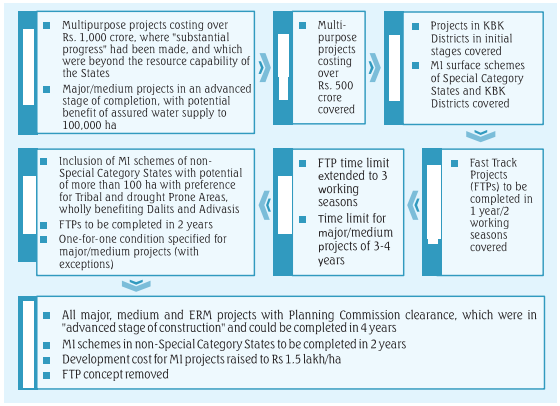
Planning

3

3.1 Successive Modifications in AIBP Guidelines

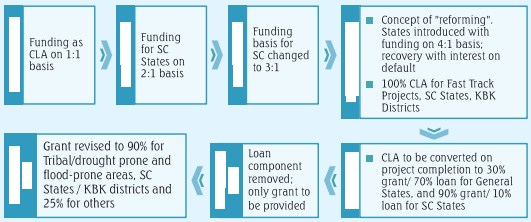
The scope and coverage of AIBP had undergone numerous amendments from its inception in October 1996 to December 2006, as summarized below:

Figure 2 - Changes in AIBP Scope and Coverage



Likewise, the funding pattern for projects under AIBP had also undergone numerous changes, as summarized below:

Figure 3 - Changes in Terms of Funding by Centre and States



The earlier Audit Report on AIBP (No. 15 of 2004) had highlighted the use of nebulous terms such as "substantial progress", "advanced stage", and "beyond the resource capability of a State" in the guidelines for selection of projects under AIBP, as well as the successive modifications of AIBP guidelines in 1997 and 1999 on the grounds of extending benefit to more States, which resulted in relaxation of criteria and dilution of AIBP's original objectives.

This trend of modifications to AIBP guidelines continued further upto December 2006. Further, the XI Plan confirmed that the results of reform measures introduced under AIBP (such as revision of water rates to cover Operation and Maintenance charges) were not satisfactory, because of the sluggish efforts of the State Governments to comply with the reform measures and also because the incentive to State Governments was not attractive enough to carry out the reforms.

This trend of modifications to AIBP guidelines was clearly indicative of continued lack of clarity in the focus and objectives of AIBP, which had been pointed out in the earlier Audit Report.

Recommendation - 1

There has been significant dilution in the focus and objectives of AIBP due to repeated modifications (six sets of modifications since its inception in 1996-97) in the scope and funding pattern of the scheme. Consequently, GoI must have a long-term perspective of AIBP in the programme guidelines, and avoid repeated and piecemeal modifications in an ad hoc manner.

3.2 Overview of Approval Process

The processes for approval of major/medium/ ERM projects and MI projects under AIBP are depicted below, in brief:

Figure 4 - Planning and Approval of Major/ Medium/ ERM Schemes

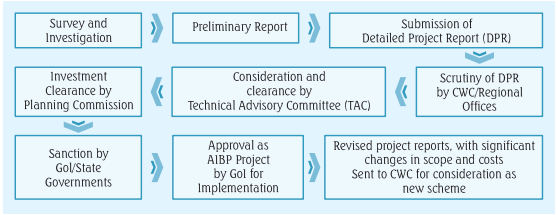
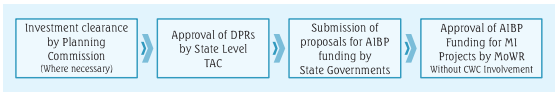


Figure 5 - Approval of AIBP MI Projects



3.3 Irregular Selection of MI Projects

Audit Scrutiny revealed that 13 out of 346 MI projects in the audit sample were irregularly selected, as detailed below:

- In Arunachal Pradesh, although the modification and improvement works to existing projects are not allowed as fresh AIBP projects, investment clearance was given by Planning Commission/ MoWR to five such projects[7] in two divisions.
- In Mizoram, despite the fact that the topographical and geographical condition of the areas falling under the three divisions were similar, there was wide variation in the projected cost per ha of the seven projects of the three divisions, which ranged between Rs.1.52 lakh per ha to Rs.2.92 lakh per ha. Moreover, sanctioning of projects with cost per ha of more than Rs. 1 lakh (revised to Rs.1.5 lakh in December 2006) was in contravention of the AIBP guidelines.

[7] Improvement and Renovation of Sigo Nallah MIP at Ngorlung, Renovation of Head work of Gagur MIP at Niglok , Improvement & Renovation of Suli Tali MIP at Mottum Sigar Area , Improvement and Renovation of Sipir MIC at Ayeng village, Improvement & Modification of Lipa Gal (Hong), Sipu (Old Ziro) and Kohi Bogo (Tajang Kley).

- In **Jammu & Kashmir**, one scheme (Unis Ujroo khul) which was already receiving finance from Rashtriya Sam Vikas Yojna (RSVY) was irregularly approved and funded under AIBP.

Besides, 82 other schemes (not falling within the original audit sample) were also found to be irregularly selected, as detailed below:

- In **Manipur**, 15 MI Projects[8] out of 211 MI Projects sanctioned during 2005-06, which were shown to have been completed in March 2007, were again included in the list of 242 new projects sanctioned afresh in 2007-08.
- In **Uttarakhand**, 15 MI individual Schemes[9] were selected where the CCA was less than 20 ha, and 50 group schemes within radius of 5 Km. were selected where the CCA was less than 50 ha; this was in violation of AIBP guidelines.
- In **Jammu & Kashmir**, two schemes (Suel canal and Noorabad canal) which were already receiving finance from NABARD were approved and funded under AIBP.

3.4 Deficiencies in Preliminary Reports

The first stage in the process for obtaining investment clearance from the Planning Commission is the preparation by the State Government of a preliminary report, based on which CWC gives in-principle consent for preparation of a DPR. This report should be based on survey and investigations and collection of information, and should cover the following aspects:

- General data and planning;
- Inter-State and international aspects;
- Survey and investigations (including geological, seismic, foundation, hydrological and meteorological investigations, and construction material survey);
- Hydrology;
- Drinking water requirements;
- Irrigation planning and planning for other intended benefits; and
- Environmental and ecological aspects.

[8] Construction of weir at Murril(Joyland), MI Scheme at Sinjawl Tuijen, Construction of weir over Itok River at Chandrakhong, Construction of weir at Borayangbi across Sandangkhong Stream,Construction of pucca canal of RLI Scheme at Kumbi Setupur, Construction of weir across Laiki river at Kameng, M.I. Scheme at Mataleisang, Construction of M.I. Canal at Wangkhei Payeng Loukon (Thanga Lawai), Construction of weir across Leinganglok River at Namthajang, Construction of weir at Oksu, Construction of weir across Tuining River Khongkaijang Village, Construction of weir at Elang Chingjin, Construction of Dam across Lalkhan at Ningthou Latingkhal, Construction and fixing of steel regulator at Magujang Maril and Construction of weir across Honia river at Thiwa Village.

[9] Patal-I (Chondli), Pudiyani, Khageli, Chhoiya (Nauti), Dhungerh (Chondli), Patal-II (Chondli), Jangal chatty, Rithya, Kulagad, Siddhi bandakhera, Nazibabad, Devaria, Anand nagar, Tiliyapur and Bhagauri-II.

However, out of 28 test-checked major/medium projects approved during 2003-08, audit scrutiny revealed that preliminary reports were prepared without survey and investigation, and were hence inadequate (being based exclusively on desk study) in respect of 7 major projects and 1 medium project in Andhra Pradesh, Bihar, Haryana, Jammu & Kashmir and Maharashtra (6 States). Further, in 3 major and 2 medium projects in Andhra Pradesh, Bihar, Maharashtra and Punjab (4 States), the anticipated benefits and expected outcomes were not assessed in the preliminary report. Details are given below:

Table 3 - Projects taken up without Proper Preliminary Reports

State	Projects without survey/ investigation	Project Cost (Rs. in Crore)	Projects where anticipated benefits/ outcomes were not assessed	Project Cost (Rs. in Crore)
Andhra Pradesh	Sri Ram Sagar Project Stage – I	2954	Khomarambhim Project	274
Bihar	Western Kosi Canal Project	1082	Western Kosi Canal Project	1082
Hayana	Balance works of WRCP	1858	—	—
Jammu and Kashmir	Modernization of Ranbir Canal	176	—	—
Maharashtra	Krishna Major project	648	Nandur Madhmeshwar Project	866
	Nandur Madhmeshwar Project	866	Arunavati River Project	225
	Patgaon Medium Project	81	—	—
Punjab	—	—	Remodelling of U.B.D.C.Channels	178
Uttar Pradesh	Hardoi Branch System	105	—	—

3.5 Deficient Detailed Project Reports

3.5.1 DPRs for Major/ Medium Projects

In terms of the "Guidelines for submission, appraisal and clearance of Irrigation and Multipurpose Projects - 2002" issued by the CWC, the DPRs should be prepared in accordance with the applicable Indian Standard and guidelines issued by the MoWR and CWC, and should include the following broad aspects:

Table 4 - Aspects to be included in the Detailed Project Reports

Contents	Brief Description
Physical features	Details of geographical disposition, topography and geology of the basin, reservoir and command area, river system and basin characteristics
Interstate/international aspect(s)	State/countries traversed by the river, distribution of catchments therein, effects of interstate/international agreements etc.
Surveys and investigations	Surveys and investigations carried out for the various alternatives considered to justify the final choice of the location and types of various components of the projects

Contents	Brief Description
Hydrology	Hydrologic inputs to the project planning, simulation and performance testing of alternative plans, effect of project development on hydrologic regime, design flood etc.
Design feature & criteria for different river valley structures	Details of structure and layout, dams, barrages, canals, canal structures and power house
Revenues	Information relating to yearly programme of development, total income from various sources of revenue, water rates, power rates, administrative charges etc.
Benefit – Cost Ratio and financial return	Details of estimation of annual benefits and animal cost for the irrigation and flood control component of the project and calculation of BCR as annual benefits/annual costs.
Environmental and ecological aspects	Environmental aspects of site selection, physical aspects etc.
Financial resources & estimates	Aspects relating to total resources of the State, provision for the sector/scheme, central / foreign aid contemplated, if any, and detailed estimates for various items covered under different sub heads
Flood control and drainage	Details of issues like flood data, flood damage, flood control measures, drainage, cultivation practices etc.
Irrigation planning	Details of existing and proposed irrigation facilities, existing cropping pattern, soil surveys, water planning etc.

Audit scrutiny revealed that in 14 out of 70 test-checked major and medium projects, the DPRs were found to be deficient as a number of important aspects were missing/ neglected as detailed below:

Table 5 - Deficiencies in Detailed Project Reports

S.No.	Aspect of the DPR	Major/ Medium Projects	States
1.	The project plan did not contain all salient features such as check list, maps and all other necessary components such as land, works, bridges, tanks, minors etc.	Sriramsagar Stage-I, Mahi Bajaj Sagar, Teesta Barrage Project, Hanumata Irrigation Scheme and Patloi Irrigation Scheme	Andhra Pradesh, Rajasthan and West Bengal (3 States)
2.	Meteorological and other data like soil surveys, socio-economic benchmark survey, engineering surveys, water logging, salinity and drainage for on farm development of works.	Sriramsagar Stage-I, Sone Canal Modernisation, Western Kosi Canal Project, Mukteshwar Project, Nandur Madhmedhshwar, Sangola Branch Canal, Patgaon, Improving Irrigation intensity of Hardoi Branch System, Teesta Barrage Project, Hanumata Irrigation Scheme and Patloi Irrigation Scheme	Andhra Pradesh, Bihar, Gujarat, Maharashtra, Uttar Pradesh, and West Bengal (6 States)
3.	Aspects like exact location of the project, hydrology aspects such as catchment area, monsoon rainfall, annual yield etc.	Sone Canal Modernisation, Modernisation of Ranbir Canal, Teesta Barrage Project, Hanumata Irrigation Scheme and Patloi Irrigation Scheme	Bihar, Jammu & Kashmir & West Bengal (3 States)

S.No.	Aspect of the DPR	Major/ Medium Projects	States
4.	Aspects like the length of main canals, types etc, in canal system cases, and in financial matters, the estimated cost, benefit cost ratio, cost of live storage, cost of annual irrigation etc	Sone Canal Modernisation, Patgaon, Mahi Bajaj Sagar, Teesta Barrage Project, Hanumata Irrigation Scheme and Patloi Irrigation Scheme	Bihar, Maharashtra, Rajasthan & West Bengal (4 States)
5.	Assessment of water availability and its need in the Command Area, and other aspects like dependable yield, 100 years return flood period, ground water potential, etc.	Champamati Irrigation Project, Western Kosi Canal Project, Improving Irrigation intensity of Hardoi Branch System, Teesta Barrage Project, Hanumata Irrigation Scheme and Patloi Irrigation Scheme	Assam, Bihar, Uttar Pradesh & West Bengal (4 States)
	Total	14	

3.5.2 DPRs for MI Projects

Audit scrutiny of 346 MI projects approved during 2003-08 revealed that the DPRs were not prepared/ made available to audit and the projects were cleared on the basis of Concept Papers[10] or simple project proposals in 112 MI projects in Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Maharashtra, Meghalaya, Nagaland, Sikkim and Tripura (9 States).

3.6 Wrong Computation of Benefit Cost Ratio

Box 2 Computation of BC Ratio

The Benefit Cost Ratio (BC Ratio) is one of the most important aspects needed for assessing the economic viability of the project. For an irrigation project, BC Ratio = Annual Benefits / Annual Cost.

Annual Benefits: are computed by taking in to account the agriculture production in the area to be irrigated under pre-project conditions and agriculture production in the area after completion of the irrigation projects.

Annual Cost: includes interest on the estimated cost of the project (including the cost of land development), operation and maintenance cost, depreciation of the project based on the estimated life of the project, maintenance of the head-works, depreciation of the pumping system and rising main (in lift canal systems), charges for power etc.

[10] Concept paper contains a brief description of the project indicating location of the project, Culturable Command Area (CCA), Annual Irrigation Area (AIA), length of canal, targeted irrigation potential, cropping pattern, projected BC Ratio, abstract of project cost, index map etc.

Audit scrutiny of 41 Major, 29 Medium and 346 MI projects revealed that:

- The BC Ratios in 18 Major, 10 Medium, and 177 Minor test-checked Irrigation Projects were either not assessed at the time of preparation of DPR, or were not assessed/ calculated correctly by taking into account the applied cost, value, rates, interest, depreciation, charges etc. in Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Sikkim, Uttar Pradesh, Uttarakhand and West Bengal (17 States).
- In 12 Major/ Medium and 119 MI Projects, the proposed cropping patterns were not adopted in consultation with the State Agriculture Department and were not based on soil surveys of the command area in Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Manipur, Mizoram, Nagaland, Orissa, Uttar Pradesh and Uttarakhand (14 States).

Details of audit observations on deficient and irregular calculation of BC Ratio are summarised below:

Table 6 - Instances of Deficient Calculation of BC Ratio

State	Projects	Findings
Andhra Pradesh	Ali Sagar Lift Irrigation Scheme	Creation of additional IP was incorrectly claimed, as there was no new IP creation and only stabilisation/ supplementing the source of existing ayacuts.
Arunachal Pradesh and Mizoram		The change in cropping pattern projected in the DPRs was stated to be on the basis of general oral opinion of beneficiaries collected during detailed survey and investigation and also through State Agriculture Department. However, there was no documentation that the proposed cropping patterns were adopted in consultation with the Agriculture Department or after soil surveys of the cropping area, nor of the prevailing market rates as adopted in the DPRs.
Bihar	Western Kosi Canal Project	BCR was calculated at 2.794 after projecting Kharif crop production, which was unrealistic as the command area was flood prone (making Kharif crop uncertain).
Gujarat	Bhadar-II	On-farm development cost was not considered for calculating BCR. Further, the BCR of 2.581 was based on the original estimated cost of Rs. 73.08 crore; the BCR based on the revised estimates of Rs. 138.54 crore would be much lower.
	Mukteshwar	IP Cost per ha was estimated at Rs. 0.31 lakh per ha, based on estimated project cost of Rs. 19.37 crore. Based on the project cost on completion of Rs. 49.81 crore, the actual IP cost per ha was Rs. 0.81 lakh per ha.
Jharkhand	Sonua Reservoir Project	BCR 0f 1.29 was incorrectly based on the data of Hazaribagh District (instead of Chaibasa District); based on Chaibasa District data, BCR would be 0.91.
	Tapkara Reservoir Project	Projected BCR of 2.637 was based on projected CCA of 2732 ha. The revised BCR, based on the actual IP created of 311 ha and other current data, worked out to only 0.22.

State	Projects	Findings
Madhya Pradesh	Bawanthadi	BCR of 1.15, as per revised estimate, was irregularly inflated to 1.76 by ignoring land development cost and cost of headwork maintenance, and adding benefits on account of cultivation in galper land (submergence area in summer) without appropriate justification.
	Bansagar Project (Unit-II – Canal)	BCR of 3.61 (as per revised estimate) was inflated by not providing for higher depreciation on electrical mechanical systems, not assessing loss of cultivation in canal submergence areas, and understating interest on capital by not including land development costs.
	Test-checked MI Tank Projects	BCR was inflated by not adding head-works maintenance costs and land development costs, ignoring loss of cultivation in submerged areas, and charging lower depreciation.
Maharashtra		For the State as a whole, BCR calculated and approved by CWC was based on the entire project costs and benefits, and not on the AIBP components alone.
Sikkim		DPRs were not produced; copies of BCR analysis were kept in some cases in implementation files. In one case, benefit due to "time saved by farmers for irrigating the fields" was irregularly considered, overstating the BCR.
Uttarakhand		111 sub-schemes of MI projects were undertaken without calculating BCR.

Recommendation - 2

Survey and investigation may be ensured in respect of all preliminary reports for investment clearance; these cannot be based only on desk study.

Formal DPRs may be insisted upon for all minor irrigation projects; concept papers or equivalents should not be treated as sufficient.

AIBP guidelines and the Planning Commission's investments clearance lay great stress on Benefit Cost Ratio (BCR) so as to provide assurance regarding the economic viability of the project. In this context, the MoWR must ensure that BCRs for all projects are properly calculated, based on validated and verifiable data and assumptions relating to costs, revenues, cropping patterns etc.