAD activities. He is assisted by Secretary, WRD. The overall administration of CADA vests with the Administrator of each CADA. In December 2012, a Directorate of Command Area Development Authorities, headed by a Director

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<sup>6</sup> System of rotational water supply

<sup>7</sup> National Bank for Agriculture and Rural Development

<sup>8</sup> Reclamation and *Ayacut* roads

and assisted by two Joint Directors, was formed at the State level and nine divisions headed by Executive Engineers were formed at the field level for implementation of CAD activities.

### **2.1.3 Audit Objectives**

The objectives of the performance audit were to assess:

- ❖ whether the planning and budgetary controls were efficient and effective;
- ❖ the results of the actual implementation of the schemes so formulated;
- ❖ the results of Participatory Irrigation Management (PIM) for proper water management and maintenance of structures after taking over of the system by the Water Users Cooperative Societies (WUCS).

### **2.1.4 Scope and Methodology of Audit**

Out of six CADAs, records relating to four<sup>9</sup> CADAs were checked in detail in addition to review of records of Directorate of CADAs and Secretary, WRD, covering the period from 2009-10 to 2013-14. The selection of sample was based on judgmental sampling method by considering the geographical location, expenditure incurred and central assistance from GoI for CAD activities. Information was also obtained regarding CAD activities from all the six CADAs through issue of Proformae. The activities relating to construction of go-downs, housing, special development programme and joint inspection of irrigation potential created were not covered in the Performance Audit.

An entry conference was held on 4 June 2014 with the Principal Secretary to Government, WRD, Karnataka, wherein audit objectives, scope, criteria of Performance Audit were discussed. The audit findings were discussed in the exit conference held on 9 October 2014. Audit acknowledges the co-operation extended by the Water Resources Department in the conduct of the Performance Audit.

### **2.1.5 Audit Criteria**

Audit findings were benchmarked against the following criteria:

- ❖ Command Area Development Act 1980;
- ❖ Guidelines and manuals issued by the Government of Karnataka and Government of India;
- ❖ Karnataka Irrigation Act, 1965;
- ❖ National / Karnataka Water Policy.

<sup>9</sup> Belagavi, Munirabad, Mysuru and Shivamogga

## **Audit Findings**

### **2.1.6.1 Status of command area development activities**

The initiative of the Government of India (GoI) for planned development of CAD activities as centre-state partnership envisages completion of canal works and On Farm Development (OFD) works in such a manner that both are completed concurrently to derive optimum benefits of irrigation without delay. However, the results were not encouraging as the gap persisted despite implementation of the Command Area Development programme from 1974 onwards.

At the end of March 2009, the gap between irrigation potential created (27.67 lakh ha) and irrigation potential utilised (22.02 lakh ha) was 5.65 lakh ha. For unutilised area of 5.65 lakh ha, the OFD works were to be planned and constructed in subsequent years, the results of which are discussed in the subsequent paragraphs.

### **2.1.6.2 Planning**

The conveyance of irrigation water up to the farms and its distribution to different farm owners is the key to the overall efficiency in usage of the created water resources for actual use. A planned approach requires Government interventions in identifying areas and creation of a database for prioritisation of tackling problem areas in a phased manner.

Under Section 12 of Command Area Development Act, 1980, every CADA shall prepare a scheme for the comprehensive development of the Command Area or any phase of it in such manner as prescribed. Any scheme so prepared shall set out the phases in which the area is proposed to be covered, phasing of the scheme, sketch plan of the area proposed, survey numbers to be covered, works to be executed, *etc.*

We observed that none of the test checked CADAs had prepared a comprehensive scheme/long term perspective plan as prescribed in the Act, although annual plans had been drawn.

CADA, Munirabad replied (June 2014) that consolidated proposals for survey and planning had been taken up and were in its final stage. CADA, Mysuru replied (July 2014) that preparation of comprehensive master plan for the earlier stages of the project does not serve the purpose. CADA, Shivamogga and Belagavi replied (July and October 2014) that the comprehensive surveys were not conducted.

In the absence of a comprehensive plan and a survey, fixing of annual targets for various CAD activities was therefore not realistic, thereby negatively impacting its implementation.

### 2.1.6.3 Allocation of funds

Funds are provided through the State budget for Central and State schemes *i.e.*, CADWM, Special Development Plan, Special Component Plan, Tribal sub plan, NABARD assisted RIDF<sup>10</sup> XVI works for carrying out CADAs activities. These funds released are placed in bank accounts of CADAs for meeting expenditure. The details of funds sought by CADAs, budget allocation made by Government, releases and utilisation of funds, remittance of funds and funds lapsed/surrendered by CADAs during 2009-14 are shown in **Table 2.1:**

**Table 2.1: Details of budget allocation, amounts released and expenditure**

(₹ in crore)

Name of the CADA	Grants sought	Budget allocation	Amount released	Amount utilised	Unutilised Grant (surrender /lapse)	Remitted	Percentage of utilisation (5) to release (4)	Percentage of funds utilised to grants sought
1	2	3	4	5	6	7	8	9
Mysuru	159.65	230.44	184.98	153.61	76.83	32.03	83	96
Bheemarayana gudi	355.95	392.54	108.28	90.09	302.45	19.16	83	25
Munirabad	509.07	349.56	222.28	206.97	142.59	14.71	93	41
Shivamogga	263.35	260.55	173.66	161.07	99.48	10.35	93	61
Belagavi	179.89	563.90	179.89	134.61	429.29	44.33	75	75
Kalburgi	171.45	241.00	119.28	85.12	155.88	34.76	71	50
<b>TOTAL</b>	<b>1,639.29</b>	<b>2,037.99</b>	<b>988.37</b>	<b>831.47</b>	<b>1,206.52</b>	<b>155.34</b>	<b>84</b>	<b>51</b>

(Source: Information furnished by Department)

From the above table, the following fund management deficiencies were observed;

- ❖ In respect of four<sup>11</sup> CADAs, the Government had allotted more funds amounting to ₹ 560.94 crore over and above the funds which were sought by these CADAs.
- ❖ The amount utilised by all CADAs was less than what was sought, which indicated poor budgetary planning.
- ❖ CADAs utilised funds only to the extent of 41 *per cent* of the budget allocation thereby affecting the implementation of the programme as per targets.
- ❖ The allocation of excess funds by the Government every year indicated adhocism since no exercise was conducted for analysing the reasons for under-utilisation of funds by the CADAs.
- ❖ Out of ₹ 988.37 crore released by the Government, only ₹ 831.47 crore was utilised by CADAs, ₹ 155.34 crore was remitted back to the Government account and the balance amount of ₹ 1.56 crore was retained by the CADAs.

<sup>10</sup> Rural Infrastructure Development Fund

<sup>11</sup> Mysuru, Bheemarayanagudi, Belagavi, Kalburgi

- ❖ Budget allocation of ₹ 262.64 crore under NABARD assistance during 2011-13<sup>12</sup> to meet the State's share of expenditure remained unutilised.

Failure to identify and address the reasons for non utilisation before allocating more funds indicated laxity in the budgetary process. During the exit conference, the Secretary, WRD, stated (October 2014) that in earlier years, budget allocation to CADAs was usually less. However, due to the abnormal increase in budget allocation in recent years, the CADAs could not utilise the allocated funds fully with the available infrastructure.

## **2.1.7 Programme management**

### **2.1.7.1 Command Area Development and Water Management Programme**

Central assistance for the Command Area Development Programme was initiated in 1974 as a centrally sponsored scheme. Its scope was enhanced by GoI (in July 2010 and December 2013) by including new components based on evaluation and impact assessments, although the basic objective remained the same *i.e.*, speedy utilisation of created irrigation potential and optimum production from irrigable land.

The GoI decided to implement the programme as a state sector scheme with effect from 2008-09. The State Government seeking central assistance is required to enter into a MoU for each approved project, which contains the implementation schedule. Strict execution as per implementation schedule is prescribed, with tolerance limit of 10 *per cent* shortfall. In case of shortfall beyond the tolerance limit not only would entail loss of central assistance but a revised MoU should be entered into for modified implementation of the schedule on a case by case basis. The cost is equally shared by the Centre and State Government for OFD works and central assistance of 75 *per cent* is admissible for components under extension services<sup>13</sup>, subject to unit cost fixed for each component.

### **2.1.7.2 Loss of central assistance**

The GoI had approved Central Assistance (CA) for 15 major and medium irrigation projects under the XII five year plan (2009-14). The details of projects, the scheduled period of completion and their status of execution are given in **Table 2.2:**

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<sup>12</sup> No assistance provided during 2013-14

<sup>13</sup> Adoptive trails and demonstration, training, *etc*

**Table 2.2: Details of projects with central assistance**

(₹ in crore)

Name of the projects/Name of the CADA	Period of MOU	Total CA as per MoU	CA up to 2013-14 as per MoU	CA claimed as per actual expenditure	Short availment of CA up to 2013-14	Status of the project
Gandorinala/Kalburgi	2010-11	7.06	7.06	1.68	5.38	Not completed as per MoU
Bennethora/Kalburgi	2010-12	10.09	10.09	7.37	2.72	CA discontinued
Lower Mullamari/Kalburgi	2010-12	9.95	9.95	Nil	9.95	CA discontinued
Upper Mullamari/Kalburgi	2010-12	4.77	4.77	0.57	4.20	CA discontinued
Chulkinala/Kalburgi	2010-12	5.52	5.52	0.03	5.49	CA discontinued
Amarja/Kalburgi	2010-13	10.82	10.82	3.60	7.22	CA discontinued
Karanja/Kalburgi	2010-15	27.63	19.99	5.50	14.49	On going
Bhima Lift/Kalburgi	2012-15	32.14	18.31	0.14	18.17	On going
Tungabhadra/Munirabad	2010-15	323.26	217.74	49.45	168.29	On going
Malaprabha/Belagavi	2010-15	153.96	338.17	42.45	295.72	On going
Ghataprabha/Belagavi	2010-15	206.07				On going
Hipparagi/Belagavi	2012-15	109.84				On going
Dhudganga/Belagavi	2013-16	5.94				On going
UKP/Bheemarayanagudi	2010-15	245.88	201.92	37.40	164.52	On going
Bhadra/Shivamogga	2010-15	107.28	83.31	46.46	36.85	On going
<b>TOTAL</b>		<b>1,260.21</b>	<b>927.65</b>	<b>194.65</b>	<b>733.00</b>	

(Source: MOUs and progress reports)

Due to shortfall in achieving targets in all the projects as per MoU, central assistance amounting to ₹ 733 crore, could not be availed. The GoI insisted (August 2014) that the State Government submits fresh proposals for extending its assistance.

Further, GoI did not reimburse the expenditure incurred on 12 projects assisted under CADWM as the shortfall in achievement was more than the prescribed limit as envisaged in the MoUs. The details of proposals sent and the actual release of central assistance are given in **Table 2.3:**

**Table 2.3: Details of central assistance received under CADWM programme**

(₹ in crore)

Sl No.	Year	Proposal sent *	Eligible central assistance as per proposal *	Amount released by GoI	Amount released in advance (+)/ not released (-)
1	2010-11	69.65	34.71	53.42	(+) 18.71
2	2011-12	368.17	76.28	53.08	(-) 23.20
3	2012-13	277.18	87.57	39.53	(-) 48.04
4	2013-14	289.42	77.46	-	(-) 77.46
<b>TOTAL</b>			<b>276.02</b>	<b>146.03</b>	<b>(-) 129.99</b>

(Source: Details furnished by Secretary, WRD)

\* This includes spill over amount of previous years

It may be seen from the above that against reimbursable expenditure of ₹ 276.02 crore, the GoI released only ₹ 146.03 crore and expenditure of ₹ 130 crore incurred was not reimbursed due to persistent slippages, thereby resulting in additional burden to the State exchequer. In addition, GoI was yet



to reimburse the State share of expenditure of ₹ 37.19 crore incurred during 2004-10. Thus, due to failure in adhering to the schedule as required under the MoUs, the State Government lost ₹ 130 crore of central assistance, besides the ₹ 37.19 crore which was yet to be reimbursed.

### 2.1.7.3 Absence of systematic annual plan

Preparation of annual action plan by the Department in line with the long term perspective plan would ensure time-bound completion of its projects. It was, however, observed that the annual action plan/integrated plans were prepared in a routine manner, without considering the extent of survey completed, which resulted in fixing unrealistic targets for OFD works. The targets and achievements for various components of the CAD activities carried out by all the CADAs under both Central and State schemes during 2009-14 are shown in **Table 2.4:**

**Table 2.4: Target and achievement under central and state scheme**

(Area in ha)

Year	Survey	FIC (OFD)	FD	COSD <sup>14</sup>	PIM <sup>15</sup>	LR <sup>16</sup>	Warabandi	AR <sup>17</sup>	AT&D <sup>18</sup>	Training	
2009-10	T	12,242	66,304	34,760	3,336	31,106	3,569	20,583	310	1,531	22,377
	A	10,174	14,294	33,348	1,251	32,039	3,821	2,183	275	1,128	22,428
2010-11	T	10,426	98,038	33,028	5,700	30,383	15,155	33,333	664	1,366	29,105
	A	9,816	61,298	34,697	3,944	29,661	11,549	22,936	694	1,417	22,376
2011-12	T	1,65,352	2,22,083	2,81,105	78,022	1,90,053	89,786	12,510	454	3,310	38,351
	A	42,981	50,725	1,46,832	3,326	73,511	21,168	843	364	3,304	59,432
2012-13	T	1,23,482	1,87,701	2,39,539	28,570	1,04,639	80,325	2,000	560	5,370	29,724
	A	9,004	49,185	1,93,252	255	57,436	27,064	1,586	517	5,466	58,115
2013-14	T	6,845	1,73,844	1,52,432	17,900	59,704	78,052	nil	254	1,212	17,373
	A	2,748	49,755	1,28,661	1,156	35,729	4,013	nil	282	1,450	22,579
TOTAL	T	3,18,347	7,47,970	7,40,864	1,33,528	4,15,885	2,66,887	68,426	2,242	12,789	1,36,930
	A	74,723	2,25,257	5,36,790	9,932	2,28,376	67,615	27,548	2,132	12,765	1,84,930

(T: Target, A: Achievement) (Source: Progress Report furnished by Secretary, WRD)

It may be seen from the above, that there were significant shortfalls in achieving physical targets in respect of all activities except training. The highest shortfalls were under COSD<sup>19</sup> (93 per cent), survey (77 per cent), LR (75 per cent) and OFD (70 per cent). The Additional Chief Secretary, WRD informed during exit conference that there were huge vacancies in the CADAs, due to which, they were facing difficulties to implement the CAD activities. It was further stated that efforts were being made to address the problem.

<sup>14</sup> Correction of System Deficiencies

<sup>15</sup> Participatory Irrigation Management

<sup>16</sup> Land Reclamation

<sup>17</sup> Ayacut Road

<sup>18</sup> Adaptive trials and demonstration

<sup>19</sup> Activities like cleaning of channels by de-silting and weeding, raising earthwork in embankments/dressing the bed and side slopes, removing undercuts, strengthening of banks, replacing and painting metal parts in gates/hoists, etc.

### 2.1.7.4 Shortfall in survey of Command Area

Guidelines of CADWM programme/Water Management Manual (WMM) prescribe undertaking topographic survey of the command area for planning and designing of OFD works. Soil survey is undertaken for land capability classification, to understand their capability for crop planning and undertaking proper treatment measures to derive their full potential.

We observed that out of six CADAs, while targets were not fixed for conducting survey in respect of two CADAs (Munirabad and Bheemarayanagudi); in CADAs Shivamogga, Belagavi and Kalburgi, the shortfall was 100 per cent, 86 per cent and 4 per cent respectively. Only Mysuru CADA recorded a progress of 100 per cent.

Reasons for shortfall in conducting surveys were not on record. Deficiencies in survey resulted in grossly inaccurate budget allocations, thereby impacting the progress of CAD activities.

### 2.1.7.5 Field irrigation channels

Field irrigation channels are a core component of the command area development programme, as they facilitate carrying of water from outlets of minors/distributaries, etc., up to tail end in a very short time, thereby preventing seepage loss. The FIC is the crucial link between irrigation potential created and irrigation utilised and helps in increasing crop production. The target, achievement and shortfall by various CADAs during 2009-14 are shown in **Table 2.5:**

**Table 2.5: Achievement in field irrigation channels**

(Area in ha)

Name of the CADA	Target	Achievement	Shortfall	Shortfall (per cent)
Mysuru	1,27,687	62,997	64,690	51
Munirabad	22,219	164	22,055	99
Shivamogga	1,61,881	72,310	89,571	55
Belagavi	1,48,079	25,166	1,22,913	83
Bheemarayanagudi	2,04,877	56,406	1,48,471	72
Kalburgi	83,227	8,214	75,013	90
<b>TOTAL</b>	<b>7,47,970<sup>20</sup></b>	<b>2,25,257</b>	<b>5,22,713</b>	<b>70</b>

(Source: Progress report furnished by Secretary, WRD)

As seen from the table above, against a total target of 7.48 lakh ha, FICs were constructed in 2.25 lakh ha resulting in a shortfall of 5.23 lakh ha (70 per cent). None of the CADAs could achieve even 50 per cent of the target in FIC construction, which indicated tardy implementation in this activity. CADAs attributed the reasons for shortfall to the fact that works were taken up only during non crop period (March - May) and that the shortfall was due to fixing overambitious targets with depleted staff strength

<sup>20</sup> This is inclusive of spillover of previous years plus fresh additions if any

besides lack of co-ordination among departments like Water Resources, Agriculture, *etc.* The reply was not acceptable in Audit since the period for working was well known to the implementing authority and should have been planned accordingly. Besides, the Department should have addressed the problems by bringing out a co-ordinated action plan to meet the actual requirements for CAD activities.

### 2.1.7.6 Construction of field drains

Field drains help in draining out surplus water from the agricultural land to the main and trunk drains. This prevents water-logging in the agricultural land, which helps in increased crop productivity. Under field drains, the drains from individual fields to Government drains or natural drains outside the outlets are constructed. The expenditure on field drains is inclusive of cost of earthwork, road cuttings, drop structures, *etc.*

The targets and achievement of construction of field drains during 2009-14 are shown in **Table 2.6:**

**Table 2.6: Physical targets achieved by various CADAs**

(Area in hectares)			
Name of the CADA	Target <sup>21</sup>	Achievement	Achievement ( <i>per cent</i> )
Mysuru	2,302	2,102	91
Munirabad	2,85,609	2,79,982	98
Shivamogga	98,027	64,362	66
Belagavi	2,01,530	1,10,178	55
Bheemaranagudi	63,750	32,030	50
Kalburgi	89,646	48,136	54
<b>TOTAL</b>	<b>7,40,864</b>	<b>5,36,790</b>	

(Source: Progress Report furnished by Secretary, WRD)

While CADAs of Munirabad and Mysuru achieved more than 90 *per cent* of the targets, in CADAs Shivamogga, Belagavi, Bheemaranagudi and Kalburgi, the shortfall ranged between 34 *per cent* and 50 *per cent*.

As per Indian Space Research Organisation's (ISRO) Study Report of 2009 (conducted in 2003), the extent of water-logged areas and salt affected areas was 11,974 ha and 5,781 ha respectively under command area of 85 major and medium irrigation projects in Karnataka. Out of this, in respect of 12 major and medium irrigation projects, the extent of affected area as assessed (2010) by GoK was 2.41 lakh ha as per MoU with GoI. Thus, in a short span of few years, the affected areas had significantly increased and this could be attributed to absence of field drains and improper drainage system. Data regarding the affected areas in respect of other projects were not available.

<sup>21</sup> This is inclusive of spillover of previous years plus fresh additions if any

### 2.1.7.7 *Deviation from norms*

As per guidelines issued by GoI (April 2008), the existing field drains have to be maintained by the land owners or WUCS concerned after their formation by the CADA and no expenditure can be incurred by CADAs either for their maintenance or for improvement. An expenditure of ₹ 17.13 crore was incurred between 2011-12 and 2012-13 on 239 works in CADA, Belagavi towards deepening/widening of existing field drains in violation of the stipulated norms by certifying that these field drains had not been constructed earlier. The drawings enclosed with the estimates clearly depicted the original discharge section and also the higher discharge section proposed to be constructed. Thus, the expenditure of ₹ 17.13 crore incurred towards widening/deepening of the existing field drains after certifying that these had not been constructed previously amounted to misrepresentation of facts and was thus, irregular.

As per design guidelines of Water Management Manual, a channel with carrying capacity of 5.38 cumecs<sup>22</sup> of water is sufficient for an area of 2,000 ha of land for draining out water. Test check of 249 estimates in CADA, Belagavi, showed that the area proposed for drainage through field drains ranged from 38 to 318 ha, for which discharge capacity of 0.86 cumecs with cross section area of 2.50 sqm (top width of four metres, bottom width four metres, height one metre with side slopes of 1:1.5) would be sufficient to drain surplus water.

We observed that as against the requirement of 2.50 sqm of the sectional area, the division had formed field drains of varying canal capacities with sectional areas ranging from 3 to 10.87 sqm with the discharge ranging up to 28 cumecs of water. Construction of field drains with higher capacity than required was unwarranted and had resulted in excess removal of earth of 20.23 lakh cum, involving an expenditure of ₹ 10.74 crore, which was avoidable.

### 2.1.7.8 *Reclamation of water-logged areas*

Excessive irrigation in areas with poor drainage causes water-logging and salinisation of soil. The water-logging would increase when water does not penetrate deep into the soils. The unlined canal, also contributes to increase in water table. The roots of the plants suffocate on account of excess water which affects crop productivity. In view of this problem, the reclamation of water-logged areas in the irrigated command area of the projects was covered under CADWM programme.

Central assistance up to 50 per cent of actual expenditure or ₹ 10,000 per ha for surface drainage and ₹ 25,000 per ha for sub-surface area is provided for reclamation of water-logged area. This activity can be taken up by the State

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<sup>22</sup> Cubic metre per second

Government with prior approval of GoI, which approves the proposals after scrutiny and recommendation by the regional office of the Central Water Commission.

The following items of works are undertaken under the component:

- ❖ Assessment of problem areas in the command areas of the irrigation projects;
- ❖ Planning and designing for preventive and reclamation measures;
- ❖ Taking up preventive and remedial activities;
- ❖ Monitoring and evaluation.

As per the MoU between GoI and GoK (November 2010), water-logged area of 1.56 lakh ha under five CADAs (excluding CADA, Mysuru) was to be reclaimed during 2010-14. Against this, the Government had programmed for 2.63 lakh ha and had reclaimed only 63,794 ha during 2010-14. The details of reclamation of water-logged area under each CADA during 2010-14 are given in **Table 2.7:**

**Table 2.7: Details of Reclamation of water-logged area**

Name of the CADA	Physical – Area in ha		
	Programme	Achievement	Percentage
Mysuru	13,557	13,536	100
Munirabad	33,182	7,298	22
Shivamogga	31,431	9,879	31
Belagavi	1,24,085	25,501	21
Bheemarayanagudi	43,175	3,872	09
Kalburgi	17,888	3,708	21
<b>TOTAL</b>	<b>2,63,318</b>	<b>63,794</b>	<b>24</b>

(Source: Progress report furnished by Secretary, WRD)

It was observed that shortfall was recorded in five CADAs, with over all achievement of only 24 *per cent*. The CADAs attributed the reason for poor progress to non-receipt of approval from GoI for the proposals submitted. The reply was not acceptable as GoK had forwarded incomplete/incorrect proposals which resulted in delayed approval/non-approval by GoI.

#### **2.1.7.9 Land levelling, grading and shaping**

Land levelling is a preparatory work undertaken in the farmers' land to ensure even spread of water throughout the command area and is taken up before formation of FIC. The Government is required to assess the extent of land to be levelled and also to provide technical assistance. This work has to be carried out by the farmers themselves at their own cost or by financial assistance arranged by Government through banks.

Against the assessment of 18.68 lakh ha requiring land levelling in eight projects, we observed that land levelling to the extent of 9.90 lakh ha was completed till March 2009. Against the balance of 8.78 lakh ha, only 24,408 ha was executed during 2009-14, leaving a large area unlevelled, indicating that adequate importance was not accorded to this activity. CADA, Mysuru, replied (July 2014) that land levelling in Hemavathy project would be completed after completion of FICs and farmers would be guided to take up land levelling works.

#### 2.1.7.10 Correction of system deficiencies

Correction of system deficiencies involves operation and maintenance activities such as restoring bed gradients, providing measuring devices, earthwork in embankment, desilting, dressing the bed, slopes, *etc.* Many irrigation projects in the country were operating below their potential due to system deficiencies above the “outlet level”. In order to improve irrigation efficiency, the CADWM programme was expanded to include system deficiencies in distributaries of 4.25 cumecs capacity which would eventually improve the outlet potential. The GoI reimburses 50 *per cent* of actual expenditure or 50 *per cent* of unit cost of ₹ 6,000 per ha, whichever is less. Prior approval of GoI is required to be obtained by the State Government before undertaking the rehabilitation work.

Correction of system deficiencies in 2.36 lakh ha under eight projects were approved (November 2010) for assistance by the GoI under CADWM. Against this, the Government set a target of 1.30 lakh ha covering eight projects during 2010-14, but only 8,681 ha was rehabilitated in five projects. The achievement was only four *per cent* of the area approved by GoI. Prior approval for reduction in the targeted area of 1.30 lakh ha had not been obtained by the State Government although it was required as per the guidelines. The status of physical targets achieved by three CADAs is shown in **Table 2.8:**

**Table 2.8: Physical targets achieved**

Name of the CADA	No. of projects	Approved by GoI	Target	Achievement
		Area in hectares		
Shivamogga	1	48,000	30,700	Nil
Belagavi	2	1,32,300	46,300	Nil
Kalburgi	5	55,706	53,192	8,681
<b>TOTAL</b>	<b>8</b>	<b>2,36,006</b>	<b>1,30,192</b>	<b>8,681</b>

(Source: Progress report furnished by Secretary, WRD)

Only CADA, Kalburgi executed this component while CADA, Shivamogga and Belagavi did not take up the work.

Thus, an area of 2.27 lakh ha under eight projects which required rehabilitation was neglected. Unless the identified deficiencies are rectified wherever the OFD works are taken and completed, their full potential cannot be achieved. CADA, Belagavi replied (October 2014) that the leakage of canal results in suffering of tail end command area. The reply was not acceptable as the CADA should have taken measures to correct the system deficiencies.

#### **2.1.7.11 Extension Services**

To impart knowledge of best practices amongst farmers for scientific utilisation of water, on account of advancement in technology, it is essential to provide extension services by undertaking field trials, crop demonstrations, training *etc.*, which would result in optimum utilisation of available water.

#### **Adaptive trials and demonstrations**

Adaptive field trials include preparation of land for receiving water, improving methods of irrigation through border strips, check basins for determining the optimal length of fields, suitable stream size, *etc.* Crop demonstrations are carried out at a farmer's field to show practically how to adopt suitable cropping patterns and use of balanced dose of inputs with proper management of available water for effective utilisation of potential created.

Keeping in view the importance of these activities, the GoI reimburses 75 per cent of expenditure incurred under this component under CADWM programme. As per MoU with GoI, the financial target to be achieved during 2010-14 was ₹ 15.20 crore. Against this, the State Government provided only ₹ 6.61 crore, out of which ₹ 5.09 crore was spent by CADAs. Reduction of budget allocation by GoK and under utilisation of the allotted amount impacted holistic development of the command area, besides resulting in not availing GoI share amounting to ₹ 6.44 crore (75 per cent of the difference between ₹ 15.20 crore and ₹ 6.61 crore).

### **2.1.8 Training**

Imparting training to the staff of Irrigation Department at management level, at field staff level and associations of the CADA is important for improving deliveries from the main system, on-farm water management, enforcement of rotational water supply, planning and designing of OFD works, Participatory Irrigation Management, *etc.* During the period 2009-14, in three out of six CADAs, *i.e.* Mysuru, Munirabad and Belagavi, no training programme had been arranged for the field staff.

However, during this period, as against a target for training 1,36,930 farmers for all six CADAs, 1,84,930 were imparted training.



## 2.1.9 Equitable distribution of water

Equitable distribution of water refers to ensuring supply of water for the designated crops of the command area of the project, which could be accomplished through enforcement of *Warabandi*, ensuring approved cropping patterns, checking illegal drawal of water and ensuring farmers' participation in water management by establishing WUCS.

### 2.1.9.1 Participatory Irrigation Management

Participation of farmers in management of irrigation systems is the prime objective of the National Water Policy. The objectives of Participatory Irrigation Management (PIM) include creating a sense of ownership of water sources and irrigation systems among the users for promoting economy in water use and preservation of the system, achieving optimum utilisation of available resources and equity in distribution, *etc.* As per section 62 of the Karnataka Irrigation Act 1965, formation of the following four-tier structure in irrigation projects was made mandatory with effect from June 2000:

- ❖ Water Users Co-operative Societies (WUCS) - at sluice point;
- ❖ Water User Distributary Level Federation (WUDL) - at distributary level;
- ❖ Water Users Project Level Federation (WUPL) - at project level;
- ❖ Water Users Apex Level Federation - at state level.

These associations were required to prepare an operational plan for their respective areas. The State Government, after signing MoUs, was to transfer the responsibility of the irrigation systems to these associations and form appropriate committees at the State level to monitor the progress under PIM and evaluate their functioning.

### 2.1.9.2 Status of WUCS

Out of 76 projects under the CADAs, PIM is being implemented in 33 major and medium irrigation projects. Reasons for not implementing the same in the other 43 projects were not furnished. The details of WUCS targeted for formation, actually formed, MoUs executed and water management handed over to WUCS in respect of these 33 projects and its command area, as of March 2014, are shown in **Table 2.9:**



**Table 2.9: Status of WUCS**

(Area in ha; WUCS in numbers)

Name of CADA & number of projects	No. of projects being implemented/ its total command area	Targeted area for PIM implementation	No. of Water Users' Co-operative Societies					Shortfall in			Non-functional WUCS (5-8)
			Total to be formed	Actually formed/ its command area	MOUs signed/ its command area	Water management handed over/its command area	Functional	Formation of WUCS (4-5)	Signing of MOU (5-6)	Handing over to WUCS (6-7)	
1	2	3	4	5	6	7	8	9	10	11	12
Belagavi (4)	3/5,43,521	3,48,239	607	598 /2,94,677	507 /2,53,248	507 /2,53,248	507	9	91	0	91
Bheemarayana gudi (1)	1/6,22,000	2,74,400	560	548 /2,68,520	464 /2,27,360	464 /2,27,360	233	12	84	0	315
Munirabad (3)	1/3,62,765	3,63,000	835	581	414 /99,775	414 /99,776	414	254	167	0	167
Shivamogga (30)	10/1,58,301	1,57,323	360	324 /1,30,364	189 /80,461	113 /45,352	189	36	135	76	135
Kalburgi (19)	14/77,415	77,415	172	150 /68,064	122 /53,604	122 /53,604	150	22	28	0	0
Mysuru (19)	4/4,86,807	4,30,660	628	630 /4,31,410	357 /1,83,746	357 /1,83,746	357	0	273	0	273
<b>TOTAL</b>	<b>33/22,50,809</b>	<b>16,51,037</b>	<b>3,162</b>	<b>2,831</b> <b>/14,38,893</b>	<b>2,053</b> <b>/8,98,195</b>	<b>1,977</b> <b>/6,81,078</b>	<b>1,850</b>	<b>331</b>	<b>778</b>	<b>76</b>	<b>981</b>

(Source: Details furnished by Secretary, WRD)

As could be seen from the above table, against a total command area of 22.50 lakh ha under 33 projects, the target had been fixed to irrigate an area of 16.51 lakh ha only, of which only 6.81 lakh ha was handed over to 1,977 WUCS. Further analysis showed that;

- ❖ Out of 2,831 WUCS formed, 981 (34 per cent) were non-functional.
- ❖ MOUs were yet to be concluded with 778 WUCS which were formed;
- ❖ Water management was not handed over to 76 WUCS in CADA, Shivamogga, though MoUs were concluded;
- ❖ The Administrators of CADAs, Mysuru, Kalburgi and Munirabad, replied (July 2014) that water management had not been handed over to WUCS, although Secretary, WRD stated (September 2014) that 3.37 lakh ha under these CADAs had been handed over to WUCS. No records relating to actual handing over of water management to WUCS, was made available to Audit.

CADA, Munirabad, replied that MoU is to be signed after fully rectifying the errors in the irrigation system and thereafter the water management would be handed over to the WUCS. However, this had not taken place.

The slow progress in formation of WUCS and non-handing over of water management to these societies were commented in Paragraph 2.4.7.4 of the Report of the Comptroller & Auditor General of India for the year ended 31 March 2011. The Public Accounts Committee (14<sup>th</sup> Assembly) in their third report had recommended (July 2014) that formation of WUCS be made mandatory for better water management. The recommendation is, however, yet to be implemented.

During the exit conference, the Secretary, WRD informed (October 2014) that CADAs were making all efforts to encourage farmers to form WUCSs by giving incentives and other facilities to the societies. It was also informed that study teams were constituted by the Government in August 2014 to study the performance of CADAs in neighboring states and that the recommendations received from the study team were under the active consideration of the Government.

#### **2.1.9.3 Status of formation of WUDLs and WUPLs**

Out of a total 651 distributaries under CADA Munirabad (209) and Bheemarayanagudi (442), only seven<sup>23</sup> WUDLs were formed. In respect of other CADAs, no WUDL was formed.

Out of 76 major/medium irrigation projects, WUPLs had been formed only in six projects under two<sup>24</sup> CADAs. Reasons for non formation of the associations were not furnished by the CADAs.

The non-formation of these associations even after 14 years of amendment to the Karnataka Irrigation Act, not only affected the equitable distribution of water but also defeated the concept of ensuring implementation of PIM envisaged under the *Warabandi* scheme. This indicated that due importance to the formation of these associations had not been accorded by the State Government.

#### **2.1.9.4 One time functional grants to WUCS**

Farmers are required to maintain field channels and drains constructed by CADAs in subsequent years. To facilitate the working of WUCS, a one-time functional grant of ₹ 900<sup>25</sup> per ha is provided. The amount is to be kept in fixed deposit and interest earned on the deposit is to be utilised for these activities. An amount of ₹ 40.57 crore was released (till March 2014) to WUCS in respect of 33 projects.

As per the information furnished by GoK, the water management in respect of 6.81 lakh ha area falling under six CADAs has been handed over to the WUCS. However, in the case of CADAs Mysuru, Kalburgi and Munirabad, even though the respective Administrators did not hand over the water management to the WUCS, functional grant amounting to ₹ 19.65 crore had been released. Thus, the release of the functional grant to WUCS was contrary to the scheme guidelines and did not serve the intended purpose. This also indicated defective monitoring by the authorities.

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<sup>23</sup> Four in Munirabad and three in Bheemarayanagudi

<sup>24</sup> Two under CADA Mysuru and four under CADA Kalburgi

<sup>25</sup> equally shared by Central and State Governments

### **2.1.10 Warabandi**

*Warabandi* means a system of equitable water distribution, by turns, according to a pre-determined schedule specifying day, time and duration of water supply to each farmer in proportion to his holding size in an outlet command. After executing OFD works, the system was to be handed over to WUCS for implementation.

As per the Karnataka Irrigation Act, each WUCS should procure water in bulk on volumetric basis from the Irrigation Department or *Neeravari Nigams* and distribute it to the land holders in accordance with the principles laid down by the General Body for equitable distribution of water. The Act also envisages fixing of one measuring device below an outlet which would help in ensuring equitable distribution of water and in building confidence amongst the farmers.

As of March 2014, though an area of 6.81 lakh ha was handed over to 1,977 WUCS, measuring devices were not installed in three<sup>26</sup> CADAs for an area of 1.98 lakh ha involving 649 WUCS. Other three CADAs did not furnish the requisite information.

Thus, water management was handed over to WUCS without installation of measuring devices. This would render WUCS helpless in ensuring equitable distribution of water within its command area and *Nigams/Irrigation Department* would also not be able to raise demand on volumetric basis. The failure in installing the measuring devices defeated the objective of the PIM for ensuring efficient and equitable distribution of water.

During the exit conference, the Administrator, CADA, Munirabad stated (October 2014) that measuring devices need to be fixed at points where water is supplied on volumetric basis.

### **2.1.11 Violation of cropping pattern**

Controlling cropping pattern violation by farmers in a command area is of critical importance as a project is designed with water availability in mind and the cropping pattern decided so as to serve its command area. Further, it is vital to control illegal drawing of water from canal through pumps. Unless controlled, equitable distribution of water to a command area cannot be ensured. This would deprive the farmers of tail end reaches the benefit of water supply. The violation invites levy of penal water rates under the Karnataka Irrigation Act.

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<sup>26</sup> Kalburgi, Munirabad and Shivamogga

Out of the four CADAs selected, no information was furnished by CADA, Belagavi. The details of cropping pattern violation in respect of the other three CADAs during 2011-13<sup>27</sup> are given in **Table 2.10:**

**Table 2.10: Cropping pattern violation**

(Area in ha)

Name of the CADA	Wet crops allowed to be grown	Wet crops actually grown		Percentage violation	
		2011-12	2012-13	2011-12	2012-13
Shivamogga	52,874	94,578	87,172	79	65
Munirabad	43,698	1,66,187	1,67,392	280	283
Mysuru	2,45,795	2,89,083	2,96,668	18	21
<b>TOTAL</b>	<b>3,42,367</b>	<b>5,49,848</b>	<b>5,51,232</b>	<b>61</b>	<b>61</b>

(Source: Details furnished by CADAs)

As seen from the above, there was large scale violation in the cropping pattern which was 61 *per cent* both in 2011-12 and 2012-13. The penal rates levied and collected were not made available by CADAs and hence it was not possible to ascertain whether penal provisions, which act as a deterrent and minimise violations, were being enforced. This had adversely affected the lands at the tail end due to excessive use of water continuously at the upper reaches.

### **2.1.12 Human resources**

The CADAs were established in 1974 and legal status conferred in 1980. The CADA works were earlier executed by construction divisions of the Irrigation Department and thereafter were executed by three *Neeravari Nigams*, which were formed between August 1994 and June 2003. The *Neeravari Nigams* are now in charge of all major and medium irrigation projects in the State. The GoI provides assistance towards establishment cost up to 50 *per cent* of the actual establishment expenditure incurred, subject to the establishment expenditure being up to 20<sup>28</sup> *per cent* of the total central assistance for the items of survey, OFD, reclamation and COSD under CADWM programme.

#### **2.1.12.1 Non-filling up of vacancies**

The MoU signed with the GoI under the CADWM programme required adherence to a strict implementation schedule to avail central assistance in the form of reimbursement of expenditure. However, the staff requirement of CADAs had not been revised in line with increased activities. Also, the Government had not filled up the vacancies which were in existence. We observed significant number of posts were vacant in all disciplines, especially in the agriculture wing of three<sup>29</sup> CADAs, as shown in **Table 2.11:**

<sup>27</sup> Information for 2009-11 was not furnished by CADAs

<sup>28</sup> Revised to 10 *per cent* from December 2013

<sup>29</sup> Munirabad, Mysuru and Belagavi

**Table 2.11: Vacancy position**

Sl No.	Wing	Sanctioned strength	Working strength	Vacancies	Percentage of vacancies
1	Administration	383	231	152	40
2	Engineering	33	18	15	45
3	Agriculture	389	74	315	81
4	Co-operation	47	25	22	47
<b>TOTAL</b>		<b>852</b>	<b>348</b>	<b>504</b>	

(Source: Details furnished by CADAs)

The staff shortage would be one of the factors contributing to the shortfall in achieving targets during the period 2009-14. During the exit conference, it was admitted that all the CADAs were suffering from shortage of technical staff and that efforts were being made to address the problem.

### **2.1.13 Persistent gap between irrigation potential created and utilised**

The core objective of the CAD programme is to bridge the gap between irrigation potential created and utilised. At the beginning of April 2009, the gap between the two components was 5.65 lakh ha which came down to 4.10 lakh ha at the end of March 2014, with net achievement of 1.55 lakh ha during 2009-14. However, the un-bridged gap had remained as high as 4.10 lakh ha which is to be viewed in the back drop of surrender/lapse of funds which was 59 *per cent* of the budget allocation. During the exit conference (October 2014), Secretary, WRD, stated that due to non issue of notification of irrigated areas, the gap between potential created and utilised seemed to be more. However, the details of non notified area were not furnished.

### **2.1.14 Crop loss due to gap between irrigation potential utilised and actual area irrigated**

The CAD programme was devoted to bridge the gap between irrigation potential created up to outlet level (dry potential) and connecting it through field irrigation channels (wet potential) for conveyance of water to farmers land. The optimum benefit is realised after execution of other OFD works like land levelling and proper drainage. The completion of OFD works is taken as the performance indicator since it bridges the gap between irrigation potential created and irrigation potential utilised.

It was noticed that the gap was still existing between irrigation potential utilised area and actual area irrigated even after completion of OFD works. During 2013-14, in 16 projects, an area of 11.12 lakh ha was actually irrigated out of 13.83 lakh ha for which FICs were created thus leaving an area of 2.71 lakh ha which was not irrigated. The details of the projects are shown in **Appendix 2.1.**

The crop loss for non-irrigated area of 2.71 lakh ha in spite of construction of FICs, worked out to ₹ 915.45 crore<sup>30</sup> per annum.

### **2.1.15 Monitoring**

As per CADWM guidelines, projects were to be concurrently evaluated by independent agencies. It also envisaged constitution of a multi-disciplinary committee headed by the Secretary to perform the following duties;

- ❖ to decide about the future programmes of CADAs and ensure their implementation in an integrated and holistic manner and advise suitably;
- ❖ to review the progress of CADWM programme and make suggestions for improving its performance at all levels;
- ❖ to decide upon the evaluation studies to be taken up at the GoK level and
- ❖ to review and recommend project proposals to be sent to the Ministry of Water Resources for inclusion of projects under the scheme.

It was observed that the Government did not conduct concurrent evaluation of any of the projects. The multi-disciplinary committee which held annual meetings for reviewing the progress achieved in implementation of the activities did not suggest any remedial measures for tackling the shortfall in progress. The committee did not fulfill its responsibility in deciding which evaluation studies were to be taken up so that the findings could be studied and remedial measures taken.

### **2.1.16 Conclusion**

The poor implementation of the activities for the development of the command area was due to deficient management of the programmes, finances and human resources, and also as a result of inadequate monitoring with lack of participatory irrigation management. The State Government also failed to achieve the targeted objectives, thereby depriving the farmers of the expected irrigation benefits. Further, the State Government failed to utilise central assistance of ₹ 733 crore. An amount of ₹ 130 crore was also not reimbursed due to shortfall in achievements as required under the MoUs. Deficiencies in formation of WUCS, enrolling beneficiary farmers as its members and inadequate entrustment of water management to WUCS led to poor implementation of the PIM which is the fulcrum of CAD activities. This defeated the very purpose of implementation of the scheme. The objective of equitable distribution of water was also, therefore, not achieved.

Poor implementation of CAD activities led to the gap of 4.10 lakh ha between the irrigation potential created and utilised. Due to non-irrigation of 2.71 lakh ha, despite construction of FICs, resultant crop loss was estimated at ₹ 915.45 crore per annum.

<sup>30</sup> Calculated on the basis of rate adopted in the detailed project report of Hipparagi Barrage, Belagavi

### **2.1.17 Recommendations**

We recommend the following:

- ❖ CADA may give priority for preparation of perspective plan to facilitate preparation of annual plans for completion of CAD activities in a time bound manner;
- ❖ Government may ensure effective budget allocation to ensure that there is no gross mismatch between the funds required and allocated;
- ❖ Government may submit revised memorandum of understanding to GoI for enabling utilisation of central assistance and for release of the withheld amount of reimbursement;
- ❖ CADA may identify the specific causes resulting in the gaps between wet potential created and actual area irrigated, for taking remedial measures;
- ❖ Government may strengthen the monitoring mechanism to ensure achievement of programme objectives; and
- ❖ Government may expedite formation of WUCS, WUDLs and WUPLs to enable more efficient use of water resources.

The matter was referred to Government in September 2014; their reply was awaited (October 2014).