

Chapter IV: Programme Implementation

4.1 Introduction

AIBP was launched primarily to accelerate completion of irrigation projects and schemes by providing Central Financial Assistance (CFA) to States implementing projects and schemes. Implementation of the programme was also required to ensure optimal utilization of financial and other resources. Besides, as the ultimate objective was to ensure availability of water to farmers, the projects and schemes included in AIBP also had defined deliverables in terms of creation and utilization of Irrigation Potential (IP). Section A of this chapter deals with achievement against the identified programme deliverables. The various factors affecting the extent of achievement are dealt with in Section B of the chapter.

Section A: Achievement of Programme Deliverables

4.2 Implementation of MMI projects

There were 154 ongoing MMI projects as on 31st March 2008 under AIBP and 47 MMI projects were included during the audit period i.e. 2008-17. Thus the total number of MMI projects covered under AIBP during 2008-17 was 201. Under PMKSY, 99 MMI projects including two National Projects were categorized as Priority projects for completion in phases up to December 2019. Out of the 201 MMI projects, 62 projects were completed during 2008-17 which included eleven Priority projects⁵². As of March 2017, 139 MMI projects were ongoing and four had been deferred.

4.2.1 Status of Completion

Out of the sampled 118 MMI projects, three projects were deferred and of the balance 115 projects, only 30 projects i.e. 26 *per cent*, were completed. This includes three Priority I and four Priority II and Priority III projects each during the period 2008-09 to 2016-17. As of March 2017, 85 projects (including 18 Priority-I) were ongoing. Of the 118 sampled MMI projects, 65 MMI projects pertained to SCSs, SAs in non-SCSs and Distressed Districts under PM's package. However, of these projects only eight were completed⁵³ during the period covered by this audit. Of the 23 projects categorized as Priority I which were scheduled for completion by March 2017, only three projects i.e. 13 *per cent* had been completed whereas 20 projects were yet to be completed. Thus, the overall percentage of completion was low and progress remained tardy even after prioritizing of projects under PMKSY.

⁵² Priority I: Rameshwar Irrigation project (Karnataka), Lower Panjara and Bawanthadi (Maharashtra), Priority II: Meddigedda (Andhra Pradesh) Singhpur, Mahuar and Sagad (Madhya Pradesh), Priority III: Maniyari Tank and Khurang (Chhattisgarh), Dongargaon and Warna (Maharashtra).

⁵³ Only one out of 25 MMI projects pertaining to SCS (Modification of Jamuna Irrigation (ERM), Assam) and seven out of 40 projects in SA in non-SCS and distressed districts under PMs package were completed (Andhra Pradesh-one, Karnataka-one, Maharashtra-five).

While obtaining approval for PMKSY, the Ministry intimated to the competent authority that projects where 100 *per cent* head works have been completed and 90 *per cent* of targeted IP has been created are deemed to be complete. A review of status of sampled completed MMI projects revealed that out of 30 MMI projects declared as completed, there were 12 projects in five States constituting 40 *per cent* of the completed MMI projects, which were treated as complete even though there were pending works under the projects and IP created was less than 90 *per cent* of the targeted IP. Details of some of these projects are covered in Table 4.10. This showed that the system of reporting on progress and completion of projects was not reliable. Non-achievement of targeted/threshold IP would affect the key assumptions for computing benefits from irrigation projects and their viability in terms of BCR.

4.2.2 Time overrun in MMI projects

Only those projects which were expected to be completed within two to four years⁵⁴ were eligible for inclusion under AIBP. However, audit scrutiny of 118 sampled projects revealed that out of the 30 projects completed, 23 projects had been completed with delays ranging between one and 11 years from stipulated time of completion. Project wise details of time overrun faced by sampled MMI projects are given in **Annexure 4.1**. Out of 85 ongoing projects, 82 projects were delayed with delays ranging from two to 18 years. Thus, 105 MMI projects consisting of both completed and ongoing projects, suffered from time overrun. In addition, out of the 83 projects not included in the sample, there was time overrun in 70 projects ranging from two to 18 years.

The status of delay in sample MMI projects is given in Table 4.1 below:

Table 4.1: Delays in MMI projects

Period of delay	MMI projects	
	Completed	Ongoing
< 2 Years	5 (22%)	0
Between 2-5 Years	11 (48%)	26 (32%)
Between 5-10 Years	6 (26%)	27 (33%)
> 10 Years	1 (4%)	29 (35%)
Total	23	82

Under PMKSY, 23 projects had been categorized as Priority I with a completion deadline of March 2017. However, 20 out of the 23 projects had missed this deadline as a result of which the Ministry further shifted the deadline for completion of 14 projects to March 2018 and of six projects to March 2019.

⁵⁴ The guidelines originally provided for stipulated period of completion of two years. In April 2004 guidelines, the timelines were revised to 6-8 seasons (3-4 years). Under 2006 guidelines the timeline is four years.

Audit scrutiny showed that delays were mainly due to factors such as issues relating to availability of land; revision in alignment, design, scope and nature of work; issues relating to availability of funds; lack of requisite clearances and site related issues; delayed dispensation of Rehabilitation and Resettlement (R&R) measures and law and order issues. Persistent and prolonged time overruns not only led to cost overruns but also diluted the central objective of AIBP of accelerating project completion so that benefits from the projects became available to farmers at the earliest.

4.3 Implementation of MI schemes

4.3.1 Status of Completion

There were 2,808 ongoing MI schemes as on 31st March 2008 and 8,483 schemes were added during 2008-17. The total number of MI schemes during 2008-17 (period of Audit coverage) was 11,291. Out of the total, 8,014 MI schemes constituting 71 *per cent* of total MI schemes were completed during the period 2008-09 to 2016-17. As of March 2017, 3,277 MI schemes constituting 29 *per cent* of total MI schemes were ongoing.

Out of 335 sampled MI schemes which was three *per cent* of total cases pertaining to the period 2008-09 to 2016-17, 213 (63 *per cent* of sample schemes) were completed during the audit period and 122 were ongoing as on 31st March 2017. Of the sampled schemes, 135 schemes constituting 40 *per cent* of sampled cases were in seven North Eastern (NE) States and 200 schemes constituting 60 *per cent* in other States⁵⁵. In NE States, out of 135 MI schemes, 88 (65 *per cent*) were completed and the remaining 47 (35 *per cent*) schemes were ongoing. In other States, out of the 200 MI schemes, 125 schemes (63 *per cent*) were completed and remaining 75 (37 *per cent*) were ongoing.

Test check of completed MI schemes in States showed that in 14 MI schemes pertaining to five States, execution of work was incomplete though the schemes had been declared as completed. The cases are discussed in Table 4.2 below:

Table 4.2: Incomplete MI schemes

State	Minor Irrigation schemes/ Sub schemes	Incomplete schemes/ Sub schemes
Arunachal Pradesh	Sub MI scheme at Kuto Hapa/nderj Uliltanagar Sub Division and Sub MI scheme at Sarshang Paddy field at Lish village	Two sub MI schemes were reported as completed without construction of the headwork, as provided in the approved estimates.
Himachal Pradesh	LIS Bharol, FIS Pandli, LIS Pabbar to Thana & Group of Villages and LIS Koku Nallah to Halallah	Out of the 17 sampled MI schemes, 15 schemes were reported as completed. However, test check of records revealed that four were actually still incomplete after incurring total expenditure of ₹ 14.23 crore.

⁵⁵ In 14 States, namely Andhra Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Rajasthan, Telangana, Uttarakhand and West Bengal.

State	Minor Irrigation schemes/ Sub schemes	Incomplete schemes/ Sub schemes
Jammu and Kashmir	MI scheme 'Construction of Pattangarh Khul ⁵⁶ '	The scheme involved construction of a <i>khul</i> of 1,500 m to be completed by March 2014 with envisaged IP of 101 ha. Though the scheme was shown as completed at a cost of ₹ 53 lakh, it was found during site visit that only 500 m of <i>khul</i> length had been constructed involving an expenditure of ₹ 22 lakh. It was also noticed that the <i>khul</i> had also not been connected to the source of water. The Department accepted (September 2017) that the work was incomplete due to local disputes.
	The scheme 'Construction of 20 no. tube-wells at Samba'	The scheme was taken up in 2007-08 to create an IP of 1,184 ha at an estimated cost of ₹ seven crore for completion within a period of two years. However, only 18 tube wells were commissioned and the remaining two were abandoned due to lesser yield/discharge of water. Besides there was a shortfall in creation of distribution channel (5,075 m as against 15,000 m).
Madhya Pradesh	Six schemes	In case of six MI schemes which were shown as completed, physical components of work such as main canals, distributaries and minors/sub-minors were either not executed or were partially constructed. Audit also noted that against an approved cost of ₹ 21.80 crore of these schemes, expenditure incurred was ₹ 24.94 crore. Thus, despite incurring excess expenditure of ₹ 3.14 crore physical components under the above six MI schemes remained incomplete.
Mizoram	Mat Project	The project was reported as completed but joint inspection visits of the project in May 2017 revealed that the project had not been completed so far due to land dispute; 35 m of channel work was incomplete and work for covering channel with cement plaster had not yet commenced.

4.3.2 Defunct MI schemes

Instances of defunct MI schemes were found in 41 cases in nine States constituting 12 *per cent* of sampled MI schemes involving IP of 5,021 ha as enumerated in Table 4.3 below:

Table 4.3: Defunct MI schemes

Sl. No.	State	Number of defunct projects	IP (ha)	Expenditure (In ₹ crore)
North Eastern States				
1	Arunachal Pradesh	12 consisting of 29 sub-MI schemes	259	2.80
2	Nagaland	6	938	12.21
3	Sikkim	6	174	1.94
4	Tripura	4	570	2.35
Other States				
5	Jammu and Kashmir	2	336	2.28

⁵⁶ *Khul* is a water channel.

Sl. No.	State	Number of defunct projects	IP (ha)	Expenditure (In ₹ crore)
6	Jharkhand	4	500	4.6
7	Madhya Pradesh	2	2,095	32.96
8	Uttarakhand	4	21	9.11
9	West Bengal	1	128	0.25
	TOTAL	41	5,021	68.50

The State wise list of defunct MI schemes/sub-schemes is given in **Annexure 4.2**. The projects were defunct due to various reasons like improper survey, poor implementation, damage/break down of headwork/sluice gate/distribution canals, landslides, water leakages, obstructions between alignment of channel, non-accumulation of water, non-construction of distribution canals, etc. As a result of schemes becoming defunct, IP created was un-utilized.

4.3.3 Time overrun in MI schemes

Of the 11,291 MI schemes implemented during 2008-2017, 335 (three *per cent*) MI schemes were selected for audit. Out of these 335 schemes, time overrun was observed in 153 i.e. 46 *per cent* of sampled MI schemes.

There was time overrun ranging from one month to 12 years in 73 (65 *per cent*) out of 113 test checked MI schemes operating in six NE States⁵⁷ as shown in Table 4.4 below:

Table 4.4: Delay in completion of MI schemes in NE States

Sl. No.	State	Number of completed MI schemes	Delay	Number of ongoing MI schemes	Delay
1.	Assam	12	One year to five years	13	One year to five years
2.	Meghalaya	6	One year to 12 years	2	One year
3.	Mizoram	7	One year to two years	1	Three years
4.	Nagaland	Nil	One year	8	One year
5.	Sikkim	7	Two months to 13 months	8	One month to 16 months
6.	Tripura	8	One year to eight years	1	Two years
	TOTAL	40		33	

Of the 73 delayed MI schemes, 40 MI schemes were completed after delays ranging from two months to 12 years and 33 were ongoing with time overrun ranging from one month to five years. In other States, time overrun was observed in 80 (50 *per cent*) out of 159 test checked MI schemes pertaining to 12 States⁵⁸. The time overrun ranged from six months to eight years as shown in Table 4.5.

⁵⁷ Information on the status of MI schemes in Arunachal Pradesh was not available.

⁵⁸ Information on the status of MI schemes in Bihar, Himachal Pradesh, Maharashtra and Telangana was not available.

Table 4.5: Delay in completion of MI schemes in other States

Sl. No.	State	Completed MI schemes	Delay	Ongoing MI schemes	Delay
1.	Andhra Pradesh	1	Six years	1	Six years
2.	Chhattisgarh	1	One year	6	One to six years
3.	Himachal Pradesh	10	One year & 10 months to six years & six months	1	Three years
4.	Jammu & Kashmir	6	One to three years	15	One to six years
5.	Jharkhand	nil	-	5	Six months to two years & three months
6.	Karnataka	6	Five months to three years & nine months	3	Four years to four years & ten months
7.	Madhya Pradesh	6	One year to two years	8	One to three years
8.	Odisha	nil	-	1	Six years
9.	Rajasthan	nil	-	1	Eight years
10.	Telangana	1	Three years	nil	
11.	Uttarakhand	7	Two years	-	
12.	West Bengal	1	Seven months	nil	
	TOTAL	39		41	

In the test checked 80 schemes, it was noticed that 39 MI schemes (49 *per cent*) were complete but with delays ranging from five months to over six years. The balance 41 schemes (51 *per cent*) were ongoing and had time overrun ranging from six months to eight years.

The broad reasons for delays were land acquisition problems, deficiencies in Detailed Project Reports (DPRs), changes in site, non-availability of funds, delays in release of fund, non-utilization of fund, local disputes, delay in requisite clearances, and abandonment of work by contractor. Delays resulted in cost escalation, damage/ deterioration of completed structures of schemes and shortfall in IP Utilisation.

4.4 Cost Overrun

MMI Projects have a long gestation period and involve considerable outlays. As mentioned in Chapter I of the report, an important consideration for launching AIBP was to financially assist States which were facing resource constraints in completing irrigation projects. It was therefore, important that resources provided for projects were optimally utilized and costs were efficiently managed. Audit of MMI projects however, disclosed significant cost overruns in most projects as discussed in the subsequent paragraphs.

Out of the 115 selected MMI projects, revision in costs was observed in 84 projects (71 *per cent* of sample). The combined cost overrun in these projects was ₹ 1,20,772.05 crore which was 295 *per cent* of their original aggregate cost of ₹ 40,943.68 crore. The extent of cost overrun in individual projects ranged between ₹ 4.40 crore to ₹ 48,366.88 crore. The list of these projects and details of cost overrun are given in **Annexure 4.3**. Of the remaining 31 (14 completed and 17 ongoing) projects, while no cost overrun was reported in 20 projects, in 11 projects expenditure had exceeded their sanctioned costs but revised approvals were

yet to be obtained. Details of these eleven projects are given in Table 4.6. The financial liability with respect to these projects was thus open-ended.

Table 4.6: Excess Expenditure vis-à-vis Sanctioned Cost

(₹ in crore)				
State	Project	Sanctioned cost under AIBP	Expenditure as on March 2017	Excess over cost
Chhattisgarh	Koserteda (completed)	154.65	166.19	11.54
Gujarat	Aji-IV (completed)	75.16	134.42	59.26
	Bhadar-II (completed)	73.09	138.61	65.52
Kerala	Chitturpuzha (ongoing)	34.57	41.69	7.12
Madhya Pradesh	Sanjay Sagar (ongoing)	250.33	277.07	26.74
	Sagad (completed)	239.99	280.21	40.22
	Mahuar (completed)	191.27	229.09	37.82
Karnataka	Sri Rameshwar (completed)	304.51	430.94	126.43
	Varahi (ongoing)	522.34	665.36	143.02
Maharashtra	Krishna (completed)	648.05	676.21	28.16
	Arjuna (ongoing)	476.49	508.04	31.55

In addition, out of the 20 projects where no cost overrun has been reported, there are 13 projects in which though no cost overrun has been reported, there has been time overrun ranging from two to 12 years. These cases carry risk of future cost escalation due to delays and time overrun.

The reasons for cost overrun in 84 projects were enhanced cost of land acquisition and R&R, changes in Schedule of Rates (SoR) and price escalation due to time overruns, variation in quantities, change in designs, etc. Illustrative cases are discussed in Table 4.7 below:

Table 4.7: Cost Overrun

State	Cost Overrun
MMI projects	
Gujarat	<p>Sardar Sarovar project</p> <p>Cost of project was revised from ₹ 39,240.45 crore (PL 2008-09) in May 2010 to ₹ 54,772.94 crore (PL 2014-15) with stipulated completion by March 2020. This led to an increase in project cost by ₹ 15,532.49 crore (40 per cent) of which increase of ₹ 5,722.29 crore alone was attributable to price escalation and ₹ 6,384.70 crore was due to change in design and inclusion of additional requirements. The company (SSNNL) stated (January 2018) that the project works were delayed due to delay in statutory clearances, court cases and R&R issues. Further, SSNNL decided in 2014 to construct underground pipe line in sub-minor canals under the head "U- Distributaries, Minors and Sub-minors", necessitating change in design with financial implication of ₹ 2,339.65 crore.</p>
Maharashtra	<p>Krishna Koyna LIS</p> <p>The cost was revised at 2013-14 price level from ₹ 2,224.76 crore (PL 2005-06) to ₹ 4,959.91 crore. This led to an increase in project cost by ₹ 2,735.15 crore (122 per cent) of which ₹ 244.64 crore alone was attributable to price escalation, ₹ 282.77 crore was due to other causes and ₹ 41.51 crore was due to change in design. Besides, ₹ 683.69 crore was increased due to District Schedule of Rates (DSR), ₹ 555.79 crore was increased due to inadequate survey, ₹ 764.61 crore was increased due to increase in rate of land acquisition and ₹ 134.02 crore was increased due to increase in area of land acquired.</p>

State	Cost Overrun
Telangana	<p>J. Chokha Rao project</p> <p>Project cost was revised from ₹ 6,016 crore to ₹ 13,445.44 crore in 2017. This led to an increase in project cost by ₹ 7,429.44 crore (123 per cent) due to changes in the scope of work.</p> <p>The Government replied (January 2018) that the original cost of ₹ 6,016 crore comprised of Phase I and Phase II only and did not include reservoirs and Phase III works. The first revised cost of ₹ 9,427.73 crore included all the phases. Hence, the increase was only 42 per cent when compared to the first revised cost, which included all the phases. The reply of the Government was not acceptable as there was no increase in the ayacut.</p> <p>Indiramma Flood Flow Canal</p> <p>The cost was revised from ₹ 1,331.30 crore to ₹ 5,940.09 crore in 2016 due to change in Standard Schedule of Rates, deviation in the project execution and changes in the scope of work. This led to an increase in project cost by ₹ 4,608.79 crore (346 per cent).</p>
Uttar Pradesh	<p>Bansagar Canal Project</p> <p>The project was included under AIBP in 1997-98 at an estimated cost ₹ 330.19 crore. The project was revised to ₹ 955.06 crore, ₹ 2,053.60 crore and ₹ 3,148.91 crore in 2003, 2007 and 2010 respectively. The latest approved cost of the project was ₹ 3,148.91 crore. This led to an increase in project cost by ₹ 2,818.72 crore (854 per cent) compared to original cost. The cost revisions were primarily due to non-release of funds on due time, increase in the rate of land, increase in cost of construction material and labour, increase in the quantity of works, additional works like bridges, drainage, crossing fall as per requirement, change in drawing and design in and increase in the scope on miscellaneous works.</p>

4.4.1 Cost increase due to change in Scope and Design

Test check of sampled MMI projects and MI schemes disclosed that in 12 MMI projects pertaining to six States and three MI schemes pertaining to three States, the scope and design of the projects were changed after sanction of the projects which led to cost increase and extra expenditure to the tune of ₹ 3,082.36 crore in these projects. Details are given in **Annexure 4.4**. A few illustrative cases are discussed in Table 4.8 below:

Table 4.8: Cost Escalation due to change in Scope and Design

State	Cost Escalation
Andhra Pradesh	<p>Conversion of Bhavanasi Tank into Mini Reservoir in Prakasam district</p> <p>The original cost of the scheme of ₹ 27 crore was revised to ₹ 47.72 crore, resulting in cost overrun of ₹ 20.73 crore. The project was ongoing as of March 2017.</p>
Chhattisgarh	<p>Gharjia Bathan Tank MI scheme</p> <p>An amount of ₹ 86.21 lakh was incurred for construction of three vertical falls and MS pipe Aquaduct which was originally not included in the scope of work leading to enhancement of cost of the work.</p>
Gujarat	<p>Sardar Sarovar Project</p> <p>In 2014 the SSNNL decided to construct underground pipe line in sub-minor canals under the head “U- Distributaries, Minors and Sub-minors”, necessitating change in design with financial implication of ₹ 2,339.65 crore.</p>
Jharkhand	<p>Subarnarekha Multipurpose Project</p> <p>The value of 13 out of 70 test-checked works was increased from ₹ 487.28 crore to ₹ 603.35 crore due to change in drawings, design and scope of works.</p>

State	Cost Escalation
Madhya Pradesh	<p>Barkheda Chhajju Minor Tank</p> <p>The scope of work of was increased by including new work of chute fall, bridge, box culvert, diverted road and spill channel cutting of ₹ 7.67 crore in revised Administrative Approval. This resulted in additional cost implication of ₹ 7.67 crore.</p>
Odisha	<p>Kanupur project</p> <p>The project was included under AIBP in 2003-04 at a cost of ₹ 428.32 crore. Due to water seepage and soil conditions in the zone of construction, design of components in Spillway, Head Regulator, Cross Drainage works, Bridge and Distributaries had to be altered which resulted in additional cost of ₹ 111.50 crore. Audit found that the soil condition and problem of water seepage was known but had not been catered for at the design stage necessitating subsequent changes in designs and additional costs.</p>
	<p>Lower Suktel Irrigation project</p> <p>Construction of balance work of one item was awarded at a cost of ₹ 140.74 crore for completion by December 2014. However, in August 2016, a supplementary agreement with one substituted item and four extra items was signed which enhanced the cost of construction of the balance work to ₹ 232.60 crore. The deviation in quantities was due to change in the General Agreement Drawing, as the original estimate was prepared on tentative drawing and design.</p> <p>Ministry stated (February 2018) that change in design may be unavoidable keeping in view the complex nature of irrigation projects.</p>

Increase in cost due to changes in design and scope are indicative of lack of due diligence and shortcomings in initial planning of the projects.

4.5 Irrigation Potential

As per AIBP guidelines, the Memorandum of Understanding (MoU) signed between the Ministry and the State Government for each project sets targets for creation of IP and for utilization of the IP created for the project/scheme. Achievement of these targets is critical for meeting the overall objective of AIBP of ensuring assured and adequate water supply for agriculture.

Out of the 118 sampled MMI projects, data regarding IP target and creation for 115 projects (30 completed and 85 ongoing projects) and for IP utilization for 114 projects (30 completed and 84 ongoing projects) as of March 2017, were made available by the concerned State level agencies. Details relating to IP targets, IP created and IP utilized of completed and ongoing projects are given in **Annexure 4.5** and **Annexure 4.6** respectively.

Out of 335 sampled MI schemes, information regarding IP target and IP created (IPC) was provided with respect to 323 MI schemes and on IP utilization (IPU) for 281 schemes/projects. Details of IP targets, IPC and IPU for MI schemes are given in **Annexure 4.7** and **Annexure 4.8**.

Audit findings with regard to IPC and IPU are discussed in the following paragraphs.

4.5.1 IP Creation (IPC)

MMI projects

Against the overall target of 85.41 lakh ha of IP from 115 projects, IP of 58.38 lakh ha was created which showed an achievement of 68 *per cent* and a shortfall of 27.03 lakh ha (32 *per cent*). Envisaged IPC was achieved in only 27 out of the 115 sample MMI projects i.e. in 23 *per cent* of the projects. Out of the Priority-I projects examined in Audit, only two projects (Sri Rameshwar LIS and Narmada Canal) achieved the targeted IP creation, as of March 2017.

IPC in 30 completed projects was 14.47 lakh ha as against the target of 15.58 lakh ha reflecting a gap of 1.11 lakh ha. Thus there was a combined shortfall of approximately seven *per cent* of the IP target with respect to these 30 projects. In the case of the 85 ongoing projects, against the target of 69.83 lakh ha, overall IPC was 43.91 lakh ha which constituted an achievement of 63 *per cent*. The shortfall was 25.92 lakh ha which constituted around 37 *per cent* of the target. A brief analysis of IPC in completed and ongoing projects and expenditure incurred on the projects is given in Table 4.9 below:

Table 4.9: IP creation vis a vis IP Target

Percentage of IPC to target IP	No. of completed MMI projects	No. of ongoing MMI projects	Expenditure during 2008-2017 (₹ in crore)
Nil	--	12	8,938
Up to 25	2	5	864
26 to 50	1	16	15,573
51 to 75	2	19	10,314
76-89	7	10	18,282
90-99	4	10	4,390
100	14	13	4,440
Total	30	85	62,801

The above table shows that only 14 completed projects achieved full IPC and four others achieved the threshold IPC of 90 *per cent* and above which is recognised by the Ministry for considering a project as completed. 12 completed projects did not achieve the threshold IPC of 90 *per cent* but were still shown as completed.

In the case of ongoing projects, 23 projects had achieved more than threshold percentage of IPC of 90 *per cent* and 52 projects had a IPC of below 75 *per cent* of which in 12 projects IPC was “nil” even though expenditure on these projects amounted to ₹ 35,689 crore.

Illustrative list of both completed and ongoing projects with achievement of IPC of below 90 *per cent* has been discussed in Table 4.10.

Table 4.10: Gap in IPC

State	Achievement of IPC (in per cent)	Gap in IPC
Gap in IPC in completed projects		
Andhra Pradesh	78	Swarnamukhi project The project was declared as complete in 2008-09, but only 3,651 ha of IP was created against the envisaged IP of 4,656 ha as of March 2017, due to reduction in command area/ayacut.
Chhattisgarh	79	Maniyari project The project was declared as complete in 2016-17, but only 11,515 ha of IP was created against the envisaged IP of 14,515 ha. Sanction for the remaining canal work under the project was included in the revised DPR which was awaited.
Gujarat	89	Aji-IV project The project was included under AIBP in 2000-01 with total projected CCA of 3,750 ha to be catered through two main canals and seven minors. The project was declared as complete in March 2010 with IP creation of only 493 hectares. Though the project was declared as completed, the main canal was completed only in March 2016 and work on one out of the seven minors was still in progress as on March 2017 with IPU of 14 per cent.
Karnataka	54	Ghataprabha project The project was declared as complete in 2010-11, but only 5,344 ha of IP was created against the envisaged IP of 9,963 ha as of March 2017.
Maharashtra	58	Kar project Project was declared complete 2010-11, but only 70 per cent of work under AIBP was completed. Balance work was proposed to be completed with funding from the State but remained incomplete due to land acquisition issues and insufficient funding.
	18	Hetwane project Project had been declared as complete in 2008-09, but canal and distributary work were still incomplete as of March 2017 due to land acquisition problems. It was also seen that an expenditure of over ₹ 100 crore was made after showing the project as complete.
	4	Warna project Though declared as complete in 2016-17, only 3,678 ha of IP was created against the envisaged IP of 87,792 ha. Three aqueducts were incomplete though most of the canal works between Km 1 to Km 29 and Km 35 to Km 47 were physically completed.
	48	Lal Nala The project was declared as complete in 2008-09, however, IP created was less than 90 per cent.
	87	Lower Panzara The project having a target of IP creation of 6,785 ha was completed during 2016-17 with achievement of 5,881 ha. The IPC could not be achieved due to encroachments in canal area.
Gap in IPC in ongoing projects		
Andhra Pradesh	Nil	Tarakarama Thirtha Sagaram Project IPC in the project was nil due to change in alignment, non-completion of canal network. The project could not be completed due to non-acquisition of land.

State	Achievement of IPC (in per cent)	Gap in IPC
Bihar	Nil	Punpun Barrage Scheme As against the envisaged IP of 13,680 ha, IPC was nil. The barrage of the scheme was almost 90 per cent complete whereas the main canal, branch canal, distributaries and water course had not yet started. DPR of Punpun CADWM had not been approved.
Gujarat	79	Sardar Sarovar Project As of March 2017, SSNNL developed IP of 14.13 lakh ha against projected IP of 17.92 lakh ha. Thus progress achieved in creation of IP was 79 per cent. Non-creation of envisaged IP was due to non-acquisition of private land, non-obtaining permission from the Forest Department for diversion of protected /reserved forest land, opposition by the farmers to handover their land, demand for UGPL /change of alignment and non-shifting of utilities in time and canal works not completed or partly completed. Test check of records showed that due to 585 missing links in distributaries and minor canals, irrigation potential in area of 1,90,354 ha could not be created. In Kachchh Branch canal, due to 42 missing links in branch and non-commencement of distributaries and minors, the IP of 1,12,778 ha could not be created. Audit also noticed that IP was shown to have been created even where there were missing links in the canal and water could not flow.
Jammu and Kashmir	Nil	Kandi Canal project IP creation was nil due to abandonment of work by the contractor.
Jharkhand	45	Subarnarekha Multipurpose project As against the targeted IP of 2.37 lakh ha, only 1.07 lakh ha could be achieved till March 2017. This was due to the fact that works relating to the project were delayed due to shortfalls in land acquisition to the extent of 20,556 ha which was 38 per cent of required land. The major part of the shortfall was with respect to land required for head works. In addition, work relating to a dam was held up due to non-clearance by Tribal Advisory Council and delays in R&R activities.
Karnataka	9	Dudhganga Irrigation project The project with envisaged IP of 11,367 ha was scheduled for completion up to 2011-12 but the project was not progressing due to opposition of farmers for acquisition of land. As a result, IPC after inclusion in AIBP was only 1,000 ha.
Telangana	40	J Choka Rao LIS Project There was shortfall of 1,48,191 ha in IP creation due to delay in land acquisition. The shortfall in land acquisition in this project was 2,483 ha which affected the taking up of work of distributary network and minors which were required for increasing IP creation.
Uttar Pradesh	43	Modernisation of Lachura Dam, Improving Irrigation Intensity of Hardoi Branch, Bansagar Canal, Restoration of Sarda Sahayak Canal System and Madhya Ganga Canal Phase-II In five projects, against total targeted IP of 12.29 lakh ha, IP created was only 5.34 lakh ha. The shortfall in IPC was highest in the case of Restoration of Sharda Sahayak Canal Project at 5.4 lakh ha and in the case of Madhya Ganga Canal Project –II at 1.05 lakh ha. Restoration of Sharda Sahayak Canal Project was reported to be abandoned after incurring an expenditure of ₹ 229 crore. In the

State	Achievement of IPC (in per cent)	Gap in IPC
		case of Madhya Ganga Canal Project –II, the shortfall in IPC was due to gaps in construction of canals due to less than required land acquisition.
West Bengal	Nil	Subarnarekha Barrage Project Against IP target of 1,30,014 ha, IPC was nil, as due to land acquisition of only 1.32 per cent of required land, lack of forest clearance and shortage of funds original project work had not commenced and only some preliminary work had been undertaken.

MI schemes

As against the overall target of IP of 1.50 lakh ha in 323⁵⁹ MI schemes, total IPC was 0.58 lakh ha (39 per cent) only.

The main reasons for shortfall in IPC were delayed execution of work, subsequent changes in the scope and design of the projects, commencement of work without ensuring fulfilment of essential pre-requisites such as land acquisition, delay in obtaining of clearances and non/delay in provision of R&R measures. As stated in para 4.2.1, failure to meet targeted IPC would affect the key assumptions for computing benefits from irrigation projects and their viability in terms of BCR.

4.5.2 IP utilization (IPU)

MMI projects

Out of a total IPC of 58.36 lakh ha in 114 projects, after incurring a total expenditure of ₹ 62,801 crore, IPU was 38.05 lakh ha i.e. 65 per cent. Thus, there was a gap of 20.31 lakh ha (35 per cent) between IPC and IPU in these projects. Full IPU was achieved in only 33 projects.

The position with regard to IPU both in completed and ongoing projects is enumerated in Table 4.11 below:

Table 4.11: IP utilization vis a vis IP created

Range of IP Utilization (in percentage)	Number of completed MMIs	Number of ongoing MMIs	Expenditure during 2008-17 (₹ in crore)
Nil	Nil	20 [#]	11,790
Up to 25	3	8	11,317
26 to 50	2	19	23,520
51 to 75	9	8	3,139
76-99	6	7	3,295
100	10	23	9,740
Total	30	85	62,801

[#] Including 12 projects with nil IP creation.

⁵⁹ IPC of 12 MI schemes out of total 335 MI schemes was not furnished.

In the case of completed projects, IPU was 10.42 lakh ha and the gap between IPC and IPU was 4.05 lakh ha constituting 39 *per cent* of IPC. In only 10 completed projects was IPC being fully utilised whereas in 14 projects IPU was 75 *per cent* or less.

In the ongoing projects, IPU was 27.64 lakh ha or 63 *per cent* and the gap between IPC and IPU was 16.26 lakh ha constituting 37 *per cent* of IPC. In 23 projects IPU was 100 *per cent* whereas in 55 projects it was 75 *per cent* or less with IPU being “nil” in 20 projects. Eight projects of seven States⁶⁰ had nil IP utilization despite IP created ranging between 1,000 ha in case of Dudhganga in Karnataka to 1,31,319 ha SRSP-II in Telangana.

Some cases of projects which saw significant variation between IPC and IPU are discussed in Table 4.12 below:

Table 4.12: Gap in IPU

State	Gap in IPU
Andhra Pradesh	<p>Gundlakamma Reservoir Project</p> <p>The IP created was not fully utilised due to gaps in canal arising out of litigation in land acquisition. This showed that IP was being wrongly showed as created even though there were gaps in canal work.</p>
Bihar	<p>Restoration of Kosi Barrage and its appurtenance (completed)</p> <p>The work of this project and CADWM programme were completed in March 2010 and March 2017 respectively. Audit scrutiny disclosed that the 3.45 lakh ha out of 4.40 lakh ha of the command area developed under CADWM was covered with unlined (<i>Kutccha</i>) structures. During joint site visits it was noticed that the <i>Kutccha</i> structures did not exist in three districts and details with regard to these structures were not available either with the Division or with the Kosi CAD Agency. Thus, the irrigation potential created under CADWM had been lost in unlined channels and the actual IP utilised was only 0.95 lakh ha.</p> <p>Durgawati Reservoir Project</p> <p>Against envisaged IP of 39,610 ha, the reported IP creation was 23,000 ha and utilization was only 2,345 ha, which was 9.45 <i>per cent</i> of IP created. The head works, Main/Branch Canal and distributaries/minors were 88, 96 and 42 <i>per cent</i> respectively complete. The process of land acquisition and Durgawati CAD&WM was incomplete.</p>
Chhattisgarh	<p>Mahanadi Project (completed)</p> <p>Bhatapara Branch Canal (BBC) under the project had an IPC of 17,882 ha through 19 distributary canals. However, shortfall of IPU was 6,488 ha i.e. 36 <i>per cent</i> of IPC. The shortfall was due to low head discharge of water as against its capacity despite availability of water which indicated that the canal system of BBC was not adequate and due to some works still being incomplete as of May 2017.</p>
Gujarat	<p>Sardar Sarovar project</p> <p>As of March 2017, IP created was 14.13 lakh ha and IP utilization was 6.28 lakh ha. Thus, progress achieved in IP utilisation against created IP was only 44 <i>per cent</i>. Audit noted that as the water delivery system up to field level was not fully developed, the created IP remained underutilized. Further, due to non-acquisition of private land, non-obtaining of permission from the Forest Department for diversion of protected/reserved forest land,</p>

⁶⁰ Bihar (one), Jharkhand (one), Karnataka (two), Maharashtra (one), Telangana (one), Tripura (one) and Uttar Pradesh (one).

State	Gap in IPU
	opposition from farmers, change of alignment and non-shifting of utilities in time, canal work were not completed or partially completed.
Jharkhand	<p>Subarnarekha Multipurpose project</p> <p>As against IP creation of 1.07 lakh ha till March 2017, IPU was 44,844 ha leaving a gap of 62,482 ha. This was due to the fact that works relating to minors and sub-minors were not completed.</p>
Karnataka	<p>Guddada Mallapura LIS and Dudhganga Project</p> <p>As against the IP creation of 5,000 ha and 1,000 ha, IP utilization was nil due to land acquisition problems.</p>
Telangana	<p>J Choka Rao LIS Project</p> <p>The gap of 82,007 ha between IP created and IP utilization was due to shortfall in utilization of ayacut due to non-availability of water.</p> <p>SRSP Phase II project</p> <p>IP utilization was nil due to inadequate inflows of water to the reservoir and non-utilization of ayacut.</p>
Uttar Pradesh	<p>Modernisation of Lahchura Dam, Improving Irrigation Intensity of Hardoi Branch, Bansagar Canal, Restoration of Sarda Sahayak Canal System, Eastern Ganga Canal (completed) and Madhya Ganga Canal Phase-II</p> <p>In six projects (one completed and five ongoing), against IP creation of 6.39 lakh ha only 4.92 lakh ha i.e. 77 <i>per cent</i> was utilized. The created IP of projects could not be utilised mainly due to non-completion of the canals in continuous stretches, non-acquisition of land and gaps in the canals.</p>

MI schemes

Data on IPU was available for 281⁶¹ schemes with the IPC being 0.46 lakh ha in these schemes. Of this, 0.33 lakh (72 *per cent*) was utilized.

Shortfalls in IPU were largely due to variation in the planned Command Area, incorrect phasing of project implementation, gaps in the main/branch canals, non-completion of minors and distributaries, defects in canals, insufficient water availability, poor Operation and Maintenance (O&M) and slow *pari-passu* implementation of Command Area Development work for creation of final distributaries to ensure supply of water in the fields. As in the case of failure to meet targeted IPC, shortfall in IPU would also affect the key assumptions for computing benefits from irrigation projects and their viability in terms of BCR.

⁶¹ IPU of 54 MI schemes out of total 335 MI schemes was not furnished.

Section B: Factors affecting Programme Implementation

4.6 Land acquisition

While evaluating AIBP, the Planning Commission identified (November 2010) land acquisition as one of the main constraints in implementation of AIBP. The 2013 AIBP guidelines recognized this by stipulating that while processing release of Central Assistance (CA) under AIBP, the same should be made commensurate with works related to land under possession.

Audit of sampled MMI projects revealed that in 56 projects (including 11 Priority-I projects) pertaining to 16 States⁶² involving a total sanctioned cost of ₹ 1,31,707.77 crore (73 per cent), land acquisition had not been completed and there was shortage of 53,881.06 ha of land which was 20 per cent of the total land required. Of these 56 projects, eight were completed without acquiring the envisaged areas of land and 48 projects were ongoing with significant delays in land acquisition. Details are given in *Annexure 4.9*. The audit findings with regard to availability of land covering both completed and ongoing projects are discussed below:

Completed Projects

- Eight completed projects⁶³ of two States viz. Maharashtra and Karnataka which had a total requirement of 10,916.91 ha of land, experienced shortage of land. The shortage in these eight projects ranged from 4.32 ha to 449.12 ha as shown in Table 4.13 below. In percentage terms the shortfall ranged from one to 64 per cent.

Table 4.13: IPC, Time and cost overrun in completed projects having Land shortages

Shortage of land (In Percentage)	Number of projects	Area (In Ha)	Time overrun		Cost overrun (In crore)		Gap in IPC (In Percentage)	
			No.	Year	No.	Amount	No.	%
Up to 10	4	4 to 1, 148	3	1 to 9	3	121 to 706	4	0 to 82
11-20	1	9	0	--	0	--	1	Nil
21-40	2	175 & 449	1	5	1	209	2	13 & 42
>40	1	449	1	2	0	--	1	Nil
Total	8		5		4		8	

⁶² Andhra Pradesh-two, Assam-two, Bihar-two, Chhattisgarh- one, Goa-one, Gujarat-one, Jammu & Kashmir-one, Jharkhand-five, Karnataka-four, Kerala-one, Maharashtra-17, Odisha-seven, Telangana-six, Tripura-two, Uttar Pradesh-two and West Bengal-two.

⁶³ Sri Rameswar in Karnataka, Bawanthadi, Lower Panjara, Hetwane, Sarangkhedda, Kar, Pentakli and Tajnapur in Maharashtra.

- Out of eight projects completed with shortage of land, there was time over run in five projects, cost overrun in four projects and gap in IPC in five projects, as shown in Table 4.13 above.
- One project i.e. Sarang Kheda where shortfall of land was 4.32 ha was however, able to achieve its targeted IP without time and cost overrun. In other cases, shortfall in IPC ranged between nil and 82 per cent.

Ongoing Projects

In the case of 48 ongoing projects (including eight Priority-I projects), an area of 59,567.77 ha which was 29 per cent of the total requirement of 2,08,016.33 ha, had not been acquired as of March 2017. The shortfall of land ranged from 1.33 ha to 20,556 ha. In percentage terms, the shortage ranged from 0.40 to 90 per cent. The shortfall in availability of land contributed to both time and cost overrun in these projects which ranged from two years (Upper Tunga in Karnataka) to 18 years (Dhansiri in Assam) and from ₹ 11.33 crore to ₹ 48,366.90 crore respectively. The details are given in Table 4.14 below:

Table 4.14: Time, cost overrun and gap in IP in MMI projects with incomplete land acquisition

Shortage of land (In Percentage)	Number of projects	Time over run		Cost over run		Gap in IPC	
		No. of projects	Range of delay (years)	No. of projects	Range of cost overrun (Percentage)	No. of projects	Range of Gap (Percentage)
Up to 10	24	23	3 to 18	21	9 to 7,268 [#]	20	13-100
11-20	9	9	2 to 14	7	110 to 854	9	20-100
21-30	1	1	9	1	792	1	100
31-40	6	6	2 to 18	4	32 to 1,896 ^{##}	7	21-100
40-50	1	1	2 to 13	0	0	1	100
50-60	1	1	18	1	371	1	76
60-70	2	2	3 to 5	1	122	2	60-91
70-80	3	3	4 to 15	3	170 to 843	2	72-100
>80	1	1	5	-	-	-	-
Total	48	47		38		43	

[#]Karapuzha Project (Kerala); ^{##}Tatko Medium Irrigation Project (West Bengal)

Cases of projects where significant shortfall in land acquisition were observed are discussed in Table 4.15.

Table 4.15: Shortfall in Land Acquisition

State	Shortfall in Land acquisition
Assam	<p>Borolia Irrigation Project</p> <p>There was shortage of land measuring 224.30 ha as of July 2017 despite payment of ₹ 94.63 lakh to the local Revenue Authority in March 2012. As a result, the work of some canals and distributaries was delayed even though construction of the Barrage and main canal had been completed. The project has suffered a time overrun of 18 years and cost overrun of ₹ 123.67 crore since its inclusion in AIBP. Besides, the IPC achieved was only 24 per cent and IPU was 27 per cent of IPC. The possession of land was yet to be handed over to the Division. The Division stated (July 2017) that the matter was with the local Revenue officers and also that the process for acquisition of land had been initiated with district authority during the period from 2007 to 2011.</p> <p>Champamati Irrigation Project</p> <p>Two canals could not be completed due to non-availability of land as compensation for acquisition could not be settled. As a result, length of two canals had to be curtailed leading to loss of IP of 90 ha. In addition, expenditure of ₹ 3.02 crore on construction of the two canals beyond the point where land became unavailable was rendered unproductive. The reason for non-acquisition of the required land was stated to be non-settlement of demand of compensation value at four times the present value of land by the land owners.</p> <p>Dhansiri Irrigation Project</p> <p>The construction of the work 'Cross drainage over river Ghogra at ch. 9,180 m of Branch Canal B-7 was awarded (June 2008) to a contractor at a tender value of ₹ 2.26 crore with the stipulation to complete the work within three months. As of July 2017, the Division incurred an expenditure of ₹ 1.60 crore but the construction of cross drainage was yet to be completed. Physical verification of the work site (19 July 2017) revealed that a well settled village existed over the proposed canal length at both the ends of the cross drainage, indicating that the process of land acquisition for the canal system was not completed. The Division admitted (July 2017) that due to non-acquisition of land, work could not be done in the remaining portion of the canal system.</p>
Andhra Pradesh	<p>Gundlakamma Reservoir Project</p> <p>Out of 4,644 ha, the acquisition was pending for 19.53 ha due to a court case. During execution of work, the Engineer-in-Chief reported (August 2009) to Government that the contractor was not able to identify land to create IP for 8,905 acres within the command area of the project.</p> <p>Bhavanasi scheme</p> <p>For acquiring 188.47 ha of land, ₹ nine crore was deposited with LAO in 2010. As of 2017 the LAO acquired 77 ha only resulting in delay of seven years for the land acquisition. Delay was due to increase in cost of land and objection from farmers.</p>
Gujarat	<p>Sardar Sarovar Project</p> <p>Out of 59,122.17 ha required under the project, only 57,150.07 ha had been acquired leaving a shortfall of 1,972.11 ha as of March 2017. Several cases of work being affected due to land acquisition issues were observed. These are dealt with below:</p> <p>As per the instructions of SSNNL, 20 per cent of the required land should be in possession of the Company while inviting tenders and 60 per cent before giving the work orders.</p> <p>Under Kachchh Branch Canal, nine out of 17 works were awarded by the company without availability of required land. In absence of the required land, the progress achieved in the works ranged between zero and 100 per cent.</p> <p>The work of construction of Morbi canal awarded in July 2012 at cost of ₹ 26.09 crore to be completed by January 2014 could not be completed till May 2017 as ownership rights of</p>

State	Shortfall in Land acquisition
	<p>acquired land could not be transferred to project authorities due to discrepancy in the land revenue records.</p> <p>Work of construction of a distributary of Limbdi Branch Canal awarded in January 2014 for ₹ 11.54 crore could not be completed as farmers did not accept compensation despite declaration of awards in February 2012. The work was, however, shown as completed in December 2015 after incurring expenditure of ₹ 8.67 crore.</p> <p>242 ha land had to be acquired for construction of 10 minor canals of Gadsisar Branch Canal but process of acquisition land had not been initiated as of July 2017. Thus, even after expenditure of ₹ 106.16 crore on construction of the branch and distributary canals, CCA in 28,548 ha could not be created rendering the expenditure as unproductive.</p> <p>The project suffered from time overrun of 16 years and cost overrun of ₹ 48,367 crore since its inclusion under AIBP. Besides, the IPC achieved was only 79 <i>per cent</i> and IPU was 44 <i>per cent</i> of IPC.</p> <p>The main reasons for non-acquisition of land were demand of enhanced compensation, change of alignment, change of ownership, difference in area to be acquired, transfer of Government land to private land, land possession issues, etc.</p>
Jammu and Kashmir	<p>Tral LIS</p> <p>Though land acquisition process had been completed for the first and second stage of the project during the implementation of project works, the same was not completed from the third stage onwards for construction of rising main and portion of canal beyond delivery tank. The land acquisition process continued even beyond the revised completion date of 2013-14 up to March 2015. This delayed the completion of the scheme. An expenditure of ₹ 103.33 crore was incurred up to March 2017.</p> <p>Rajpora LIS</p> <p>Land acquisition process was initiated only during the execution of the project till March 2012 despite the fact that the completion date for the project was 2013-14. An expenditure of ₹ 64.86 crore was incurred up to March 2017. The main reason for delay was resistance in land acquisition.</p>
Jharkhand	<p>Subarnarekha Multipurpose Project</p> <p>As against requirement of 54,558 ha, land acquired was 34,002 ha. Shortfall in IP creation was 1,29,520 ha and IP utilization was 62,482 ha, which was 58 <i>per cent</i> of IP created under the project. The main reason was due to delay in acquisition of land by the project authorities.</p>
Maharashtra	<p>Krishna Koyna Lift Irrigation Scheme</p> <p>In the fourth revised project report of KKLIS Project, an increase of ₹ 134.02 crore over third RPR was shown due to increase of area of land acquisition. Out of 6,305.87 ha required, 4,193.63 ha of land was yet to be acquired. Even land for head works was not acquired fully till March 2017. Land acquisition cases were not filed resulting in delay in acquisition of land and subsequent increase in rates.</p> <p>Waghur</p> <p>Waghur Major Irrigation Project included creation of IP of 38,570 ha. Further, LBC comprises two branch canals and its distributaries namely, Asoda and Bhadli. Audit scrutiny revealed that the work orders were awarded to contractors for construction of Asoda branch canal and Asoda distributaries without acquiring of full continuous length of land required for the same. Consequently, in Asoda branch canal a total length of 2.854 km</p>

State	Shortfall in Land acquisition
	between km 5.886 and km 11.00 were executed without continuity of length for which payment of ₹ 2.78 crore was made to contractor and ₹ 1.05 crore paid to PWD for deposit work. Similarly, in Asoda distributaries, a total length of 9.16 km between km 0.00 to km 11.20 was executed without continuity of length for which payment of ₹ 4.83 crore was made to contractor. The portion of land was later abandoned. It was also observed that expenditure of ₹ 1.63 crore for land acquisition and ₹ 85.66 lakh for miscellaneous items was incurred in this abandoned portion. Subsequently, Government of Maharashtra accorded (June 2017) approval to Pressurized Pipe Distribution Network (PDN) work in the abandoned portion of length of Asoda branch canal and Asoda distributaries for irrigation of projected IP at a cost of ₹ 75 crore. The work was yet to begin as of July 2017.
Odisha	<p>Anadapur Barrage, Kanupur, Lower Indra, Lower Suktel, Ret Irrigation, Rukura Irrigation, Telengiri</p> <p>The shortfall in land acquisition ranged from four to 79 <i>per cent</i> of the required land. The delays were reported due to pending sanction of land acquisition estimates. The main reason for non-acquisition of land in Anandpur Barrage Project was the resistance from the land holders.</p>
Telangana	<p>J Choka Rao LIS Project</p> <p>The shortfall of 2,483 ha land was due to higher compensation demanded by the farmers. The project suffered from time overrun of eight years and cost overrun of ₹ 7,429.44 crore since its inclusion under AIBP. Besides the IP creation was only 40 <i>per cent</i> and IP utilization was 18 <i>per cent</i> of IP created.</p> <p>Indiramma Flood Flow Canal project</p> <p>The shortfall of 1,735 ha of land was due to obstruction from land owners demanding higher compensation for land. The project suffered from time overrun of five years and cost overrun of ₹ 4,609 crore since its inclusion under AIBP. Besides the IP created was nil.</p> <p>Reasons for non-acquisition of land were due to the demand from farmers for hike in land compensation and creation of obstructions in viz. (i) survey work and subsequent process of land acquisition and (ii) not allowing the agencies to bring machinery to the site.</p>
West Bengal	<p>Subarnarekha Barrage project</p> <p>The main reason for non-acquisition of 4,034 ha (73 <i>per cent</i>) of land was non-availability of funds as the State government was not in a position to continue both Teesta Barrage project and Subarnarekha Barrage project. As a result, there was no physical progress with regard to the project. Land acquisition proposals of 862.30 ha were lying with Land Acquisition department.</p>

The main reasons for non-acquisition of land were administrative delays, demand for enhanced compensation, lack of fund, public objection, change of alignment, change of ownership, difference in area to be acquired and legal disputes.

Thus, shortfalls and delays in land acquisition not only affected the timely implementation of projects but was also one of the limiting factors for the achievement of targets for IP creation and utilisation.

The Ministry stated (February 2018) that land acquisition is an ongoing process which runs through the execution period of the project. However, as is evident from the findings mentioned above, delays in land acquisition was the principal cause of time overrun across

most of the delayed projects. In addition, shortage of land also adversely affected timely creation and utilization of IP of the projects.

4.7 Rehabilitation and Resettlement

Rehabilitation and Resettlement (R&R) measures are governed by the Land Acquisition Act, 1894 and the Land Acquisition, Rehabilitation and Resettlement Act, 2013 of the Union and relevant State Acts. Timely implementation of R&R measures is necessary for undertaking land acquisition, obviating public opposition to projects and for taking up key components of projects such as dams and reservoirs.

Test check of records revealed slow progress of R&R measures in 20 projects of eight States. There were deficiencies such as incomplete coverage of all Project Affected People (PAPs), non-distribution of land, lack of basic infrastructure and administrative delays. There were shortcomings in the quality of R&R such as non availability and poor maintenance of basic amenities in resettled villages. Delays in release of funds led to protests and demand for payment of higher compensation. These deficiencies led to project delays and shortfalls in IP creation and utilization. Details are given in **Annexure 4.10**.

A few illustrative cases are discussed in Table 4.16 below:

Table 4.16: Incomplete R&R measures

State	Incomplete R&R measures
Andhra Pradesh	<p>Gundlakamma Reservoir Project</p> <p>Rehabilitation of all families from seven partial submergence villages were not initiated due to non-completion of R&R centres. In case of 'full submergence villages', rehabilitation for all families was not done till June 2017. Further, land acquisition of 48.27 acres was held up. As a result of non-completion of land acquisition and R&R there was shortfall in creation of envisaged Culturable Command Area (CCA)/ ayacut and the canal work was not completed leading to shortfall in IP creation.</p>
Maharashtra	<p>Wang project</p> <p>R&R plan under the project envisaged resettlement of the inhabitants of nine affected villages. As per Maharashtra PAP Rehabilitation Act, 1999, 18 amenities were to be provided in each village. However, there were deficiencies in implementing R&R measures such as all project affected families not being resettled, distribution of land being incomplete and civic facilities being deficient. Deficient R&R measures led to public protests affecting the dam work and gorge filling. As a result, the project suffered time overrun and IP creation was only 14 per cent.</p> <p>Aruna Project</p> <p>Authorities did not release ₹ 54.57 crore to SLAO for timely dispensation of R&R measures. As a result, farmers demanded higher compensation after implementation of Land Acquisition Act, 2013 and refused to shift from their villages. This affected work relating to gorge filling of dam and no IP creation was achieved under the project even after a time over run of three years.</p>
Odisha	<p>Lower Indra Irrigation Project</p> <p>The initial estimate for displacement of families rose from 1,460 to 9,441 up to March 2017. The project authorities paid compensation of ₹ 58.74 crore only to 2,937 Displaced</p>

State	Incomplete R&R measures
	Persons (DP) as per the Rehabilitation and Resettlement (R&R) Policy of 1994 without ensuring their eviction from the submergence area. As a result of non-eviction of the DPs, ineffective implementation of R&R measures and delay in land acquisition the project has suffered a time over run of 13 years and cost overrun of ₹ 1,541 crore. The State Government stated (March 2018) that eviction and R&R issues were a difficult task and Government had to move very carefully and tactfully.
Telangana	<p>Indiramma Flood Flow canal project</p> <p>The State Government deleted (January 2016) the work of Thotapally Balancing Reservoir (TBR) taken up in September 2008 due to delay and increasing cost of R&R measure under new Land Acquisition (LA) Act. The work of Mothe Reservoir could not commence due to obstructions caused by the villagers and non-settlement of the R&R issues within the agreement period. Further, though the overall physical progress of the project was 91.8 per cent, the progress in respect of branch canals and distributaries was only 14.9 per cent. As a result, no ayacut could be created so far. The State Government replied (January 2018) that as the project would become un-economical due to increased cost of R&R after new Land Acquisition Act came into force, Thotapally reservoir was deleted.</p>

The delay and lapses in completion of R&R measures affected the progress of work leading to time and cost over-run in these projects.

4.8 Clearances from various authorities

For ensuring hindrance free and timely execution of projects, it was essential both in terms of codal provisions and AIBP guidelines that all necessary statutory clearances from other Ministries/ Departments be either obtained at the approval stage of the project and in an expeditious manner. These clearances covered forest, wildlife and environmental clearances as also clearances from Railways and National Highway authorities. These clearances are necessary to ensure that execution of works is unhindered and timely.

Audit of sampled projects showed that in 22 MMI projects in nine States⁶⁴, there were delays in obtaining requisite clearances for the projects. In nine projects⁶⁵, forest clearance and in nine other projects⁶⁶, both environment and forest clearance had not been obtained or were delayed. In one project, clearance for railway crossing had been obtained with delays. In seven other projects, multiple clearances viz. environment, forests, wildlife, railway and road crossing had not been obtained prior to approval of the projects. The details of all 22 projects are given in **Annexure 4.11**. A few illustrative cases are discussed in Table 4.17.

⁶⁴ Bihar, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Telangana and West Bengal

⁶⁵ Durgawati in Bihar, Sardar Sarovar, Aji-IV and Bhadar-II in Gujarat, Sonua in Jharkhand, Warna and Krishna Koyana LIS in Maharashtra, Subarnarekha Barrage and Tatko in West Bengal

⁶⁶ Surangi, Sonua, Gumani, Anandpur Barrage, Telengiri, Lower Shuktel, Kanupur, Lower Indra in Odisha and IFFC in Telangana.

Table 4.17: Clearances Issues

State	Clearances
Gujarat	<p>Sardar Sarovar Project</p> <p>There were three cases in which certain clearances had not been obtained which had affected progress of work and achievement of deliverables. These are dealt with below:</p> <ul style="list-style-type: none"> • The work of constructing distributary and minors of Limbdi Branch Canal was awarded in February 2014 for completion by August 2015. This work required construction of one railway crossing for which agreement was concluded with the Railways only in March 2015 and the work was in progress (August 2017). This delay resulted in non-completion of the work and also held up creation of CCA of 2,000 ha. • The work on a stretch of Kachchh Branch Canal (KBC) crossing the Kachchh Desert Wild Life Sanctuary (KWLS) area remained incomplete due to delay in obtaining wildlife clearance. This delay has led to both cost and time overrun. In addition, the missing links in the canal has also led to three Pumping Stations which were completed at an estimated cost of ₹ 515.80 crore for lifting water to the canal, to remain idle. • Work on Suraj distributary and its minors with a projected CCA of 2,751.95 ha was completed in May 2014. The CCA created was, however, only 2,504.08 ha and utilization was only 279.80 ha (11 <i>per cent</i>) due to non-completion of structure on railway crossing of Suraj Distributary due to delay in obtaining the clearance from Railway authorities.
Jharkhand	<p>Gumani project</p> <p>Despite payment of estimate charges of ₹ 24.67 lakh in November 2015 to the Railways, final drawings and estimates of proposed Gumani Canal crossings at Barharwa Station under Eastern Railways Division, Malda Town was yet to be obtained as of April 2017.</p>
Odisha	<p>Kanupur project</p> <p>Several works were dependent on the completion of a bridge on National Highways. However, NHAI did not take up the work as of May 2017 even though the matter was with them since 2011 and despite sanction of estimate for the bridge for ₹ 36.95 crore. This project had suffered a cost overrun of ₹ 2,010.00 crore and a time overrun of nine years. In addition, both IPC and IPU for the project is nil.</p>
Maharashtra	<p>Tarali Project</p> <p>Clearance from NHAI was required for Koparde approach canal crossing and clearance from railways was required for Koparde approach Canal at KM 181/3-4 of Pune Miraj railway track (Canal C.27/240 km). The requisite clearances remained to be obtained. The project has suffered a time overrun of five years and cost overrun of ₹ 366 crore since its inclusion in AIBP. Besides, the IPC achieved was only 48.35 <i>per cent</i> and IPU was 33 <i>per cent</i> of IPC.</p>
Karnataka	<p>Ghataprabha Stage-III project</p> <p>Alignment for Ghataprabha Right Bank Canal from Km.150 to Km.180 passing through forest land for different reaches was surveyed and approved in 2001-02. The work on the canal was, however, started without approval of the Forest Department. Further, three works awarded to contractors, had to be rescinded after an expenditure of ₹ 1.03 crore due to absence of approval from Forest Department.</p>
Telangana	<p>Indiramma Flood Flow Canal project (IFFC)</p> <p>The deviations from the original proposal resulted in change in the scope of the project and entailed obtaining fresh clearances which had not been obtained till March 2017. The project suffered a time overrun of five years and cost overrun of ₹ 4,609 crore since its inclusion under AIBP. Besides, the IP created under the project was nil.</p>

State	Clearances
	<p>Sri KomaramBheem Project</p> <p>Under the project, the main Canal and Distributory No.25 was crossing a railway line. An amount of ₹ 12.80 crore was deposited with the Railway authorities for construction of bridges in April 2015 and the work was started. There was time overrun of eight years and cost overrun of ₹ 680 crore since inclusion of the project under AIBP. Besides, the IP created was only 61.46 per cent.</p>

Out of the 22 projects having delays in obtaining requisite clearances, four projects⁶⁷ were completed after delays ranging between two to 11 years. The remaining 18 ongoing projects have suffered a cost overrun ranging from ₹ 16.26 crore to ₹ 48,366.88 crore and time over run ranging from two to 18 years. The Ministry accepted (February 2018) that projects were delayed due to delays in getting clearances from other departments like Railways and NHAI.

4.9 Works Management

Procedures for execution and management of works are contained in the General Financial Rules, applicable State Financial Rules, Public Works Department Works Manuals and circulars and instructions issued by Vigilance authorities from time to time. The overall objective is to ensure that works are undertaken in terms of prescribed procedures and are executed efficiently in accordance with project aims and within approved time lines and costs. A test check of records of the selected AIBP projects revealed several deficiencies and irregularities in works management which are discussed in the succeeding paragraphs.

4.9.1 Splitting of works

For the purpose of approval and sanctions, a group of works are considered as one work if they form part of one project. The necessity for obtaining the sanction of the higher authority should not be avoided because of the fact that the cost of each particular work in the project was within the powers of such approval of a lower authority (Rule 130, GFR). State Governments have also prescribed delegation of powers for granting approvals and technical sanction and laid down limits of works that can be awarded to different classes of contractors. Test check of project records showed that in case of eight MMI projects in four States and six MI schemes in two States, 23 works amounting to ₹ 47.41 crore were awarded after splitting these into 271 works in violation of GFRs and extant orders of the State Governments. This led to bypassing of rules of delegation of powers, diluted technical scrutiny over works and undermined transparency and accountability. Details are given in Table 4.18.

⁶⁷ Aji-IV and Bhadar-II of Gujarat, Mahuar in Madhya Pradesh and Warna in Maharashtra.

Table 4.18: Splitting of works

State	Splitting of works
MMI projects	
Maharashtra	<p>Tilari and Dhom Balkawadi project</p> <p>As per Rule 136 of Maharashtra Public Works Manual, a group of works the aggregate cost of which exceeds what an officer is empowered to sanction should not be split up to bring them within the sanction power of that officer. Government Resolution of 1996 limited the sanctioning power of EE to ₹ 25 lakh. In the following projects, works were split into components of below ₹ 25 lakh to keep the works within the powers of the EE.</p> <ul style="list-style-type: none"> ○ In Tillari project, three works valuing ₹ 3.99 crore were split into 10 works. ○ In Dhom Balakwadi project, four works valuing ₹ 4.73 crore were split into 24 works to avoid sanction of competent/higher authorities.
Uttar Pradesh	<p>Bansagar, Madhya Ganga, Hardoi Branch Canal project and Eastern Ganga Project</p> <p>As per orders of State Government of 1995, delegation of financial powers of EE, SE and CE were ₹ 40 lakh, ₹ one crore and unlimited respectively. In the four projects, works valuing ₹ 28.54 crore were split into 121 components of below ₹ 40 lakh to keep the works within the powers of the EE. The details are as follows:</p> <ul style="list-style-type: none"> ○ In Bansagar Canal project, work of construction of retaining wall and drainage of ₹ 6.63 crore was split into 22 components. ○ In Madhya Ganga Canal project the work of construction of Canal of ₹ 4.10 crore was split into 15 components. ○ In Hardoi Branch Canal Project the work of improving irrigation intensity of ₹ 17.63 crore was split into 74 components. ○ In Eastern Ganga Project earthwork of ₹ 17.50 lakh was split into 10 components.
Telangana	<p>SRSP-II project</p> <p>As per Andhra Pradesh Government orders (July 2003), a class III contractor can execute works up to ₹ one crore only. A portion of work under Package 55 was deleted from the main contract for the package and split into nine works. Out of the nine works, five works costing a total ₹ 5.81 crore and each work valuing more than ₹ one crore were entrusted (June 2012) on nomination basis, to a single contractor.</p>
West Bengal	<p>Subarnarekha Barrage project</p> <p>According to State Government instructions (November 2000), powers of the EE to sanction original works were limited to ₹ 10 lakh in each case. Land development work near Barrage site with a total cost of ₹ 66 lakh was split into nine different works during 2002-03 so as to keep award of works within the financial power (₹ 10 lakh) of the Divisional Office.</p>
MI schemes	
Mizoram	<p>Mat, Zilngai, Buhchandil and Changte schemes</p> <p>In four schemes having cost of ₹ 3.43 crore, the division split 11 sub-works into 49 components to bypass approval of the competent authority. Of these, 37 works were awarded to contractors and the remaining 12 works were undertaken departmentally.</p>
Odisha	<p>Dablajore and Temurapalli MI schemes</p> <p>As per Appendix VII of OPWD code Vol-II, tenders should be invited for all works costing more than ₹ 50,000. In case of emergent situations such as relief works, repairs required due to damage by flood, closing of breaches in embankments on road, splitting up of work,</p>

State	Splitting of works
	etc. may be done in public interest for smooth and expeditious execution. Works valuing ₹ 40.59 lakh were split into 56 F2 agreements ⁶⁸ during 2009-13 limiting value of each agreement to ₹ 50,000 thereby obviating approval of higher authority and wide publications of tenders was also not resorted to in violation of OPWD code.

4.9.2 Incorrect phasing of project Implementation

AIBP guidelines (1998-99) envisaged assistance to projects for their phased completion so that benefits start flowing early with comparatively smaller investment. The construction programme should be synchronized in a manner that allows the Dam, Main Canal and the distributaries to be completed in a phased manner so that phase wise benefits can be obtained. The AIBP guidelines of 2013 stressed on *pari-passu* implementation of Command Area Development (CAD) works so that utilization of IP created can be enhanced. The erstwhile Planning Commission also stressed upon the 'vertical integration' approach⁶⁹ in construction of canal network. Improper phasing of various project components leads to delay in both creation and utilization of IP and idling of project assets created at considerable expenditure and consequently affecting the total useful life of the project besides postponing the benefits to farmers.

Test check of sampled projects disclosed incorrect phasing of works in 10 MMI projects and four MI schemes pertaining to seven States which are discussed in Table 4.19 below:

Table 4.19: Incorrect Phasing of Project Implementation

State	Incorrect phasing of implementation
Bihar	<p>Durgawati Reservoir Project Dam section, main/branch canals were complete but branch canals and water courses were incomplete. Durgawati CADWM programme was also incomplete.</p> <p>Punpun Barrage The barrage was almost complete, but main canal and Branch Canal/distributaries were incomplete. Further, the Department started construction of check dam structures without approval of the design by CDO Patna. Punpun CADWM programme was yet to start.</p>
Gujarat	<p>Sardar Sarovar Project Under Limbdi Branch Canal (LBC) priority was accorded to construction of branch canals and distributaries and minors were taken up after completion of the branch canals. Sub-minor canals were also not developed. As a result, there were missing links in the distributaries and minor canals and developed CCA of 84.21 Th ha could not be utilized.</p> <p>Total length of the KBC is 357.185 km of which water flows only in length of 157.214 km due to completion of KBC in patches beyond this chainage. The KBC Division 2/7, Gandhidham has jurisdiction of KBC between chainage 271.224 and 357.185 km.</p>

⁶⁸ F2 Agreement - Standard contract form as per OPWD code

⁶⁹ State should draw up an implementation schedule, segment wise, for completion of canal network, in such a way that a segment of the canal network taken up from head is completed in all respects so as to make the irrigation water available for the designed potential of that segment up to the outlet in that particular segment.

State	Incorrect phasing of implementation
	<p>Tender clause stipulates that the contract of Operation and Maintenance (O&M) for five years shall commence from the date of taking over of the canal system. The defect liability period of two years run concurrently with O&M for first two years.</p> <p>The work of constructing KBC reach 354.542 km to 357.185 km (2.643 km) with O&M for five years (package IR-22) was awarded (October 2012) to M/s Montecarlo Limited, Ahmedabad at tendered cost of ₹ 39.41 crore (Estimated cost: ₹ 44.45 crore). Stipulated date of completion was October 2014 and the work was completed in March 2015 with final cost of ₹ 36.09 crore.</p> <p>Though this last stretch of KBC is complete and ready to serve, but initial stretches from Ch. 157.214 to 354.542 km are still incomplete, therefore, the last stretch from 354.542 km to 357.185 km is lying idle since April 2015 as the water can flow up to 157.214 km only. The Division is paying O&M cost as per tender agreement since April 2015. The total O&M cost paid to the agency is ₹ 16 lakh. In the absence of operation of branch canal without flowing water, the cost towards O&M incurred has not served any purpose. The defect liability period of two years as per clause stated above has also lapsed without serving its purpose.</p> <p>Moreover, without flowing of water, the expenditure incurred on the last stretch of ₹ 36.09 crore remained idle besides rendering the O&M cost of ₹ 16 lakh and the defect liability period redundant.</p> <p>The EE, KBC Division 2/7, Gandhidham stated (July 2017) that the land was acquired easily and immediately so tender for the work was awarded. The agency has maintained the canal though water is not flowing and for this the agency has engaged security persons and carried out the work of repairing and rectification of erosion of earthwork.</p> <p>The reply is not tenable as there should be segment wise construction schedule to ensure that asset should be utilised immediately after its creation so that expenditure incurred does not lie idle. Further, O&M expenses should not be incurred without commencement of operations.</p> <p>The company stated (January 2018) that the construction of Branch canal, Distributaries and Minor canals of LBC works were taken up in a phased manner with the construction of pumping stations, CCA of 84,216 ha was developed up to minor level in the command area of Limbdi Branch Canal by the end of March 2017 and about 39,994 ha. CCA was irrigated. The remaining developed CCA of 24,222 ha was not utilized due to non-completion of missing links.</p>
Jharkhand	<p>Subernarekha Multipurpose Project</p> <p>The work of Icha Dam was not started due to pending decision of Tribal Advisory Council of Jharkhand. However, an expenditure of ₹ 475.29 crore had been incurred on construction of distribution system as of March 2017.</p>
Karnataka	<p>Sri Rameshwara LIS project</p> <p>While the work of intake canal, jack well, raising main were completed and water was received in the canals since March 2013, construction of Field Irrigation Channels (FICs) were taken up only in 2014-15. As a result, out of an envisaged command area of 13,800 ha only 10,182 ha has been completed as of March 2017.</p> <p>Ghataprabha Project</p> <p>Though the work of the main canal was completed between 2005-06 and 2007-08, tenders for FICs works were initiated only between August 2011 to March 2012. Delay in construction of FICs in both cases led to benefits not accruing to farmers despite completion of canal and distributary network.</p>

State	Incorrect phasing of implementation
Madhya Pradesh	<p>Mahuar Project</p> <p>Gates of dams are installed after execution of work of the dam up to crest level. However, in this project, work of radial gates was awarded in 2008-09 with provision of price escalation for completion within 24 months before the award of civil works in 2011-12. As a result of the mismatch in the award of work for gates and civil works, the Department made avoidable payment of escalation of ₹ 1.14 crore on gate work.</p>
Maharashtra	<p>Warna</p> <p>The works relating to down-stream parts of the canal were completed before the up-stream works and aqueducts were taken up for construction. As a result, the down-stream parts of the canal remained unutilized and IPC remained much below envisaged levels.</p> <p>Chandrabhaga MI scheme</p> <p>While the barrage work was completed, the canal work had not been commenced.</p> <p>Kang, Sur and Tandulwadi MI schemes</p> <p>In these schemes, dams have been completed but ancillary works were yet to be completed. Incorrect phasing of expenditure therefore resulted in schemes remaining non-functional despite investment of ₹ 351.70 crore as of March 2017.</p>
Odisha	<p>Anandapur Barrage Project</p> <p>The project was included in AIBP in 2005-06. Though construction of the barrage was 34 <i>per cent</i> complete and expenditure incurred was ₹ 941.62 crore on the work, tail end of the leading Channel was yet to be taken up. As a result, IPC and IPU of the project were both nil.</p> <p>Kanupur Irrigation project</p> <p>In case of the work of spill channel, a quantity of 6.35 lakh cum excavated earth was disposed of. With proper phasing of work, the same could have been utilized in another work of the same project “construction of the earth dam” at a distance of two km and enabled saving of over ₹ six crore.</p>

4.9.3 Execution of sub-standard works

AIBP guidelines of October 2013 envisaged that the State Government shall ensure required quality control in the execution of the works, i.e. all mandatory quality control checks and mandatory inspection by supervisory officers of field laboratories has been carried out. The periodical report of quality control will also be reported to CWC. However, during site verification of sampled projects, audit noticed execution of sub-standard works in 11 MMI projects/MI schemes pertaining to six States. Execution of sub-standard and defective works affected the functionality of projects in terms of IP creation and utilization and also led to expenditure on repairs. The cases referred to above are discussed in Table 4.20 below:

Table 4.20: Sub-standard Works

State	Sub-standard works
Andhra Pradesh	<p>Veligallu Project</p> <p>The project was completed in August 2007 and the Department issued Completion Certificate in May 2010. However, several defects were noted during site inspection (November 2010) and the contractor was issued notices for rectification. As these defects were not rectified, supply of water to the fields was not made. The Department has assessed the cost of rectification at ₹ 16 crore. The work was yet to be taken up.</p>
Bihar	<p>Durgawati Project</p> <p>The works relating to canals for the project was both incomplete and technically sub-standard. The canal was constructed in negative slope at many locations due to which water could not reach the tail end of the canal. At places, faulty structure of one distributary led to overflow of water and led to a breach in the canal. Further, at many places in the canal, lining work was needed.</p>
Chhattisgarh	<p>Dhotimara MI scheme</p> <p>Construction of Dhotimara Tank was awarded in February 2009 for ₹ 3.31 crore with the stipulated date of completion as January 2010. As of August 2017, the work was still incomplete with expenditure of ₹ 2.45 crore incurred in December 2012. The following defects were observed by audit:</p> <p>Concrete work of the spill way wall was completely damaged. Rain cuts in earthen dam and the stone pitching work was dispersed.</p>
Madhya Pradesh	<p>Sindh Project Phase-II</p> <p>In Sindh Project Phase-II, concrete banks of LBC feeder canal and RBC were damaged and an amount of ₹ 1.53 crore was spent towards repairs.</p>
Maharashtra	<p>Warna Project</p> <p>The canal embankment was to be provided with a heartening zone of impervious material to prevent water leakage. This work was taken up during 2007 to 2009 at a cost of ₹ 54.97 crore. During site visit, leakages were noticed in the canal indicating sub-standard construction of the heartening zone at the embankment.</p> <p>Kar Project</p> <p>Due to heavy seepage in the 33.30 km long Left Bank Canal of the project completed at a cost of ₹ 111.67 crore, water could not flow beyond km 23. Heavy seepage was also reported in the Lohara Sawangi distributaries under the project.</p> <p>Madan Tank project</p> <p>There was seepage in 19 places in the main canal and minors, gates of 29 minors were not functional, 14 structures were damaged and there was heavy silting in the canals.</p> <p>Lal Nala project</p> <p>The pipes used for Rashtasant Bhumi LIS were manufactured using small pieces of metal sheet instead of spiral welding which was against tender conditions and indicated sub-standard work.</p>

State	Sub-standard works
	<div data-bbox="528 241 1240 730" data-label="Image"> </div> <div data-bbox="673 741 1091 772" data-label="Caption"> <p><i>Ordinary welded pipe in Lal Nalla Project</i></p> </div> <div data-bbox="373 788 657 819" data-label="Section-Header"> <p>Wang and Tarali projects</p> </div> <div data-bbox="373 837 1394 900" data-label="Text"> <p>Steel reinforcement bars were rusted due to exposure even though tender specifications provided for protection of bars from rusting/corrosion.</p> </div> <div data-bbox="376 918 1366 1630" data-label="Image"> </div> <div data-bbox="684 1644 1082 1675" data-label="Caption"> <p><i>Rusted reinforcements in Tarali Project</i></p> </div>
<p>Karnataka</p>	<p>Ghataprabha Stage III project</p> <p>In the Right Bank Canal, a two km stretch was found to be filled with silt and was water logged due to vegetation growth by a Lokayukta team. Due to the defects, expenditure of ₹ 1.09 crore incurred on the work was rendered unfruitful.</p>

4.9.4 Irregularities and deficiencies in award of work

General Financial Rules and codal provisions related to Public Works envisage competitive bidding procedures in accordance with pre-determined laid down criteria so as to ensure that eligible, efficient and cost effective bidders are awarded contracts. Codal provisions also require that sufficient time should be given for submission of tenders. In addition to ensure efficient works management, it is important that works be taken up and tenders be finalized without delays. Test check of sampled MMI projects and MI schemes disclosed that in 14 MMI projects of eight States and in 27 MI schemes in three States, there were deficiencies in award of work such as award of work on non-competitive basis without valid justification, flaws in Notice Inviting Tender (NIT) with regard to duration of notice and evaluation criteria and delays in finalization of tender and award of works. Details are given in **Annexure 4.12**. These details show that works relating to 10 MMI projects and 15 MI schemes with a total value of ₹ 1,260.58 crore were awarded on a non-competitive basis. Further, in works relating to four MMI projects with a total value of ₹ 109.92 crore, tender processes adopted in terms of time given for submitting bids or entering into agreements restricted/ diluted competition, etc. In addition, there were delays in award of works in two projects with total estimated cost of ₹ 5,035.26 crore.

4.9.5 Deficiencies in Works expenditure

Expenditure and payments related to various works are required to be made in accordance with financial rules, codal provisions, terms and conditions of tenders/contracts, administrative approvals and sanctions. In addition, expenditure should yield envisaged benefits, be necessary for implementing the program, meet program goals and create assets that are put to use effectively. Test check of works expenditure on sampled schemes and projects disclosed several cases of irregular expenditure (₹ 274.01 crore); wasteful, unproductive and idle expenditure (₹ 233.25 crore); and extra and avoidable expenditure (₹ 830.55 crore) with a total financial implication of ₹ 1,337.81 crore. Details are given in **Annexures 4.13, 4.14 and 4.15** respectively. These instances are those that have come to the notice of audit during test check of records and do not exclude the risk of other similar instances.

4.9.6 Undue benefits to the Contractor

Adherence to Public Works Manual, Government instructions, extant orders and contract agreements provide the framework for governing rights and obligations of contracting parties and ensuring accountability in public work management. The stipulated terms and conditions regulate the release of advance and payments to the contractors. Adequate safeguards in the form of penal provisions aid in promoting economy and efficiency in works. In 29 MMI projects of 16 States and 22 MI schemes of three States, audit noticed that there were cases of grant of undue benefits to the contractors amounting to ₹ 303.36 crore by violating the terms and conditions of the agreements. Broadly, the undue benefits to contractors were due to termination of contracts without invoking risk and cost clause

under the contract (₹ 137.12 crore), non-levy of liquidated damages (₹ 90.07 crore), non-recovery of advances (₹ 42.86 crore) and excess payments to contractors (₹ 33.31 crore). The details are given in **Annexure 4.16**. Some illustrative cases are discussed in Table 4.21 below:

Table 4.21: Undue benefits to the Contractors

State	Issues
Termination of contracts without invoking Risk and Cost clause	
Chhattisgarh	<p>Mahanadi Reservoir</p> <p>The work of construction of Balance Cement Concrete lining by Paver machine in selected reaches from Km.102.10 to 113.33 of Mahanadi Main Canal was awarded (September 2007) to a contractor under two contracts for a total cost of ₹ 14.01 crore. As per the terms and conditions of the contracts, the works would remain at the risk and cost of the contractor till complete work was delivered.</p> <p>The contractor did not complete the work as stipulated in the contract. Based on a proposal (February 2009) of the Executive Engineer (EE) for termination of the contracts with imposition of penalty and forfeiture of earnest money deposit, the Chief Engineer, recommended termination of the contracts by invoking risk and cost clause. However, the EE paid dues of ₹ 1.10 crore and closed the contracts without invoking the risk and cost clause. No immediate effort was taken to complete the balance work valuing ₹ 10.96 crore. The department entered into a fresh contract for the remaining work only in February 2015 for an amount of ₹ 28.66 crore, which further resulted in extra cost of ₹ 17.70 crore to the Government.</p>
Jharkhand	<p>Subarnarekha Project</p> <p>As per the terms and conditions of contract, in the case of termination of contract due to fundamental breach of contract by the contractor, the Engineer shall issue a certificate for the value of work done after deducting the values of advance payments received, other recoveries due, taxes and 20 per cent of the value of the work not completed representing the additional cost for completing the work. The amount worked out, if in excess of any payment due to the contractor, would be owed to the Department.</p> <p>An agreement was executed (April 2014) for Construction of Earthwork and lining from Km 0.00 to 4.56 and Km 6.03 to 6.39 of Icha Right Main Canal for a total cost of ₹ 26.75 crore. The agreement was subsequently terminated (August 2015) after execution of work to the extent of ₹ 2.50 crore, due to breach of contract by the contractor. However, the Engineer did not issue the necessary certificate of execution of work as per contract conditions. As a result, an amount of ₹ 1.88 crore⁷⁰ due from the contractor could not be recovered.</p>
Madhya Pradesh	<p>Barkheda Chajju Tank, Chandwahi Tank, Parsatola Tank and Mirhasan Tank MI schemes</p> <p>The original agreements were rescinded due to delay or non-execution of work by contractor and balance works were executed through other agreements at higher rates, extra cost of which was debitible and recoverable from original contractor as per contract conditions. Audit observed that the terms and conditions in the contracts were changed, resulting in short-recovery of the debitible cost of ₹ 2.79 crore from the contractor.</p>

⁷⁰ Total value of work done: ₹ 2.50 crore (A); Less Advance Payment: Nil (B); Less other recoveries as per agreement: ₹ 3.85 lakh (C); Less other taxes/recoveries to be deducted at source: ₹ three lakh (D); Less 20 per cent deduction of value of work not done: ₹ 4.85 crore (E); Total (A to E): (-) ₹ 2.41 crore; Less Adjustments (Revocation of Performance Security): ₹ 53.50 lakh; Net Demand (-) ₹ 1.88 crore

State	Issues
Non-levy of Liquidated Damages	
Gujarat	<p>Sardar Sarovar Project</p> <p>The work for providing and constructing service road on Limbdi and Vallabhipur Branch Canal was awarded (January 2017) at a total cost of ₹ 95.68 crore with stipulated completion by July 2017. As per the terms and conditions of the contract, in the case of non-completion of works within the stipulated duration, Liquidated Damages (LD) of 0.10 <i>per cent</i> of the contract value per day for the duration of delay subject to maximum of 10 <i>per cent</i> of the contract value would be levied. However, as of September 2017, the contractors could only complete works valued at ₹ 37.47 crore (39 <i>per cent</i>).</p> <p>The Project Management Consultant (PMC) informed (July 2017) the division that contractor had engaged in extensive outsourcing, there was shortage of key staff, non-availability of supervisory staff, etc. which had delayed the project. Since the reasons for delay were solely attributable to the contractor, LD from the contractor was required to be levied. However, audit noticed that LD was not recovered from the contractors. This led to undue financial benefit to the contractor to the extent of ₹ 11.89 crore being 10 <i>per cent</i> of the estimated cost of the works.</p> <p>The company stated (January 2018) that work could not be completed due to early onset of monsoon, local interferences and extra/excess works resulting from site inspections, which were not attributable to the contractor. The reply is not acceptable as PMC specifically brought to the notice of the Company the fact that contractor was responsible for delay in execution of work.</p>
Jharkhand	<p>Subarnarekha Multipurpose, Gumani, Sonua, Surangi and Panchkhero Project</p> <p>As per terms and conditions of contracts for execution of the projects, the contractor shall be liable to pay LD at the rate of 1/2,000th of the Initial Contract Price per day for delay up to a maximum of 10 <i>per cent</i> of the Initial Contract Price along with compensation of an amount equal to half <i>per cent</i> on the estimated cost of the work for every day that the due work remains incomplete up to a maximum of 10 <i>per cent</i> of the estimated cost of work. The contractor was also required to provide insurance cover for a minimum amount of ₹ five lakh per occurrence limited to four occurrences, for any loss or damage or personal injury or death, before start date of the work. In case of failure of contractor to provide the required insurance, premium from any payment due to the contractor was to be recovered.</p> <p>We observed that 66 works⁷¹ under the projects were delayed ranging between 23 and 1,467 days, due to which LD of ₹ 78.55 crore⁷² was liable to be paid by the contractor. However, against this, ₹ 20.17 crore only was deducted resulting in short deduction of LD of ₹ 58.38 crore. We also observed that in 43 agreements, neither did the contractors submit insurance cover working out to ₹ 8.60 crore nor did the employer recover premium for insurance cover as per the provisions of the contracts.</p>
Karnataka	<p>Upper Tunga Project</p> <p>As per the conditions of the contract, penalty of half <i>per cent</i> per week on the estimated cost of the work was leviable for the delay in completion of the work subject to a maximum of 7.5 <i>per cent</i> of the estimated cost of the work. In 16 works, though there were delays in completion of the works by the contractor, the Company levied only nominal penalty of ₹ 0.59 lakh as against ₹ 6.47 crore in violation of the conditions of the contract.</p>

⁷¹ Subarnarekha Multipurpose: 46; Gumani: nine; Sonua: nine; Surangi: one; Panchkhero: one

⁷² Subarnarekha Multipurpose: ₹ 73.96 crore; Gumani: ₹ 3.75 crore; Sonua: ₹ 72 lakh; Surangi: ₹ 10 lakh; Panchkhero: ₹ two lakh

State	Issues
Assam	<p>Baksa MI scheme</p> <p>The work for the project Hatigudi FIS under the scheme was awarded (June 2010) to a contractor for ₹ 1.27 crore, to be completed by 12 months. As per the terms of the contract, the time allowed for carrying out the works entered in the tender was strictly to be observed failing which the contractor shall be liable to pay compensation at the rate of one <i>per cent</i> every day of delay up to ten <i>per cent</i> of the estimated cost /tender value of the work.</p> <p>The work was completed in January 2014 (delayed by 32 months) but full payment was made to the contractor without recovery of LD amounting to ₹ 12.75 lakh (10 <i>per cent</i> of tendered value).</p>
Madhya Pradesh	<p>Kachnari Diversion Scheme and Sawli Tank MI schemes</p> <p>As per standard tender documents, the contractor shall have to pay penalty at the rate of 0.5 <i>per cent</i> per week subject to a maximum of 10 <i>per cent</i> of total contract value for delay in execution of works. The contractor did not execute or complete the work in stipulated period of completion but the Department did not levy penalty for same and granted extension of time. This resulted in undue financial benefit to contractors of ₹ 50.92 lakh due to non-levy of penalty for delay.</p>
Non-recovery of Advances	
Gujarat	<p>Sardar Sarovar project</p> <p>Miscellaneous Public Works (MPW) advances were given by two divisions to various agencies for shifting of utilities and other works of special nature such as railway crossing. An amount of ₹ 11.16 crore towards MPW advances paid between 2011 and 2014 were outstanding (March 2017) from these agencies. SSNNL stated (January 2018) that MPW advance shall be adjusted on receipt of works account.</p>
Telangana	<p>Indiramma Flood Flow Canal (IFFC) project</p> <p>The contractor was paid (March 2006) mobilization advance of ₹ 16.97 crore (five <i>per cent</i> of the contract value). The scope of work was reduced (November 2010) by ₹ 255.95 crore due to entrustment of certain portions to other agencies. An amount of ₹ 12.55 crore was recovered (April 2010) out of the mobilization advance of ₹ 16.97 crore. The balance of ₹ 4.42 crore was not recovered though more than seven years have elapsed.</p> <p>The Government of Telangana stated (January 2018) that the agency did not submit any bills after that and hence the advance was not recovered. The reply is not acceptable as the Government did not furnish any reasons for not recovering the balance of mobilization advance from the deposits/retention money of the agency, which was in possession of the Department.</p>
Excess Payments	
Maharashtra	<p>Lower Wardha Project</p> <p>The contractor consumed 17 lakh cum of Cohesive Non Swelling (CNS) material at the rate of ₹ 468.55 per cu m (including cost of transportation of material for 30 km at the rate of ₹ 362.50 per cu m) during the execution of the work of construction of CC lining of Main Canal, Giroli and Deoli branch canal. The project authorities failed to produce any record of the quarry from which the material was extracted. The District Mining Office of Wardha district had confirmed that no permission was granted to the contractor for extraction of the material. Thus, basis of preparation of estimate of ₹ 67.40 crore to the contractor for the distance of 30 km without ensuring the actual location of the quarry could not be verified in audit.</p> <p>The Ministry stated (February 2018) that no government quarry was available nearby the main and Branch canal, so the nearby Quarry Sarangpuri which is 15 km from Main Canal was considered in the estimate by considering the length of Main canal and both branch</p>

State	Issues
	canals and the average lead i.e. 30 km. The reply is not acceptable since there was no evidence of the source of material produced by the contractor and supplemented by the District Mining Office, Wardha about any permission for extraction of the material.
Odisha	<p>Kanupur Irrigation project</p> <p>The work of construction of spillway was awarded for ₹ 135.67 crore. As per the State Analysis of Rates 2006, only cost of labour, material and machineries were allowed for preparation of the cost estimates for all cement items such as fine aggregates and coarse aggregates. From the departmental estimate, it was, however, revealed that one km conveyance with re-handling charges were also added in the estimate in contravention with the State Analysis of Rate. As a result, undue benefit of ₹ 6.41 crore was passed on to the contractor for re-handling charges in the execution of 3.76 lakh cum of cement work.</p>
Uttar Pradesh	<p>Bansagar Canal Project</p> <p>Due to slow progress of work, the project authorities decided (March 2012) to close on-going 88 contract bonds and execute one single high value contract bond to execute the balance works of previous agreements. The balance works of the previous running contract bonds were awarded to a contractor (January 2013) at a cost of ₹ 402.52 crore scheduled to be completed by January 2015.</p> <p>In nine out of 14 test-checked bills of quantities awarded to the contractor, extra items amounting to ₹ 99.56 crore were added after finalization of the contract. Further, an amount of ₹ 21.85 crore was paid by two test-checked Divisions on account of price adjustment. Audit observed that there was no provision for price adjustment in the contract and a clause for the same was added (October 2012) later after submission of bids (September 2012). Hence, undue benefit of ₹ 121.41 crore was given to contractor.</p>
Madhya Pradesh	<p>MI scheme Barkheda Chhajju Tank</p> <p>For construction of embankment, a quantity of 7,446.52 cum of different items (Filter Sand, stone pitching, etc.) used for construction of embankment, were also paid but not deducted from total embankment quantity to work out net payable quantity. This resulted in excess payment of ₹ 4.43 lakh at the rate of ₹ 59.48 per cum.</p> <p>Though 3,790.63 cum metal was available at site for utilization in work, a lead of boulder/metal of minimum two km at the rate of ₹ 95.22 per km was clubbed in estimated rates and paid to contractor. This resulted in excess payment of ₹ 4.29 lakh.</p> <p>The contractor used stone dust in concrete in place of Karera sand (sand from Sindh river at Karera) but was made payment with a lead of 110 km which also resulted in excess payment of ₹ 36.10 lakh.</p>

The undue benefits to the contractors were indicative of lack of compliance with the conditions of the contracts, thereby affecting transparency, fairness and accountability in use of government funds.

4.10 Audit summation

Implementation of projects under AIBP, including the projects under Priority I category, Special Category States, Special Areas in non-Special Category States and Prime Minister's package for agricultural distress districts was very slow, despite prioritization and provision of enhanced central assistance. There were delays in completion of projects under both MMI projects and MI schemes by periods ranging from one to 18 years due to shortage in land, pending clearances, administrative and managerial failures and lack of fund. The time

overrun led to cost overrun arising from extra financial implications due to changes in Schedule of Rates, price escalation, variation in quantities, additional requirement at sites, enhanced cost of land acquisition, tender excesses, etc. The realization of envisaged benefits in terms of Irrigation Potential (IP) creation was only 68 *per cent* in MMI projects and 39 *per cent* in MI schemes. The utilization of IP created was 65 *per cent* and 72 *per cent* respectively for MMI projects and MI schemes. A synchronized approach was missing in the States leading to gaps between envisaged IP, IP created and IP utilized. Project implementation was affected by many limiting factors such as incomplete land, necessary clearances and deficient works management. The total financial implications arising from deficiencies in works management noticed by audit in the sampled projects and schemes amounted to ₹ 1,641.17 crore. The findings as above have arisen from audit of only a sample of MMI projects (58 *per cent* of total MMI projects taken up during the period) and MI schemes (three *per cent* of MI schemes taken up during the period). Government should review the remaining projects /schemes not included in the sample for likely delays and other problems revealed by the examination of the sample projects/schemes.