

Chapter II: Planning

2.1 Introduction

AIBP provides for an elaborate framework for planning involving multiple agencies both at the Central and State levels. In the case of MMI projects, the planning process broadly involves preparation of Preliminary Reports on projects after conducting necessary survey and investigations. These are thereafter submitted to the Central Water Commission (CWC) which scrutinizes the same and accords *in-principle* consent for preparation of Detailed Project Reports (DPRs). The DPRs prepared by the State governments are examined by the CWC and sent to the Technical Advisory Committee (TAC) of the Ministry for technical clearance. After clearance by the TAC, the DPRs are sent to the Planning Commission/Ministry for final approval and investment clearance¹⁵. Minor Irrigation schemes are to be taken up under AIBP only after these have been approved by State TAC/State Planning Department.

2.2 AIBP Eligibility Criteria and Norms

AIBP guidelines lay down the eligibility criteria and norms for inclusion of projects and schemes under AIBP. These norms have undergone numerous amendments since the inception of AIBP in October 1996, as summarized in Table 2.1 below:

Table 2.1: Revisions in norms for inclusion of projects under AIBP

| Month/Year | Norms for inclusion of project under AIBP |
|---------------|--|
| October 1996 | <ul style="list-style-type: none"> ▪ Multipurpose projects costing over ₹ 1,000 crore where <i>substantial progress</i> had been made and were beyond the resource capability of the States. ▪ MMI projects at an <i>advanced stage</i> of completion, with potential benefit of assured water supply to 1,00,000 ha. ▪ Projects should have investment clearance of Planning Commission. |
| April 1997 | <ul style="list-style-type: none"> ▪ Projects costing over ₹ 500 crore. |
| April 1999 | <ul style="list-style-type: none"> ▪ Projects in KBK districts of Odisha. ▪ MI schemes of SCS (seven States in North East and other Hilly States viz. Himachal Pradesh, Sikkim and Jammu & Kashmir). |
| April 2005 | <ul style="list-style-type: none"> ▪ MI schemes in SCS with IP of more than 50 ha for group of schemes and 20 ha for individual schemes with cost per ha not exceeding ₹ one lakh and MI schemes in non-SCS with IP of more than 100 ha for individual schemes with preference for Tribal Areas and Drought Prone Areas, wholly benefiting <i>dalits</i> and <i>adivasis</i> (Special Areas). ▪ Inclusion of ERM projects. ▪ One-for-one condition¹⁶ specified for MMI and ERM projects (with exceptions). |
| December 2006 | <ul style="list-style-type: none"> ▪ For inclusion under AIBP, MMI and ERM projects should have stipulated period of completion in next four years. ▪ In non-SCS with IP more than 50 ha for each scheme which serve Tribal Areas and Drought Prone Areas. |
| October 2013 | <ul style="list-style-type: none"> ▪ ERM projects with investment clearance of Planning Commission related to projects already completed and commissioned at least 10 years earlier subject to conditions. |

¹⁵ After replacement (1 January 2015) of Planning Commission by National Institution for Transforming India (NITI) Aayog, investment clearance is accorded by the Ministry.

¹⁶ Only on completion of one project under the programme, inclusion of another project will be considered.

| Month/Year | Norms for inclusion of project under AIBP |
|------------|---|
| | <ul style="list-style-type: none"> ▪ Exceptions to one to one rule allowed for projects in agrarian distressed districts identified under Prime Minister's package. ▪ "Advanced stage" defined to mean project which had incurred expenditure of at least 50 <i>per cent</i> of the latest approved estimated cost and achieved at least 50 <i>per cent</i> physical progress in the case of essential works¹⁷. ▪ For MI schemes in non-SCS the stipulated date of completion was two FYs. ▪ <i>Pari-passu</i> implementation of CAD works for the utilization of IPC. |
| July 2015 | <ul style="list-style-type: none"> ▪ AIBP was made one of the four components of PMKSY and included the incomplete MMI projects. ▪ MI schemes were made a separate component of PMKSY, under <i>Har Khet Ko Pani</i>. |
| July 2016 | <ul style="list-style-type: none"> ▪ Out of 144 incomplete MMI projects and five National Projects, 99¹⁸ projects were declared as Priority projects for completion in phases up to December 2019. |

(Source: Ministry)

Report No. 4 of 2010-11 of the C&AG had highlighted that frequent modifications in AIBP guidelines (1997, 1999, 2005 and 2006) showed lack of clarity in the focus, approach and objectives of AIBP. The Parliamentary Standing Committee (16th Lok Sabha) in its Fourteenth Report on Review of AIBP (March 2017) had also observed that such frequent changes in guidelines "hampered the smooth implementation of the programme and reflects lack of farsightedness in framing policy". Audit examination revealed that even thereafter, the guidelines have continued to be modified from time to time viz. in 2013, 2015 and 2016.

2.3 Inclusion of projects under AIBP without adherence to prescribed criteria

MMI projects

Audit noticed that 30 MMI projects involving sanctioned cost of ₹ 30,192.70 crore i.e. 17 *per cent* of the total sanctioned cost of the 118 sampled projects, were included under AIBP in violation of norms and criteria prescribed in the guidelines. An amount of ₹ 3,718.71 crore had been released as Central Assistance (CA) up to 2016-17 to these projects since their inclusion under AIBP. Details of the above 30 projects are given in **Annexure 2.1**. Audit findings relating to the 30 MMI projects that were included in AIBP in violation of the guidelines are discussed in following paragraphs:

- In the case of four States viz., Jammu and Kashmir, Karnataka, Kerala and Uttar Pradesh which already had ongoing MMI projects under AIBP, nine ERM projects with a total sanctioned cost of ₹ 1,016.02 crore were included under AIBP during 2005-12 in violation of conditions stipulated in AIBP Guidelines¹⁹. An amount of ₹ 239.46 crore had been released against these nine ERM projects. Ministry's explanation (February 2018) that the guidelines allow inclusion of ERMs where new potential is

¹⁷ Head works, earth works for canal, land acquisition, R&R activities for reservoir areas, finalization of designs and availability of construction drawings matching with completion of work as per award of work.

¹⁸ Includes two National projects

¹⁹ Para 6 (a) of the 2005 AIBP Guidelines.

envisaged is not tenable as for inclusion in AIBP, the primary requirement that the State should not have any ongoing MMI project is to be met first.

- Four MMI projects in two States i.e. Karnataka and Maharashtra, with a total sanctioned cost of ₹ 2,045 crore were included under AIBP between 2002-03 and 2009-10 without obtaining investment clearance of the Planning Commission. An amount of ₹ 301.18 crore had been released against these projects during 2003-10. Ministry justified (February 2018) the above based on instructions issued by Planning Commission in 1997 which permitted State Governments to accord investment approval for medium irrigation schemes without Inter-State aspects. This is not acceptable, as since 1996 itself AIBP guidelines had mandated inclusion of MMI projects only after investment clearance by the Planning Commission.
- 14 MMI projects in eight States viz., Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Odisha, Telangana and Uttar Pradesh with a sanctioned cost of ₹ 26,822.10 crore were included under AIBP during 2005-06 to 2009-10 even though these were not at an advanced stage of construction. We noticed that the expenditure on these projects ranged between nil to 34 per cent of their estimated cost at the time of their inclusion. Further, since their inclusion under AIBP, an amount of ₹ 3,114.15 crore had been released to these projects till March 2017. Ministry stated (February 2018) that 2006 AIBP guidelines did not define “advance stage of construction” and hence these projects were included. The Ministry’s contention is not tenable as the expenditure on these projects was low and ranged from nil to 34 per cent of their original estimated cost only.
- In Jharkhand, the projected gross command area of three projects with a sanctioned cost of ₹ 309.58 crore were included under AIBP even though these did not fulfil the criteria of having a planned command area of one lakh ha as required under provisions of the AIBP guidelines stated *ibid*. As such, selection of these three projects under AIBP was irregular. An amount of ₹ 63.92 crore had been released to these projects till March 2017.

MI schemes

Eligibility criteria under AIBP guidelines for inclusion of MI schemes varied between SCS and non-SCS and were also modified by the Ministry from time to time as shown in Table 2.2 below:

Table 2.2: Eligibility criteria for MI schemes

| Year | Category of State | Area | | Development cost per ha |
|------|-------------------|-----------------------|------------------|-------------------------|
| | | Individual MI schemes | Group of schemes | |
| 2005 | SCS | At least 20 ha | At least 50 ha | Less than ₹ one lakh |
| | Non-SCS | More than 100 ha | - | - |
| 2006 | SCS | At least 20 ha | At least 50 ha | Less than ₹ one lakh |
| | Non-SCS | More than 50 ha | - | Less than ₹ one lakh |
| 2013 | SCS | 10 ha | 20 ha | Less than ₹ 2.50 lakh |
| | Non-SCS | 20 ha | 50 ha | Less than ₹ 2.50 lakh |

Audit scrutiny of MI schemes included under AIBP in three States revealed 41 cases of inclusion of MI schemes which was not in accordance with the laid down criteria. State-wise details of important findings are given in the Table 2.3 below:

Table 2.3: MI schemes included without adherence to prescribed criteria

| State | Schemes included without adherence to prescribed criteria |
|-------------------|--|
| Arunachal Pradesh | <ul style="list-style-type: none"> Cluster of MI schemes at Kukurjan, Old Ganga MI scheme, Singri Hapa Jote, Inderjuli MI scheme, Model MI scheme at Chimpu WRD Complex, Rillo MI scheme at Poma under Itanagar Sub. Division and Cluster of MI scheme at Pareng, Boleng, Supsing, Rengo, Yingku, Lileng, Mopit, Begging, Dosing, Parong, Riew, Riga, Pangkang, Kumku, Ugging, Yemsing, Kallek, Komsing <p>For the above two clusters of MI schemes sanctioned during February 2011, development cost per ha were ₹ 1.81 lakh and ₹ 1.24 lakh respectively as against the prescribed cost per ha of less than ₹ one lakh.</p> <ul style="list-style-type: none"> Gipjang MI scheme for Budagaon, Wanghoo, Takhongand Ramalingam Agri field areas <p>The scheme was sanctioned in January 2009 with the total IP of 42 ha, which was less than the stipulated minimum of 50 ha.</p> |
| Jammu & Kashmir | <ul style="list-style-type: none"> Development cost in respect of 11 out of 30 test checked schemes sanctioned prior to the year 2013-14, was in excess of ₹ one lakh per ha and ranged between ₹ 1.05 lakh and ₹ 3.10 lakh per ha. The expenditure incurred on these schemes was ₹ 33.22 crore for the period ending March 2017. The Department stated that as the schemes were duly approved by the competent authority, (TAC) funds were released for execution of works. 20 tube wells involving an approved cost of ₹ seven crore, were included as MI Scheme under AIBP during 2008-09, which was irregular as the schemes did not involve any surface irrigation. |
| Rajasthan | <p>Bhimni MI scheme</p> <p>The development cost per ha for the projects was ₹ 1.13 lakh as against the prescribed cost per ha of less than ₹ one lakh; though the scheme was not eligible for grant under AIBP, the Department got the project sanctioned and received the grant for ₹ 7.87 crore.</p> |

2.4 Detailed Project Reports (DPRs)

As per CWC Guidelines for submission, appraisal and clearance of irrigation and multipurpose projects, DPRs submitted by State governments are subjected to techno-economic scrutiny by CWC, which has to complete the appraisal within a maximum time of

38 weeks. Further, block-wise information²⁰ on Command Area is also required to be furnished for each project. The Public Accounts Committee in its 68th Report during 15th Lok Sabha recommended that DPRs must be insisted on for all minor irrigation projects as in the case of major and medium projects, and concept papers or simple project proposals should not be treated as sufficient. AIBP guidelines also require that MI schemes should be technically appraised by State TAC on the basis of DPRs and after their approval, submitted to the Ministry for inclusion under AIBP.

In the case of 14 sampled MMI projects pertaining to seven States²¹ including three Priority-I projects with overall sanctioned cost of ₹ 10,550.91 crore, DPRs were not made available to audit.

In one case, a project (Rongai Valley, Meghalaya) with sanctioned cost of ₹ 16.30 crore was included under AIBP without preparing a DPR. An amount of ₹ four crore had been released by GoI up to 2002-03 for the project. The project was subsequently abandoned by the contractor in April 2003 after an expenditure of ₹ 17.90 crore was incurred and physical progress of 95 *per cent* was achieved, due to submergence of command area and abnormal delay in land acquisition.

Of the balance sampled MMI projects where DPRs were made available, our test check disclosed that in 35 projects with an overall sanctioned cost of ₹ 55,955.19 crore (31 *per cent*), there were shortfalls and deficiencies in preparation and processing of DPRs such as delays, inadequate surveys, deficiencies in surveys, inaccurate assessment of water availability, incorrect IP, inaccurate assessment of Command Area, reduction in Command Area, lack of activity wise construction plans and inadequate provision of cross drainage works in distribution systems. These deficiencies resulted in changes in quantities of items of work, modifications in scope of work and in structural engineering and designs after commencement of work which had significant financial implications.

In six MI schemes of five States, instances of non-preparation of DPRs, incomplete information in the DPRs and improper survey and investigations were noticed.

Details are given in **Annexure 2.2**. A few illustrative cases covering different issues are discussed in the Table 2.4.

Table 2.4: Deficiencies in DPR

| State | Deficiencies in the DPR |
|-------------------|--|
| Arunachal Pradesh | <p>Cluster of MI schemes under Bana Block</p> <p>Project proposal with estimated cost of ₹ 98.00 lakh contained only survey and estimates of sub MIPs. Important information such as BC ratio, salient features of the project, project phasing/schedule, Index maps, etc. were not included in the project proposal.</p> |

²⁰ Command area details, location, classification of land, Gross command area, Culturable command area, size of land holding, etc.

²¹ Andhra Pradesh: two, Assam: four, Bihar: one, Goa: one, Karnataka: three, Odisha: one, Tripura: two.

| State | Deficiencies in the DPR |
|--------------------------------|---|
| | <p>Cluster of MI schemes at Kukurjan, Old Ganga MI scheme, etc., under Itanagar Sub-Division</p> <p>The above cluster of MI schemes was approved for the cost of ₹ 1.43 crore with physical target of 79 ha. Audit scrutiny of the DPR revealed that the project consists of seven sub-MI schemes whose total targeted area as per the survey reports was 270 ha. Thus, the information given in the DPR regarding the coverage of ha was not in line with the survey.</p> |
| Andhra Pradesh and Maharashtra | <p>Velligallu (Andhra Pradesh), Lower Wardha, Wang and Krishna Koyna LIS (Maharashtra)</p> <p>There were delays ranging from four to 25 years in approval of DPRs. These projects were finally approved for a total amount of ₹ 7,498.77 crore. Delay in approval of DPRs deprived beneficiaries from envisaged benefits from the projects for prolonged periods.</p> |
| Karnataka | <p>Upper Tunga Project</p> <p>The alignment of the main canal from Km. 212 to Km. 217 was modified at the time of approval. After completion of one stretch of the canal, the work from Km. 212 to Km. 213.220 could not be taken up as the farmers demanded change of alignment to the alignment originally surveyed for which they had agreed to provide land. Thus, modifying the original alignment resulted in protests by the farmers and stoppage of work. The contract was later rescinded and a new tender notification was issued for the balance work. As a result, the project that was to be completed by March 2015 and now included under Priority-I category is still incomplete depriving farmers of irrigation.</p> |
| Madhya Pradesh | <p>Kachnari Diversion scheme</p> <p>The canal length of 3,420 m could not be constructed due to non-availability of actual command area (CCA of 220 ha) on site during execution. This showed that the DPR had not correctly assessed the availability of command area. Non-completion of canal rendered the expenditure amounting to ₹ 3.21 crore on the project wasteful.</p> |
| Maharashtra | <p>Chandrabhaga barrage</p> <p>The work of construction of the barrage was completed in June 2015 at a cost of ₹ 188.96 crore, but canal could not be constructed due to location of command area at a higher level than the submergence area, indicating improper survey and planning and resulted in blocking of huge expenditure of ₹ 188.96 crore. Besides the water could not be stored in the barrage due to non-rehabilitation of two villages coming under submergence.</p> |
| Nagaland | <p>Alachila MI scheme (Mokokchung), Balijan MI scheme (Dimapur), Balughoki MI scheme (Dimapur), Cluster-II MI scheme (Dimapur), Khekiho RWH (Dimapur), Upper Amaluma MI scheme (Dimapur), Ralan MI scheme (Wokha), Krazhol MI Project (Kohima), Kiyeaki MI scheme (Kohima), Chenyak MI scheme (Tuensang), Choklotso (Tuensang) and Shopong MI scheme (Tuensang)</p> <p>DPRs of 12 sampled MI schemes did not have the meteorological data, soil surveys, hydrological aspects like monsoon rainfall, nature of catchment area, existing water availability of catchment area, ground water potential, etc. Although the independent monitoring team (NABCONS Pvt. Ltd.) pointed out these deficiencies in December 2016, STAC approved DPRs without the aforementioned vital data.</p> |
| Telangana | <p>Sri Ram Sagar Stage Phase II project</p> <p>Water availability had not been properly assessed and water from two of the three reservoirs did not become available due to problems of land acquisition in forest area and absence of catchment area. As a result, the deficit had to be supplemented through another new lift irrigation scheme constructed with a cost of ₹ 121.69 crore (March 2017). This led to additional financial burden on SRSP II project and also delayed achievement of irrigation potential.</p> |

| State | Deficiencies in the DPR |
|---------------|---|
| Tripura | <p>Pratyekroycherra diversion scheme, Duraicherra diversion scheme, Chandukcherra diversion scheme, Purba Nadiapur LI scheme, Taltala LI scheme, Rabiadrafida para LI scheme, Shankhola LI scheme and Kalashati para LI scheme</p> <p>In case of eight out of the nine selected MI schemes, DPRs were not prepared. Instead of DPRs, the State Government submitted project proposals indicating the targeted CCA and estimated cost to the GoI for funding. The Department stated that preliminary survey and investigations were carried out, but these reports were not made available to audit.</p> |
| Uttar Pradesh | <p>Modernisation of Lahchura Dam</p> <p>In case of the project originally approved at a cost of ₹ 99.66 crore, there were significant variations in quantities of 75 items of works mentioned in the approved DPR. This indicated deficiencies in surveys and investigations and inaccurate estimation of quantities at the stage of preparation of DPR. The project has suffered a cost overrun of ₹ 229.16 crore and a time overrun of eight years.</p> <p>Madhya Ganga Canal Project Stage-II</p> <p>The work of concrete lining of the canal sanctioned in July 2007 at a cost of ₹ 117.87 crore was stopped after completion of work up to 31.55 km out of 66.20 km on the pretext of affecting the ground water recharge. This showed that the requirement and feasibility of providing concrete lining had not been adequately analysed at the DPR stage leading to avoidable expenditure on bed lining.</p> |

2.5 Benefit Cost Ratio (BCR)

The Benefit Cost Ratio (BCR) is the ratio of annual additional benefit on account of irrigation to the annual cost of providing those benefits. The calculations of BCR are incorporated in the DPRs, as it is an essential requirement for determining the economic feasibility of an irrigation project. As per guidelines for preparation of DPRs of irrigation and multipurpose projects, the minimum BCR for approval of such projects in Drought Prone Areas was one and in other areas it was 1.5.

PAC in its 68th Report during Fifteenth Lok Sabha recommended that Ministry must ensure that the BCRs for all projects are properly worked out, based on validated and verifiable data and assumptions relating costs, revenues and cropping patterns, etc.

In all six MMI projects and two MI schemes selected in Andhra Pradesh, the inputs considered for computation of BCR were not made available to audit, in the absence of which the accuracy of data could not be ascertained.

In 28 MMI projects in nine States²² and 82 MI schemes in 10 States²³, CWC and the project authorities did not adopt uniform parameters for calculation of BCR. There were divergences and discrepancies in adoption of capital cost of development of land, costs of various works, annual Operation and Maintenance (O&M) charges and depreciation whereas yield of various food grains and annual benefit were found to be inflated.

²² Assam, Bihar, Chhattisgarh, Jharkhand, Karnataka, Odisha, Maharashtra, Rajasthan and Uttar Pradesh

²³ Assam, Bihar, Jharkhand, Mizoram, Sikkim, Madhya Pradesh, Nagaland, Odisha, Rajasthan and Uttarakhand

Important findings are given below:

MMI projects

- In five projects²⁴ in three States, authenticated data from District Agriculture Officer regarding annual yield of crops were not used for calculation of BCR.
- In case of Aruna project in Maharashtra, cost of ₹ 129.01 crore in respect of land acquisition was excluded from the cost of project for calculating BCR.
- In four projects in Chhattisgarh²⁵, there were discrepancies in calculation of annual O&M charges viz. adoption of non-uniform parameters for calculation of annual O&M charges in two projects. The annual O&M charges were included at rates ranging from ₹ 500.00 to ₹ 600.00 per ha in two projects whereas administrative expenditure at ₹ 100.00 and ₹ 600.00 per ha were included in place of O&M charges in two other projects. Depreciation and interest on capital cost were also seen to have been estimated at different rates. Besides, contingencies such as cost escalation due to delay in land acquisition and finalisation of drawing and design were also not taken into account in any project.
- In four projects²⁶ in Odisha, depreciation cost was not taken as per prescribed rate of one *per cent* of cost of the project having life of 100 years/two *per cent* of cost of the project with a life 50 years.
- In Tarali project in Maharashtra, no separate BCR of Tarali valley and Drought Prone Area (Man and Khatavtaluka) were calculated.
- In case of Narmada Canal Project in Rajasthan, the un-irrigated area before construction of project was considered as 1,70,222 ha in place of 1,14,927 ha and net receipt was also calculated at higher value i.e. as ₹ 651.83 crore in place of ₹ 633.42 crore. Further, operation and maintenance cost was calculated on the basis of CCA in place of Gross Command Area (GCA), which was higher.

MI schemes

In the case of MI schemes, calculation of BCR was not found to be as per prescribed guidelines in 82 schemes in 10 States. In 20 MI schemes²⁷ in three States, there were discrepancies in calculation of O&M charges. In 59 schemes²⁸ in three States, data on post-irrigation increase of food grains had been taken without authentication by District Agriculture Office and in three schemes in Jharkhand, the irrigated land of area was incorrectly computed.

²⁴ Durgawati in Bihar, Lower Panzara and Bawanthadi in Maharashtra, Restoration of Hardoi Branch and Bansagar in Uttar Pradesh

²⁵ Maniyari Canal, Kelo, Mahanadi and Koserteda

²⁶ Lower Indra, Lower Suktel, Anandpur Barrage and Ret Irrigation in Odisha

²⁷ 12 MI schemes in Mizoram, one in Assam, two in Sikkim, three in Madhya Pradesh, one in Rajasthan and one in Nagaland

²⁸ 14 MI schemes in Bihar, 30 MI schemes in Uttarakhand, eight MI schemes in Madhya Pradesh, four in Jharkhand, and three in Odisha

It has been observed that BCR calculated while approving the projects/schemes is not sacrosanct as the actual BCR may reduce significantly due to increase in cost as outlined in subsequent chapters and decrease in benefits in cases where the utilized Irrigation Potential is below the Irrigation Potential envisaged.

2.6 Audit Summation

Overview of planning of the programme reflects widening coverage of projects under AIBP. The criteria for inclusion of projects/schemes were modified repeatedly in the AIBP guidelines and projects/schemes were included under AIBP without adherence to the same resulting in irregular release of ₹ 3,718.71 crore. There were shortfalls and deficiencies in preparation and processing of Detailed Projects Reports such as delays, inadequate and deficient surveys, reduction in command area and inadequate provision of cross drainage works in distribution systems. While Benefit Cost Ratio (BCR) was key for assessing economic viability of projects, Project Authorities did not adopt uniform parameters for calculation of BCR and on account of delays and cost overrun, actual BCRs were likely to be much lower than calculated BCR by the time projects were complete.