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PERFORMANCE AUDIT REPORT

INDIA

**NATIONAL WATER MANAGEMENT PROJECT
(CREDIT 1770-IN)**

June 19, 1998

Operations Evaluation Department

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Currency Equivalentents (annual averages)

Currency Unit = India Rupees (Rs.)

Year	Official ^a	Market ^b	Real ^c
1987	12.96	14.55	20.89
1988	13.92	17.00	21.73
1989	16.26	19.00	22.50
1990	17.50	19.80	23.95
1991	22.74	28.00	26.19
1992	25.92	32.30	28.10
1993	30.49	31.45	29.90
1994	31.37	31.60	31.61
1995	34.95		
1996	34.95		

a. "International Financial Statistics," IMF, Vol. XLVIII, 1995.

b. Pick's Currency Yearbook, World Currency Yearbook and Currency Alert, various issues.

c. (1994 Exchange Rate X GDP Deflator India)/GDP Deflator US.

Abbreviations and Acronyms

CADA	National Command Area Development Authority
DCA	Development Credit Agreement
ERR	Economic Rate of Return
FAO/CP	Food and Agricultural Organization/Cooperative Program
GOAP	Government of Andhra Pradesh
GOI	Government of India
GNP	Gross National Product
ICR	Implementation Completion Report
ID	Irrigation Department
IIMI	International Irrigation Management Institute
ISTF	Institutional Strengthening and Training Fund
M&E	Monitoring and Evaluation
MOWR	Ministry of Water Resources
NWMP	National Water Management Project
O&M	Operation and Maintenance
ODA	Overseas Development Administration (of the United Kingdom)
OED	Operations Evaluation Department
PPC	Project Preparation Cell (in each state)
SAR	Staff Appraisal Report
WALMI	Water and Land Management Institute
WMC	Water Management Cell
WRCP	Water Resources Consolidation Project

Fiscal Year

Borrower: April 1 - March 31

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June 19, 1998

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**Subject: Performance Audit Report on India:
National Water Management Project (Credit 1770-IN)**

Attached is the Performance Audit Report on the India National Water Management Project (NWMP) prepared by the Operations Evaluation Department. NWMP was approved in FY87 for a Credit of US\$114.0 million equivalent. After an extension of one year, the fully-disbursed credit was closed in March 1995. Total disbursement was US\$130.0 million equivalent because of the SDR changes in value.

The primary objectives of the project were to increase agricultural productivity, farm incomes and recovery of recurrent operating costs by making public sector irrigation more reliable and equitable. To achieve these objectives and facilitate replication nationwide, the project planned to help the central Ministry of Water Resources and three participating states in the south to develop institutional capacity to change irrigation from demand to supply-based operations, implement and monitor improved operation and maintenance (O&M), and provide low-cost scheme investments to upgrade infrastructure in 16 irrigation schemes covering 460,100 ha. It was expected that these pilot projects would be replicated in other states and funding for additional schemes over 123,00 ha was provided. Almost two-thirds of the project cost was for engineering scheme improvements and 12 percent was for incremental O&M, engineering and administration. The balance of project costs was allocated to institutional strengthening, training, and special studies of water management.

The project failed to meet most of its objectives because it underestimated the magnitude and complexity of reforming the way state irrigation departments operated, managed and maintained their facilities. Irrigation departments were not conversant with the new principles of system design and operation and only three of the initial 16 projects were fully designed at appraisal drawing heavily on Bank staff expertise. Beneficiaries were not consulted about the change to a hydraulically complex supply-based irrigation system predicated on the conversion of wetland to dryland irrigation. Supporting agricultural extension was largely ignored. Comprehensive training programs designed to address these issues were largely unsuccessful because of high turnover of staff, fragmented training efforts and inappropriate institutional restructuring. Delays in counterpart funding allied with requirements for Bank approval of individual scheme design slowed implementation.

Strong governmental and Bank pressure to increase Bank disbursements in response to macroeconomic problems caused the project to lose focus. The Bank grossly simplified project screening criteria in 1990 and expanded the project to include an additional six states and 64 subprojects which increased the project area to 2.18 million ha. Overall costs to complete the enlarged project far exceeded approved funding because the Bank believed these costs would be covered by a follow-on project. The rapid geographic expansion of the project jeopardized systematic monitoring and evaluation, and supervision became ineffective. It was only after the Bank commissioned an independent evaluation by

the Food and Agriculture Organization's Cooperative Program during the pre-appraisal stage of the follow-on project that the true state of affairs was revealed.

Overall, 96 schemes were initiated but only 32 were completed. Actual area benefited was only 16 percent of the modified targets. Infrastructure improvements were mainly deferred maintenance and did not improve overall system performance. Institutional development was negligible. Anticipated improvements in cropping patterns, cost recovery and O&M targets were generally not achieved despite project cost overruns of 148 percent in nominal rupee terms and 11 percent in US\$ terms. Inadequate funding for O&M has led to deterioration of the few project facilities that were completed. As a consequence of this lamentable performance, the economic rate of return for the three appraised sub-projects fell from 38 percent at appraisal to 3 percent. Another six schemes not considered at appraisal have ERRs ranging from 17 to -16 percent. The weighted average ERR for the nine projects evaluated in the Implementation Completion Report (ICR) is 12.3 percent mainly due to the allocation of a half of the Credit as a bridging fund for the Haryana Water Resources Consolidation Project (Cr. 2592-IN). Excluding the Haryana project, the weighted average ERR is 4.6 percent.

The NWMP failed to address a whole series of policy contradictions that undermine the financial viability of public sector irrigation in India. State electrical power subsidies to groundwater irrigation encourage resource mining but constrain investment in O&M of surface irrigation systems that provide much of the recharge. National subsidies for command area development at the farm level require substantial matching grants from states: a consequence is that there is insufficient funding to guarantee the integrity of the upstream water supply system. Most importantly, there was an unwillingness to tackle the issues of cost recovery and empowerment of beneficiaries. Fortunately, projects in the Bank's current irrigation portfolio are seeking to redress these failings but it is too early to evaluate their efficacy.

The outcome of NWMP is rated as unsatisfactory, institutional development as negligible, and sustainability as unlikely. These ratings are in agreement with those assigned by the ICR except for institutional development which the ICR rated as modest. OED downgrades the Bank's performance rating in the ICR from unsatisfactory to highly unsatisfactory and maintains the ICR's unsatisfactory rating for Borrower performance.

There are six lessons: (i) national irrigation projects in a country as diverse as India do not work; (ii) projects need to focus and concentrate on single states; (iii) introduction of new irrigation water management concepts is a complex institutional and sociological venture which is better tested through a few small pilot projects that emphasize participation of all stakeholders and institutional reform; (iv) future projects have to take a more holistic view of the O&M funding issue and eliminate cross-sectoral policy contradictions; (v) thorough and independent evaluation of effective monitoring of project performance must precede decisions to endorse follow-on projects; and, (vi) as more responsibility is delegated to the field, the Bank has to explore new ways to effectively manage and supervise project implementation and ensure staff receive adequate training and have appropriate incentives.

Robert Picciotto
by Roger Slade

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PRINCIPAL RATINGS

	<i>ICR</i>	<i>Audit</i>
Outcome	Unsatisfactory	Unsatisfactory
Sustainability	Unlikely	Unlikely
Institutional Development	Modest	Negligible
Borrower Performance	Unsatisfactory	Unsatisfactory
Bank Performance	Unsatisfactory	Highly Unsatisfactory

KEY STAFF RESPONSIBLE

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
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Completion	N. Bandyopadhyay	S. Barghouti	H. Vergin

Preface

This is the Performance Audit Report (PAR) for the India National Water Management Project (Credit 1770-IN). The project was approved in March 1987 for a credit of US\$114 million and was completed in March 1995, one year behind schedule. The credit was fully disbursed in June 1995.

The PAR is based on the Implementation Completion Report (ICR) prepared by the South Asia Regional Office, Staff Appraisal Report (SAR), and legal documents; on study of the projects' files, supervision reports, and project documents; and on the findings of an OED mission which visited India in November-December 1997. During this mission, OED's audit team met officials of the central and state governments, the implementing agencies, and project beneficiaries. The collaboration of these officials and other persons is gratefully acknowledged.

The draft PAR was sent to the government for comments. Comments received from the Borrower are attached as Annex B.

1. Background and Rationale for the Project

1.1 Agriculture is the primary source of livelihood for three-quarters of India's population and the rural areas that contain 80 percent of the poor. All arable land is cultivated, and improvements in agricultural productivity, which account for 30 percent of GNP, depend on raising crop yields, diversifying to higher-value crops, and increasing cropping intensity. Irrigation and high-yielding irrigated crops, the basis for stabilization and growth of food production in India, contribute 55 percent of agricultural output.

1.2 But the performance of most irrigation systems outside northwest India, and some delta areas, has fallen far short of expectations mainly because of insufficient funding for system maintenance, outmoded rules for operation, and lack of beneficiary participation. Commonly, the State Irrigation Departments (IDs) have responsibility for operating and maintaining everything from headworks covering tens of thousands of hectares to field outlets serving 40 ha or less. The size and complexity of most Indian projects, the large number of control points, and limited infrastructure available make this an almost impossible task.

1.3 Consequently, farmers do not get the service they believe they are entitled to and react by taking matters into their own hands. The result is an ongoing battle between the officials and the farmers, with both sides claiming that the other side is failing in its performance. The irrigation department is unable to give reliable irrigation services, because the farmers interfere with the system, and they do this because the irrigation supplies are unreliable. As a result, average yields and area irrigated are less than projected, unit area water use is higher than necessary, and many farmers receive erratic and limited supplies. Unreliable water supplies lead farmers to adopt risk-avoidance strategies: these affect decisions such as which areas to plant or what crops to grow and tend to favor the choice of low-input, low-yield, drought-tolerant crops. Even reliable supplies of water, if poorly timed, miss the high potential benefits of optimum planting dates, or yield-enhancing supplies at critical stages of plant growth.

1.4 The Government of India (GOI) first approached the Bank with a proposal for a national water management project for the irrigation sector in 1982. After some discussions and initiatives to improve water management in 17 ongoing Bank-supported projects, the GOI, in late 1984, established a Water Management Cell (WMC) in the Ministry of Irrigation (now Ministry of Water Resources [MOWR]), and the Bank and GOI together agreed to explore the potential for water management projects in selected states.

1.5 From past experience, the Bank concluded that the existing infrastructure made it impossible for the IDs to provide irrigation services to individual farmers and plots. At the right point in the irrigation system, control had to be transferred to the farmers. However, experience also showed that farmers' water management groups are unsustainable if the water supplies are unreliable. Accordingly, the basic objective of the National Water Management Project (NWMP) was to increase the reliability of irrigation water supplies through improving system operation. In many schemes this would be achieved through successive improvements in infrastructure and operations.

1.6 In theory, some interventions could be implemented without modifying the existing irrigation facilities. In practice, investment was needed to redress inadequate maintenance, provide additional control structures, and improve the low design standard of the original project. To keep attention focused on improving system operation rather than rehabilitation of deferred maintenance, interventions were not to exceed \$200/ha.

1.7 Guidelines for preparing and evaluating scheme proposals were developed by the Bank, and joint GOI/Bank teams helped prepare three model proposals.¹ In April 1985, the GOI decided to initiate detailed project preparation in three States—Andhra Pradesh, Karnataka, and Tamil Nadu. Each state prepared an overall project report, finalized a detailed scheme proposal, and began preparation for additional schemes. If the concept was successful, other states were to be included subsequently.

1. These “Guidelines for Preparing a Scheme Proposal” were exceedingly lengthy, 309 pages, and contained an introductory text, four technical annexes, and three in-depth case studies.

2. The Project

Objectives of NWMP

2.1 The objective of the National Water Management Project was to increase productivity and farm incomes in existing irrigation schemes through providing a more reliable, predictable, and equitable irrigation service. The NWMP took a scheme-by-scheme, state-by-state approach, emphasizing effective internal monitoring so as to manage operations and assess the impact of operational interventions on agricultural production. For each scheme, the most appropriate technique of water supply was to be adopted depending on climate and local practices.²

2.2 The strategy of NWMP had two parts, both of critical importance. One of these aimed at developing in the participating states and GOI an *institutional capacity* to plan, implement, and monitor improved O&M practices; the second consisted of *low-cost infrastructure improvements* designed to support an improved operational plan. The most important element of the strategy and scheme formulation was the preparation of an *operational plan*. Using water availability (rainfall, surfacewater, and groundwater), system characteristics, and agricultural options, the plan would define the timing and quantities of water deliveries and the responsibilities of those involved. The low-cost infrastructural improvements and the physical investments (about 80 percent of the cost) would cover deferred maintenance, corrective additions required to implement the operational plan, and enhanced O&M facilities and equipment.

Project Components

2.3 The total cost of the project was an estimated US\$157 million: it consisted of six principal components.

- **Scheme Investments** (US\$73.7 million) required to implement the operational plan. This included repairs and renovations to existing structures; provision of new water control structures; field channels and drains; measuring devices; and investments in upgraded O&M facilities and equipment, including housing for staff and transport and communications equipment.
- **Engineering and Administration** (US\$6.6 million) required to supervise the effective implementation of the scheme investments.
- **Incremental Recurrent O&M Expenditures** (US\$8.5 million) to support implementation of the improved operational plan and a steadily declining share of maintenance during the life of NWMP.
- **Institutional Strengthening and Training** (US\$18.5 million) of the IDs with particular emphasis on helping them develop O&M planning and support units in

2. Later in the project it was mistakenly assumed that NWMP advocated the adoption of proportional water distribution according to the techniques of warabundi practiced in NE India.

the states, and in the central WMC of the MWR. The project supported staffing costs, buildings, equipment, vehicles, and associated recurrent costs. This included US\$10 million provided under an Institutional Strengthening and Training Fund for the states but managed by MWR for activities mutually agreed by the Bank and GOI.

- **Training Programs** (US\$5.1 million) to orient field staff and farmers. The project would also support technical and orientation training programs for scheme staff, state O&M staff, and staff of the WMC and support study tours within India and overseas. These funds also supported the building of the Irrigation Management and Training Institute in Tamil Nadu and the new Induction Training Program for Irrigation Engineers in Maharashtra.
- **Special Studies and Programs** (US\$2.7 million) to strengthen specific aspects of water management (monitoring and evaluation, computer applications, communications, dam safety, etc.), including local and international technical assistance.

Plans for NWMP Implementation

2.4 Each state was to prepare a *Scheme Summary* to be cleared by the central WMC. Following this clearance (that sanctioned preparation costs from NWMP funds), the state then produced a full *Scheme Report* (the Operational Plan). After internal review and clearance within the state, the full *Scheme Report* had to be approved by the NWMP Appraisal Committee chaired by the Additional Secretary, Water Resources, GOI, and then approved by the Bank.

2.5 In each participating state a Project Planning Cell (PPC) was to prepare scheme proposals and supervise their implementation. A single O&M agency (the ID or the Command Area Development Authority (CADA)) was to be designated before the scheme investment was completed and would be assigned responsibility for water delivery within each scheme. The O&M cell would give direction to the state's O&M activities, and support and monitor schemes. Agricultural supporting services (e.g. extension, CAD, credit) were to be programmed to complement the operational plan for irrigation management. It was expected that the state IDs would coordinate activities of the O&M agency, other government agencies, and the farmers.

Monitoring and Evaluation

2.6 An M&E plan consistent with management requirements and manpower availability was to be prepared for each scheme and form a part of its O&M plan. The PPCs and/or O&M cells at the state level were to help introduce M&E practices at the scheme level, develop reporting formats and procedures, and monitor progress. Taking into account the successes and failures, the operational plan was to be modified for the next season.

Issues Raised During Project Appraisal

2.7 In comparison with earlier Bank irrigation projects, the NWMP was exceedingly ambitious as it sought to challenge long-established top-down management of public sector irrigation management. In addition, it aimed to introduce equitable water distribution throughout

irrigation systems using proportional flow division structures and mutual ID/farmer operation of the system in a structural division of responsibility. Not surprisingly, its innovative nature and potential risks were highlighted in the Bank's review process.

2.8 Regional management expressed concern on several occasions that there were dangers that the project was too ambitious. But the remedy suggested was flawed:

*"To reduce pressures for an oversized project, we should agree that the second NWMP will not have to await completion of the first one. ...Past experience indicates that preparation of such plans may take a long time and could result in delays in implementation and disbursement. To minimize this risk, NWMP should include mainly (80 percent) preselected schemes."*³

2.9 Several reviewers thought the project scope was too ambitious given the Bank's experience with institutional development in India:

"even in the best irrigation systems designed to standards which are the best in India, it is by no means simple to put in place operational plans which are dependent on their implementation on an only gradually evolving modern institutional framework....Overall this is a very bold initiative on an immense scale (implied size 1 million ha, 50,000 km of field channels). Why not scale it down...to states where we have some experience with irrigation institutions - first get all the pilots running properly, identify specific objectives in each project with clearly defined operational conditionalities; agree appropriate organizational patterns and technical quality standards with each participating state. Providing NWMP is successful, over its first 2-3 years a second larger operation could then be mounted....which could include additional states."

2.10 In view of this advice, the project scope was initially restricted to Andhra Pradesh, Karnataka and Tamil Nadu and included 16 schemes covering about 460,000 ha. As these states might add additional schemes, and other states might want to join NWMP an allowance to cover an additional 123,000 ha was included to give a total area of 583,000 ha.

2.11 Even with these changes, a formal and perceptive review of the Green Cover SAR was still pessimistic:⁴

"Faced with delays in implementation of NWMP, GOI may pressure states to start new schemes to fully utilize the credit. We may end-up with large NWMP with little control over and nothing completed, and subsequently be forced to NWMP II, justified by the need to complete works already started. Therefore NWMP needs a formula that would permit new sub-projects only on the basis of progress (defined clearly in the SAR) by these three initial schemes. If clearly defined indicators cannot be developed, the project should be limited to the three schemes only."

Unfortunately, this advice was not taken.

3. Memorandum. Grimshaw to Helman, October 18, 1994.

4. Memorandum, Martin Herman to Chaim Helman, July 30, 1986.

2.12 Herman's 1986 review also raised an extremely important issue:

“Farmers must be fully involved long prior to project start....The proposal for farmer involvement is mainly more ID and CADA assistance in promoting farmer organizations, an approach that has produced little in the past. I feel that the issue should be turned around. A model should be presented to farmers in all schemes that satisfy NWMP criteria in the state and farmer organizations should raise matching funds and bid for modernization of their schemes. This would create much stronger incentives to organize.”

2.13 This advice was ignored, but the SAR was modified to emphasize the need for more consultation with farmers. Unfortunately, this was wholly ineffective in changing the top-down management style of IDs. Only in April 1997 did a breakthrough occur in one state driven by financial crisis: a new government in Andhra Pradesh, with a pragmatic chief minister, brought about massive farmer participation in irrigation to reduce O&M costs.

2.14 Most reviewers expressed surprise that the project did not place more emphasis on cost recovery and other means to provide full funding for O&M, particularly as the project would only fund incremental O&M cost, and even that on a declining scale. Indeed, the issue of sufficient funding for O&M to maintain improvement effected by the NWMP became an issue of project clearance by Bank's senior management. A covenant was included to ensure that a detailed review of O&M practices and needs would be carried out by participating states by December 31, 1989 and an action plan implemented not later than June 30, 1991.

2.15 Strengthening institutional capability at all levels was a key element of the project, yet even so, reviewers expressed concern at the difficulties that had to be overcome. Up to Board presentation, the Bank used 319 staff-weeks, half of this in the five-month post-appraisal period during which design the three initial schemes were finalized. In addition, extensive use was made of staff from the Food and Agricultural Organization Cooperative Program (FAO/CP) and local consultants. This high resource use by the Bank so early in the project caused the Bank's management to question (a) the ownership of the project, and (b) how the design effort was to be sustained given the newness of the NWMP concepts and the lack of training of state and central government technical staff.⁵

2.16 The Bank's irrigation advisor was similarly concerned:⁶

“There are very few Indian staff in Irrigation Wings of the Public Works Department or Ministries of Irrigation who have been trained for preparation of the project and New Delhi Office (NDO)/FAO staff contribution depends on few highly dedicated individuals.”

2.17 While the project made extensive provision for training, it would obviously take time to bring participating institutions up to speed. Normally, the Bank would have addressed this problem with a heavy input of foreign technical assistance, but India's policy of self-reliance precluded this option. This insufficient institutional capability of both Bank and Indian

5. The Project Brief is quite candid on this point (para 27): “The project has been largely developed by Bank staff and consultants and a continued strong commitment will be essential until local capability can be developed.”

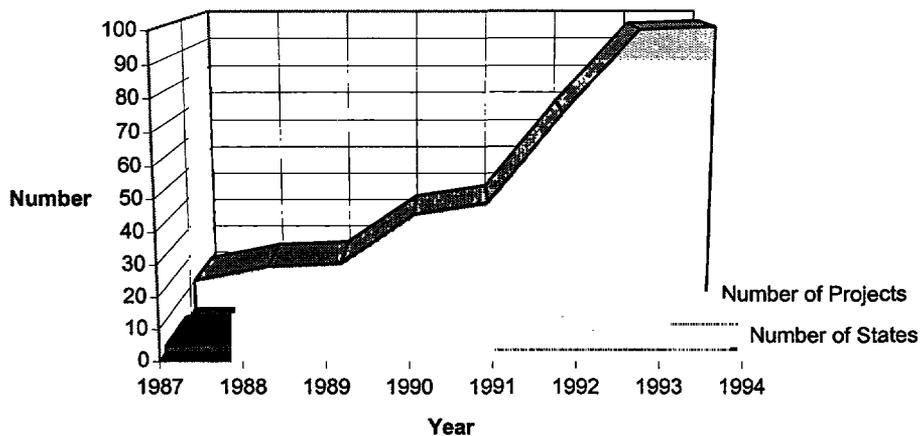
6. Hervé L. Plusquellec to Guy Le Moigne, May 28, 1986. Back to Office Report-NWMP Appraisal Mission.

institutions was to prove the “Achilles heel” of the project. Overall, appraisal was too optimistic about acceptance of the NWMP paradigm and the institutional capability to implement it, and failed to consider changing the policy environment. In consequence, project quality at entry was weak.

3. Project Implementation and Outcome

3.1 On the surface, the project appears to be successful. The credit was fully disbursed after a one-year extension to March 1995. Although overall project costs increased from US\$157 million to US\$176 million, this was primarily due to an appreciation of the SDR.⁷ The three original participating (Andhra Pradesh, Karnataka, and Tamil Nadu) were joined by six additional states during implementation: Bihar, Gujarat, Kerala, Madhya Pradesh, Orissa, and Uttar Pradesh. The total number of schemes cleared for implementation increased from 12, identified at appraisal and covering 460,000 ha, to 96 covering a command area of 2.18 million ha (Figure 3.1). Although the SAR says (para 3.33) that no new subprojects would be started after June 1, 1990, an additional 64 schemes were added after that date.

Figure 3.1: Number of States and Projects under NWMP



Institutional Development

3.2 In reality, the project seriously underestimated the difficulty of reforming the way state governments and IDs did business. In the first two years (FY87-88) only 6.5 percent of the credit was disbursed, and in FY89 this was zero due to non-compliance with IDA procurement regulations. Although the appraisal team had prepared three schemes, only an additional four had been approved by GOI. A primary reason for slow implementation was that the GOI and state governments did not give priority to NWMP (probably because of the relatively small financial

7. The appreciation of the SDR increased the Bank Credit from US\$114 million to US\$130 million and GOI's share increased from US\$43 million to US\$46 million.

resources involved) and counterpart funding was always short. Leadership from the center was missing until 1989 when a chief engineer for the WMC was appointed. Until then WMC's review procedures were cumbersome and time-consuming. While progress in establishing planning capability was reported as good in Tamil Nadu, it was still nascent in Karnataka and non-existent in Andhra Pradesh. Indeed, it was only in 1990 that all three states had chief engineers directing NWMP work. As a result, Bank missions and consultants used an unsustainable 245 staff-weeks in the first two years for scheme preparation.

3.3 Two years into the project, the Bank was quite candid about the problems:⁸ "Expertise in the truly modern approach to operational planning and monitoring and evaluation (M&E) is still in short supply, though available among some individuals, but not in the focused manner within the Irrigation Departments as assumed under NWMP. The ID's staff ...still have a prevailing propensity to operate schemes along long-established procedures and instructions." Supervision also noted that "project implementation is also slowed down by the time-consuming process of convincing water users of the benefits and of motivating them to abide by the regulations and to understand the implications of revised Operational Plans." The process of data gathering needed to develop the operational plan was far more time-consuming than envisaged at appraisal. While acknowledging that "training, information and motivation of both irrigation staff and water users has clearly emerged as a prime prerequisite to achieving the objectives of improved water management," the Bank still adhered to a top-down management style, and took no steps to increase farmers' participation in project design and implementation. It was, however, supportive about training.

3.4 But training planned under the project was too little and too late. Its usefulness was also consistently undermined by high rates of staff turnover in the IDs.⁹ Sometimes it was inappropriately applied. In Tamil Nadu, for example, the Bank-sponsored project preparation unit received training, yet the O&M unit taking over management after the project received none. In Andhra Pradesh, the project preparation unit was only officially approved in July 1990: until then local consultants were responsible for project design under NWMP.

3.5 An independent review of the SAR's training program for the three initial states in 1987 found that it was woefully underfunded and that it would take 4 to 5 years.¹⁰ Overall, it would require a massive 50-60,000 training days per year and have to cover 90 senior managers, 500 middle managers and engineers, 3,000 field technicians, and at least 40,000 water users. The review also found that existing training material was not focused on NWMP ideas and was inappropriate. Fortunately, Dutch technical assistance (US\$4 million) was agreed by GOI in 1988 to develop special training modules at Hyderabad. This was disseminated through the national network of Water and Land Management Training Institutes (WALMIs) in the early 1990s. A similar proposal to involve the British ODA was unsuccessful. The special Induction Training Program for Maharashtra also ran into problems: the mechanism for funding a GOI institute in the state was not agreed until 1989, and expatriate consultants were not appointed until October 1991.

8. Bank Supervision Report, August 9, 1989, Summary Report paragraph 7.

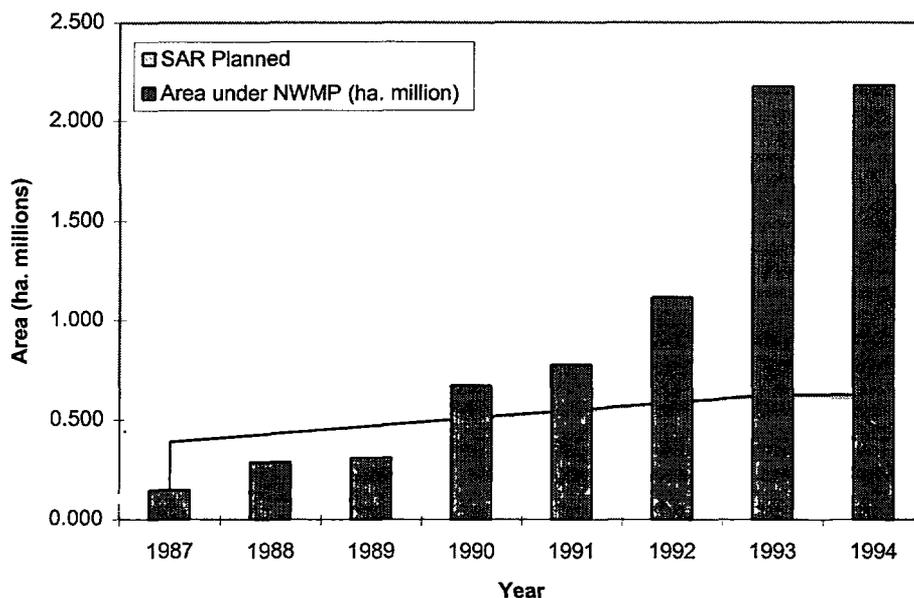
9. In Karnataka for example, 17 chief engineers were responsible for NWMP over a period of six years.

10. Report of Training and Communications Review Mission, June 6-20, 1987. Prepared by DHV Consulting Engineers, July 1987 for the World Bank.

Concern at Inadequate Physical Progress

3.6 Despite the recognized inability of the institutional development effort to meet the needs of only three states, the program was expanded rapidly after 1989 (Figure 3.2). Only one year into the project, GOI raised the issue of expanding it to more states and the prospects for a NWMP II. Although none of the seven initial schemes was complete and there was no reliable and objective evidence that the NWMP concepts were being successfully applied, the Bank agreed that there was a “strong *prima facie* case for including Kerala and Uttar Pradesh in the program..[and] comparable arguments apply to Bihar.”¹¹ The Bank’s initial response to a NWMP II was that it should wait 2 to 3 years, be focused on Uttar Pradesh and Bihar, and other states allowed on a case-by-case basis.

Figure 3.2: Area under NWMP Projects



3.7 By August 1989, however, the supervision mission “strongly recommended that the NWMP’s physical scope be expanded...to make use of as yet uncommitted funds,” and as further proof of a supply-driven process: “the mission...urged each State Government...to formally write to the GOI requesting participation in the program.” In advocating expansion to UP and Bihar, the mission set a dangerous precedent because “schemes proposed are very large and the NWMP is thus called upon to finance activities both at the systems level and in pilot distributaries, rather than throughout the command [as in earlier NWMP schemes]. Major problems are faced in such commands which are still beyond the original scope of the NWMP. The aim here is to evolve solutions...under simplified procedures.”

11. Bank Supervision Back-to-Office Report, June 23, 1988, paragraph 16.

Simplifying NWMP Procedures

3.8 The drive for simplified design procedures was initiated by GOI in mid-1989. GOI saw the NWMP as “modest and bureaucratic with an overly ‘project’ approach,” and was concerned about the growing number of incomplete projects (seven schemes had been cleared at this time and another five were under planning). This followed a review by the GOI/Central Water Commission which concluded that Bank-supported projects, compared with non-Bank projects, cost more and had delayed benefits and lower economic returns.¹² The Bank’s view was that, under current conditions, about 35 schemes covering a total of 0.76 million ha were feasible. GOI responded with the argument that to attract state attention and support, a much larger program with simplified procedures was required. State governments should establish performance targets and be held accountable, and neither GOI nor the Bank should be involved in the details of planning or operation. GOI’s views were conditioned by planning for rehabilitation of the national irrigation infrastructure for the Eighth Five-Year Plan (1990-1995), which envisaged Bank assistance of US\$625 million.

3.9 A program of this scale would require an almost eightfold increase in disbursement and would go against NWMP’s emphasis on careful and systematic planning before limited civil works. Funding to the states would be on a 50-50 basis in tranches from the central government, conditioned on agreed criteria. Thus the first tranche could be for system diagnosis, the second for developing an operational plan, and further tranches for satisfactory progress on specified works. GOI firmly believed that if funds were provided, irrigation staff would respond because they “know what has to be done.” Bank staff clearly recorded at the time that this was wishful thinking, given that only Tamil Nadu had fully institutionalized operational planning (see footnote 9), and the other states relied either on the Bank or consultants for expertise. The pragmatic view was that if GOI upheld the NWMP emphasis on diagnostic analysis scheme-by-scheme, preparation of realistic operational plans, and performance monitoring, then the Bank could agree to simplifying the planning guidelines and screening procedures. The mission cautioned, however, that although “lessons can be learnt through appropriate M&E....the risk would be high of a massive increase in funding being poorly spent, if such lessons from the past are ignored.”¹³

3.10 At midterm review in December 1990, 28 schemes covering 450,000 ha were under implementation: none had been completed. Another 21 schemes were under preparation bringing the total area to 650,000 ha compared with the SAR targets of 35 schemes and 583,000 ha. It was agreed that pre-appraisal activities for a NWMP II should begin in October 1991.

3.11 To ensure compliance of the three new States to NWMP principles, the review recommended that a NWMP unit be set up in WALMIs in each state and that the simplified guidelines for project preparation be finalized as soon as possible. New schemes in Andhra Pradesh were banned because of poor progress in implementation.

12. Supervision Mission Back-to-Office Report, July 1989, paragraph 6.

13. *ibid*, paragraph 56.

Expansion

3.12 By 1992, new states joining the NWMP were only sent the contents list of the scheme preparation guidelines as an indication of what was required, and this was followed-up with one or two short visits by Bank staff. Not surprisingly, this “rubber stamping” of the project approval process allowed the scope of the project to increase rapidly, reaching 10 states, and covering 1.8 million ha in 84 schemes by mid-1993 and peaking at 2.4 million ha and 94 schemes by project completion in March 1995. Even with these simplified procedures, implementation was slow primarily because most states could not provide adequate counterpart funds. As a result, only 33 schemes covering 0.64 million ha (110 percent of the SAR target) were expected to be complete by credit closure.

3.13 Rapid expansion of the NWMP after 1990 caused the quality of project screening and Bank supervision to deteriorate. The laxness of the criteria for inclusion under NWMP is well illustrated by Bank approval of three additional projects in Andhra Pradesh covering 148,300 ha and costing about US\$24 million. Justification for this approval was based only on the State’s willingness to allocate US\$2.5 million that year to NWMP and not on the performance of the seven unfinished schemes. Similarly, the Haryana canal lining project, designed to provide bridging funds until its Water Resources Consolidation Project (Cr. 2592-IN) came on line, used US\$67 million or 38 percent of total NWMP project cost, or half the IDA Credit.

3.14 Not surprisingly, the quality of Bank supervision was seriously challenged by the proliferation of schemes and states. Even worse, staff resources available fell to 42 weeks/year, a third of the pre-1989 levels. While there had been core staff continuity from appraisal through 1990, thereafter few staff stayed with the project for more than a year. To cope with the wide geographic spread, the Bank delegated most of the supervision to new Bank consultants, most of whom were recruited after retirement from either the state or GOI water resource/irrigation organizations. Few of these Bank consultants received formal training on Bank policies and procedures for lending and supervision. Most learnt Bank procedures on-the-job. And during the latter period, supervision quality was further jeopardized by the practice of *ad hoc* supervision by any Bank staff in the vicinity of NWMP states and schemes.¹⁴

Outcome

3.15 In the combined view of the Bank and GOI’s identification mission for NWMP II (March 1994), the NWMP had been largely successful in improving the performance of public sector irrigation projects. As a result, GOI proposed an NWMP II project covering 5.2 million ha and costing US\$575 million over seven years (1994-2000). The Bank agreed to fund GOI’s project preparation.

3.16 Yet only a year later, an internal memo from the Bank’s New Delhi Office stated that NWMP was unsatisfactory, had no impact on institution building, and inequitable and unreliable water distribution persisted in most NWMP schemes. When the rating for development objectives was downgraded from ‘satisfactory’ to ‘unsatisfactory’ following the last supervision

14. The Region refutes this observation.

(also the ICR) mission in May-June 1995, in June 1995 the Bank canceled further missions to discuss planning for NWMP II.¹⁵

3.17 The decision to cancel NWMP II after nine years of encouraging signals from the Bank caused great rancor within GOI. Indeed, the rationale for allowing the project portfolio to burgeon beyond any hope of completion under NWMP, was that unfinished schemes would be carried over to NWMP II. In view of the controversy generated by the ICR mission's findings, a supplementary ICR mission in the fall of 1995 visited schemes selected by GOI's WMC. All the earlier adverse findings were confirmed.

Monitoring and Evaluation

3.18 How could such a situation develop? The SAR strongly emphasizes M&E and comprehensive guidelines, *prepared by Bank staff*, were introduced to IDs in 1987.¹⁶ However, as noted then, "no systematic and comprehensive data collecting operation has been initiated to test these guidelines under field conditions. The main problem...is [the IDs] unfamiliarity with such M&E procedures and systems." Although there are continuing supervision comments about the inadequacy of M&E, only in the last two years of the NWMP was it taken seriously, *to justify a NWMP II*. In the interim, evaluation of project performance was based on short visits to schemes with little or no reference to baseline conditions. Most missions only reported gross changes to agricultural production and water management, even though this could not be directly attributable to NWMP. These fleeting impressions were given credence in 1991: the Bhadra schemes in Karnataka won the 1990-91 National Productivity Council award for the highest agricultural production in an irrigated area. In Tamil Nadu, the Chinnamanure Farmers' Association wrote to the Bank saying that as a result of NWMP civil works, they had better water supplies and an additional 6,000 acres under irrigation.

3.19 By 1994, the M&E information was less sanguine. An evaluation of schemes in Karnataka found that they were operating better than at appraisal, tailenders received water, and yields and cropping intensities were up; the local sugar factory reopened at Vani Vilas. The evaluation cautioned, however, that while main canals on Bhadra were productively managed, the cost of doing so—110 engineers—was unsustainable. Proportional flow introduced under NWMP—a key concept—was being progressively abandoned by farmers who preferred traditional gated controls.

3.20 State funding of O&M was a cause for concern. This was totally inadequate. In Karnataka, over 80 percent of the state's allocation for O&M (Rs. 140/ha) was used for staff costs, and systems were structurally deteriorating. Even with the incremental funds from NWMP (Rs. 50/ha), this was less than a quarter of GOI's norm of Rs. 300/ha. Cost recovery was clearly an unresolved issue.

3.21 Independent evaluators commissioned by the Bank, while initially optimistic, began to reveal major problems. Remote sensing initially indicated significant increases in irrigated area because of NWMP, but subsequent ground truthing revealed that other factors were responsible. An evaluation by the International Irrigation Management Institute (IIMI) of two of the original

15. Development objectives were rated 2 up to 1993 and then rated 1 because of better disbursement until 1995.

16. World Bank: "Operational Guide to Monitoring Irrigation Water Management in India," Draft December 1987.

pilot schemes found a significant improvement in equitable water distribution but only modest improvements in predictability and reliability.¹⁷ Better rainfall in the preceding years and other factors may have accounted for these improvements. IIMI could find little evidence of improved operations or involvement of farmers. Most IDs appear to have failed to grasp the central concepts of the NWMP; this led to an emphasis on physical rehabilitation to the detriment of institutional development.

3.22 A Bank-commissioned FAO/CP preparation mission for NWMP-II (December 1994) found mostly problems. Scheme reports were not based on a thorough diagnosis of the existing situation and alternatives were not considered. Operational plans reviewed were inadequate with no priorities for technical mitigation.¹⁸ Funding for O&M was only 20 percent of needs, and there were no O&M plans for any schemes. Extension services were ineffective. There was little evidence of successful water user groups and most NWMP flow regulation structures were damaged.

Economic Evaluation

3.23 Data were only available for the three original schemes in south India; the ICR's estimated economic rate of returns (ERRs) are far below those at appraisal (a weighted average of 3 percent compared with 38 percent). Another six schemes not considered at appraisal were evaluated and the ERRs ranged between 17 percent (Haryana) to -16 percent (Ratapani in Madhya Pradesh).¹⁹ The weighted average of all evaluated schemes was 12.3 percent because of the high investment in Haryana. Discounting Haryana as being outside the scope of the NWMP project lowers the weighted average ERR to 4.6 percent. The reasons for the low ERRs are high cost overruns and that incremental irrigated area was significantly smaller than appraisal expectation, Figure 3.3. Even then, there could be some question about how representative the schemes are as they were selected by the IDs and may be biased towards the "better" schemes.²⁰

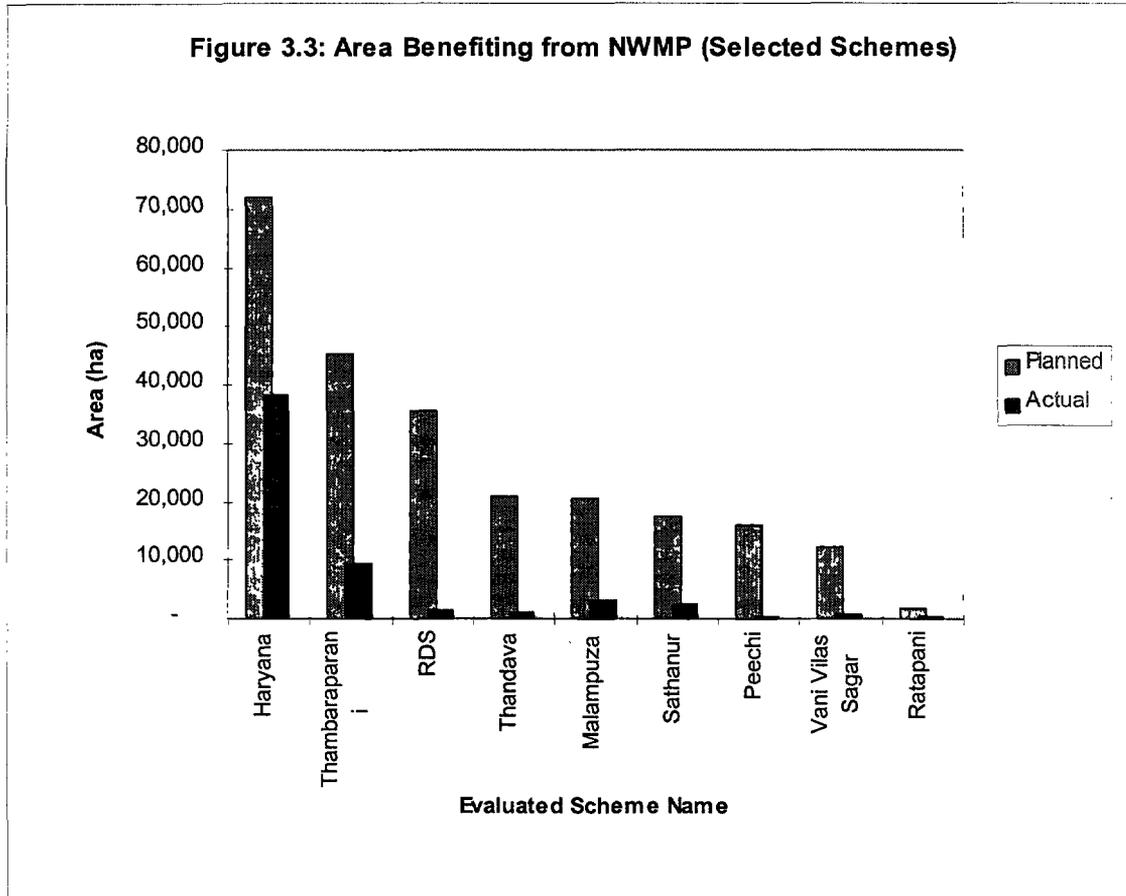
3.24 GOI strongly disagrees with these findings and argues that the ICR only considered the production on the incremental area while the whole command under the NWMP benefited from better water distribution (for example, reduced waterlogging in the head reaches). The audit finds that the ICR's ERRs methodology is robust, and GOI's concerns are unfounded. For example, in the evaluation of the Thambaraparani subproject: wet and dry season paddy yields were found to have increased by 5 percent over 4,800 ha; drainage improvements increased yields by 15 percent over 4,000 ha; and a more assured water supply increased yields by 10 percent over 740 ha.

17. IIMI. "Evaluation of Schemes Under NWMP-I, Bhadra Scheme in Karnataka and Sathanur Scheme in Tamil Nadu", Main Report, January 1995, Colombo, Sri Lanka.

18. GOI disagrees with this conclusion: all canals have a schedule for irrigation operations even if it is not called an operational plan. This misconception is because the IDs failed to "articulately and coherently to explain" their operational plans.

19. Individual scheme ERRs were: Vani Vilas Sagar 9 percent; Sathanur 6 percent; RDS -6 percent; Peechi -6 percent; Thambaraparani 4 percent; Malampuzha 9 percent; Thandava -3 percent; Ratapani -16 percent; and Haryana 17 percent.

20. ICR, page 64, para. 16 (b). GOI says this statement is unwarranted.

Figure 3.3: Area Benefiting from NWMP (Selected Schemes)

4. Findings and Lessons

Ratings

Overall Outcome

4.1 The ICR rates project outcome as unsatisfactory, and the audit confirms that assessment despite the weighted average ERR of 12.3 percent. As the sample used in the ICR analysis is probably biased towards the better-performing projects, and includes the effects of non-project activities, an upgrade to marginally satisfactory is not warranted.

4.2 The project only partially achieved its main objective of increasing productivity and farm incomes in existing irrigation schemes through providing a more reliable, predictable, and equitable irrigation service. Most improvements were the result of essential rehabilitation work rather than improved scheme management. The key NWMP concept of diagnostic analysis followed by a holistic operational plan and M&E was not achieved or sustained. Even the GOI thought this approach too technical given the significant operational problems of deferred maintenance and problems of finding adequate O&M funds. The conclusion is that the NWMP was supply driven by the Bank until 1989, and thereafter, following pressure from GOI to disperse more quickly for macroeconomic reasons, it was unwisely expanded to ensure disbursement.

Institutional Development

4.3 The audit disagrees with the ICR rating of institutional development as partial and downgrades this to negligible. There is no evidence that the project had any impact on the O&M culture of IDs or their top-down management style.²¹ In most IDs the core group of engineers responsible for the NWMP were disbanded at the end of the project. Farmers participation in irrigation management was not improved as a result of the project. While there was a substantial training effort, its impact was diluted by the sheer magnitude of the task and its one-off approach.

Sustainability

4.4 The audit concurs with the ICR in rating sustainability as unlikely because the NWMP paradigm was not institutionalized and the basic issue of too little funding for O&M was not resolved.²²

21 GOI disagrees and states that there is a general awareness in the States of the importance of adequate funding for O&M and charging for water. In support, GOI cites the National Water Policy (1987), and the recommendations of a Planning Commission Report on Pricing of Irrigation Water (1992) and the Tenth Finance Commission.

22 GOI disagrees with this rating: NWMP was a pilot project and the policy and conceptual weaknesses were to made good in the follow-up phase.

Bank Performance

4.5 The audit downgrades the ICR's rating of Bank performance from unsatisfactory to highly unsatisfactory. The NWMP concept, while sound from an engineering perspective, was ill-matched to the institutional realities in India. Rather than tackling the generic institutional problems causing unsustainable O&M, the Bank chose the relatively easy option of tinkering with the engineering of irrigation schemes and attempting to satisfy the appetite of problems caused by deferred maintenance. Despite stating at appraisal that there would be no further schemes after 1990, and that an emphasis on M&E would be the basis for additional schemes, Bank management disregarded these conditions when allowing the unprecedented expansion of the project after 1990. The early period of supervision clearly identified serious and developing problems that were not heeded, and after 1990 the poor quality of supervision tended to overlook them. Only the Bank's commissioning of independent evaluators (FAO/CP and IIMI) at the end of the project revealed the true state of affairs.

Borrower Performance

4.6 The audit rates Borrower performance as generally unsatisfactory as does the ICR. The overall impression is that GOI and the States agreed to the NWMP to ensure funds for deferred O&M. When disbursement slowed to match diagnostic analysis, GOI abandoned the NWMP concept. The relatively small amount of funding eventually made available to the states was out of proportion to the Bank's bureaucratic requirements, and most states only paid lip-service to original objectives of the NWMP. This was reflected in the lack of counterpart funding that chronically delayed project implementation.

Principal Findings

4.7 The NWMP approach was several steps removed from the fundamental problem of making O&M financially viable. While making water supplies more reliable may make farmers more able and willing to pay irrigation fees, the project contained no provisions for accelerated cost recovery. It took no account of new trends in forming water user associations to catalyze cost recovery—as in the Philippines. Neither did it seek to address a number of policy contradictions and market failures that undermine the ability of the state governments to allocate more to O&M while other measures are being piloted.²³

23. There are two good examples of this. Nationally, the CADA program encourages States to invest Rs. 500/ha for on-farm irrigation infrastructure matched by a equal grant from the central government. This highly visible program that is well favored, and thus well funded, by the states. Thus we have the contradiction of substantial sums being spent on farms, but the matching requirement means that states have insufficient funds to ensure O&M of the canals that feed these farms. There are similar distortions of policy for agricultural electricity supplies that nationally account for 48 percent of all subsidies to agriculture. In Madhya Pradesh, the government has a policy of providing free wells and a low flat-rate power tariff to pump groundwater. Apart from the environmental damage this causes (rapidly falling watertables in some areas), many of the wells are located adjacent to surface water irrigated areas to recycle seepage water. Again, in the absence of sufficient funds for canal O&M, irrigation water does not reach the tail ends of commands, groundwater is not recharged and is mined, and wells become inoperable. Cost to Madhya Pradesh is Rs. 200 million (US\$5.3 million) per year and funds for the O&M of public irrigation systems are reduced accordingly.

4.8 A national irrigation project is too remote from the states to be effective, particularly given the absolute power of the states in water matters, climatic variability across India, and the diversity of the institutional approaches used to manage water.²⁴

4.9 Unless the Bank can achieve a critical mass of investment at state level, there are few incentives for the states to reform their way of doing business.

4.10 The quality of supervision is extremely important, and it is essential that Bank invest sufficiently in its recruited staff and consultants. This is particularly important where such staff are recruited dominantly from the ranks of government, and although experienced in project implementation, are unfamiliar with Bank standards and procedures. Significant lowering of the age of recruitment would also enhance the return on investments in training as well as providing continuity in project supervision.

4.11 As a result of problems highlighted through implementation of the NWMP, the Bank has ceased to invest in national projects for irrigation development and changed its focus.²⁵ The first steps to a new way of doing business were outlined in the Bank's 1991 India Irrigation Sector Review that gave the highest priority to institutional development, participation of farmers and the private sector, and redefining public expenditure priorities. Subsequently, the Bank has focused its assistance on specific states through a series of water resources sector investments called water resources consolidation projects (WRCP). The first of these, the Haryana WRCP (March 1994) was quickly replicated in Tamil Nadu (May 1995) and Orissa (November 1995).²⁶ While these WRCPs still focused on the traditional rehabilitation of the irrigation subsector, those for Haryana and Orissa were aimed at integrated development of the whole water sector in line with the Bank's 1993 Water Resources Management Policy.²⁷ All WRCPs gave increasing importance to fiscal sustainability and the formation of water user associations (WUAs) to eventually take over management of public sector irrigation. The CAS for 1995 further stipulated that investments provide comprehensive support for policy, institutional and expenditure reforms *in key sectors in states receptive to reforms*.

4.12 Since then, the Bank has developed innovative irrigation rehabilitation projects with the reform-minded State Government of Andhra Pradesh (GOAP). An action plan to undertake the phased establishment of WUAs in two large projects was agreed in 1997,²⁸ but was extended state-wide when the Andhra Pradesh Farmers' Management of Irrigation Systems Act was passed in the same year. As a result, 10,292 WUAs have been formed. In addition, GOAP issued a policy statement committing itself to improved cost recovery to achieve financial sustainability of irrigation services. Almost immediately, GOAP voted to increase irrigation service fees by 300 percent and consider a change from flat-rate to volumetric pricing. Future support for AP's

24 GOI disagrees with this conclusion. It argues that it is easier to implement policy reforms if the Centre involves several States and is effective and efficient in coordination and monitoring. It also argues that State focused projects "suffers from the same hiccups as faced any national projects..and project implementation follows the same path."

25. There are two other national water projects: Dam Safety (Cr. 2241, Ln. 3325) implemented over the period 1991-97; and the Hydrology Project (Cr. 2774) implemented over the period 1995-2001.

26. Haryana Water Resources Consolidation Project, Cr. 2592, 1994; Tamil Nadu Water Resources Consolidation Project, Cr. 2745, 1995; Orissa water Resources Consolidation Project, Cr. 2801, 1996.

27. The Region cautions that the first few WRCPs still largely ignored agricultural extension.

28. Third Andhra Pradesh Irrigation Project, Cr. 2952 and Ln. 4166, 1997.

irrigation sector will be one of the six components of the AP Economic Restructuring Project (APERP) recently negotiated for Bank funding of US\$542 million. Under APERP which focuses on policy, fiscal and institutional reforms, all components are fungible and subsectors that fail to meet benchmark policy changes risk loss of funding.

Lessons

4.13 National irrigation projects in a country as diverse as India do not work. Projects need to focus and concentrate on single states where the policy environment is either right or can be realistically influenced by the project.

4.14 Future projects have to take a more holistic view of the O&M funding issue and develop a coherent set of fiscal policies for cost recovery and phasing-out subsidies to the agricultural sector.

4.15 Systematic monitoring and evaluation (M&E) must have a high profile during project implementation and project design should ensure adequate institutional support to develop M&E capacity.

4.16 Decisions on follow-up projects must be based on thorough and independent evaluation in relation to agreed performance indicators.

4.17 The performance of NWMP in terms of piloting significant institutional reform shows the limits of traditional lending instruments and the advantages of the Bank's new adaptable lending and learning and innovation loans.

4.18 Institutional reform and upgrading of irrigation agencies and farmers' participation should be a prerequisite to future substantial investment at state level.

4.19 It is essential that locally recruited Bank staff and consultants are given sufficient training, particularly in the areas of Bank policies for lending and supervision.

Basic Data Sheet

NATIONAL WATER MANAGEMENT PROJECT (CREDIT 1770-IN)

Key Project Data (amounts in US\$ million)

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of appraisal estimate</i>
Total project costs	157.0	176.1	112
Credit amount (IBRD)	114.0	130.0	114
GOI	43.0	46.0	107
Date physical components completed	03/31/94	not complete	
Economic rate of return (%)	37	11	30

Cumulative Estimated and Actual Disbursements (in US\$ million equivalent)

<i>FY</i>	<i>87</i>	<i>88</i>	<i>89</i>	<i>90</i>	<i>91</i>	<i>92</i>	<i>93</i>	<i>94</i>	<i>95</i>
Appraisal Estimate	1.0	11.20	27.00	47.40	71.10	91.40	106.1	114.0	114.00
Actual	–	8.43	8.43	15.66	26.13	37.94	67.5	106.9	129.97
Actual as % of estimate	0	75	47	33	37	42	64	94	110
Date of final disbursement: June 20, 1995.									

Project Dates

	<i>Original</i>	<i>Actual</i>
Identification		1984-1986
Preparation		11/85
Appraisal		05/86
Negotiations		01/19-23/87
Board approval		03/24/87
Signing	...	05/12/87
Effectiveness	06/15/87	08/10/87
Completion	03/31/94	03/31/95
Closing date	03/31/94	03/31/95

Staff Inputs (staff weeks)

<i>Stage of Project Cycle</i>	<i>Actual</i>
Through appraisal (05/86-03/87)	154.4
Appraisal through Board approval (03/87-08/87)	164.9
Board-effectiveness	5.5
Supervision	495.9
Completion	40.0
<i>Total</i>	860.7

Mission Data

	Date (month/year)	No. of persons	Staff days in field	Specializations represented ^a	Performance rating ^b		Types of problems ^c		
					Imp. status	Dev. obj.	CLC	PMP	FA
Supervision 1	06-07/87	2	7	E,IE	2	2	-	2	2
Supervision 2	05/88	3	-	IE(3)	2	2	-	2	2
Supervision 3	03/89	12 ^d		IE(7),E, Ag(2),SA,PE	2	2	-	2	2
Supervision 4	08/89	4	^e	IE(2),E,SA	2	2	2	2	2
Supervision 5	12/89- 07/90	6	-	IE(4),E,SA	2	2	2	2	2
Supervision 6	07/90	6	^f	IE(4),E,SA	2	2	2	2	2
	10/90	8	^f	IE(3),E,FA, Ag(2)PE	2	2	2 ^g	2	2
Supervision 7	09/91	3	^f	IE,E	2	2	2	2	2
Supervision 8	01-07/92	3	^f	IE,E	2	2	2	2	2
Supervision 9	01-06/93	3 (issued 10/93)		IE,E	2	1	1	1	2
		3 (issued 07/93)		IE,E	2	2	2	2	3
Supervision 10	10/93- 06/94	2	^f	IE(2),E	S	S	1	1	2
Supervision 11	07/94	1	-	IE(2)	-	-	-	-	-
ICR Mission 1	02-03/95	3	21	IE,E,Ag	-	-	-	-	-
ICR Mission 2	11/95	3	21	IE,E,Ag	-	-	-	-	-

a. Ag = Agriculturalist; E = Economist; FA = Financial Analyst; IE = Irrigation Engineer; SA = Systems Analyst; PE = Procurement Engineer.

b. 1 = Problem-free or Minor Problems; 2 = Moderate Problems; and 3 = Major Problems.

c. CLC = Compliance with legal covenants; PMP = Project management performance; FA = Fund availability. FA(2) = Moderate problems of availability of funds; FA(3) = Major problems with availability of funds, which are being addressed adequately; 1 = Improving; 2 = Stationary; and 3 = Deteriorating.

d. At different times over a period of six months.

e. Series of missions between May 8 and June 28.

f. Missions were undertaken at different periods to different states and a summary supervision report has been prepared.

g. Status 3 in Tamil Nadu for audits and Andhra Pradesh for overall status.

Other Project Data

Borrower/Executing Agency:

FOLLOW-ON OPERATIONS

<i>Operation</i>	<i>Cr./Ln. no.</i>	<i>Amount (US\$ million)</i>	<i>Board date</i>
Upper Krishna (Phase II) Irrigation Project	Cr. 2010/ Ln. 3050	160.0/ 165.0	05/04/89
Haryana Water Resources Consolidation Project	Cr. 2592	258.0	03/29/94
Tamil Nadu Water Resources Consolidation Project	Cr. 2745	282.9	06/20/95
Orissa Water Resources Consolidation Project	Cr. 2801	290.9	12/19/95
Third Andhra Pradesh Irrigation Project	Cr. 2952/ Ln. 4166	150.0/ 175.0	05/20/97

Comments from the Borrower

No.7/1/98-WM/2382
 Government of India
 Ministry of Water Resources
 Water Management Wing

2164/2

B-Wing, 2nd Floor,
 Lok Nayak Bhavan,
 Khan Market,
 New Delhi - 110 003.

Dated 1st July, 1998.

To

Mr. Roger Slade, Manager
 Sector and Thematic Evaluation Group
 Operations Evaluation Department
 1818 H Street N.W.
 Washington D.C. -20433
 USA

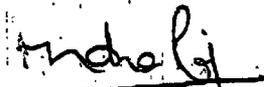
**Subject:- INDIA - National Water Management Project(Credit 1770-IN)-
 Performance Audit Report.**

Dear Sir,

Please find enclosed herewith comments of Ministry of Water Resources, Government of India on the draft performance Audit Report on National Water Management Project, for consideration before finalisation of the report.

Encl: As above

Yours sincerely,


 (INDRA RAJ) 01/7/98

Sr. Joint Commissioner(WM)
 Tel. No.4643918

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NATIONAL WATER MANAGEMENT PROJECT**COMMENTS OF MINISTRY OF WATER RESOURCES ON THE DRAFT
PERFORMANCE AUDIT REPORT.**

The performance of the National Water Management Project was discussed with the Team of the Operation Evaluation Department (OED) during its visit to this country in connection with the preparation of the Performance Audit Report of the project. The views of the Ministry of Water Resources on the various issues, on which the auditors felt that NWMP has not performed well, were clarified to the Team. Surprisingly, the outcome of such discussions have not been reflected in the OED report. Some of the aspects which need to be clarified are given below:-

(I) The basic objectives of NWMP, which were the main reason for seeking loan for the project by this country, were to increase the productivity and farm incomes in the existing irrigation system through providing a more reliable, predictable and equitable irrigation service. In the Implementation Completion Report(ICR) of the project prepared by the MOWR in March, 1995, based on the information collected from the various participating States, it was indicated that the schemes undertaken under NWMP which have already been completed or were nearing completion have shown increase in productivity between 15% - 67% in the irrigated areas. This was possible only because of better water use and improved efficiency caused as a result of NWMP. The interventions have also created conditions for equitable distribution of irrigation water

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and the tail commands of completed NWMP schemes have started getting irrigation water, some for the first time after the inception. This fact though very important from the point of the project has been totally over looked by the auditors. Through the interventions undertaken under NWMP, it was to ensure farmers satisfaction in getting irrigation water. This was a matter of pride for those who had toiled for it.

The experience of the project has given encouraging results and it's impact has been well appreciated at various forums including Bank missions. The ICR mission and now audit's mission contentions that such a significant improvement in agricultural production and productivity could be attributed to factors extraneous to NWMP interventions is unfounded.

(II). The ICR mission launched at the time of the project closure rated the project outcome as unsatisfactory. The Bank's audit mission also agrees with that assessment despite the fact that the weighted average ERR of the project is 12.3 percent. The contention that the sample in the ICR analysis is biased towards better-performing projects is unfounded. The reluctance to include the benefits of schemes launched in Haryana under NWMP, even though a quarter of NWMP funds were spent on them, is also not justified.

The ICR estimated Economic Rate of Returns (ERR) has been found to be lower than that projected at Appraisal. The ICR in their basic assumptions made for evaluating

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ERR significantly departed from the assumptions made in SAR. The ICR considered the benefits of only incremental area of a command in their ERR analysis instead of the total command which was benefited from NWMP interventions. With the improved water distribution there was substantial increase in productivity in the existing command areas. The ICR Mission premise for the above that NWMP money spent on rehabilitation of main canal system should be considered as normal O&M expenses spent by the State is not correct. This is antithesis to the NWMP objectives of benefiting the whole command of the scheme by ensuring reliable, equitable and predictable irrigation service. The structural interventions carried out under NWMP over the whole scheme can't just be assumed to benefit any particular area of command.

(III) It would also be not correct to say that NWMP concepts were not understood by the States and GOI. The concepts introduced by the project were simple based on the advice of WB Consultants visited time to time. But the fact is that they were not put forward articulately and coherently before the ICR mission which gave the mentioned impression. No canal in India runs without an irrigation planning and schedule (can be called operational plan). It is another matter that these operational plans were not presented before the mission in a systematic manner. The FAO/CP Mission which visited India during February/ March 1995 to review the implementation performance of the NWMP in their aid memoire has observed that "the bias shown in the SAR towards the Warabandi system was, in their opinion, unrealistic. Distinction should have been made between the productive irrigation systems (found in the southern States) and the

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protective irrigation systems (found in the north and north-west). SAR was also unrealistic to expect that in the preparation of operational plans, paddy growing areas could be reduced and substituted by irrigated dry crops covering a larger area of the command." In view of the above, it is not understood why, the auditors expect that all the projects scattered all over the NWMP covered States should have gone in for preparation of new operational plans. In fact while implementing the NWMP, the States have continued to follow the practices which were traditionally in vogue in their areas, as the changes suggested under NWMP were not suitable for their areas. As long as the operation of the projects have yielded good results, there is no reason why one should impose upon the farmers something which is not locally acceptable and suitable.

(IV). The schemes selected under NWMP were those which were operating at low irrigation efficiencies because of inadequate maintenance in the past. To implement the operational plan prepared as per NWMP objectives, it was essential that the canal networks were brought to proper shape. As such, the structural interventions proposed under NWMP formed an important component of the programme. Nearly eighty five percent of schemes outlays was earmarked for infrastructural improvements. Being the first phase, this seemed to be inevitable. However, ICR and audit mission have created the impression that the NWMP was primarily focused on deferred maintenance. The auditor assessment that institutional development aspects were unsatisfactory and farmer's participation was not improved as a result of the project is not justifiable. It was clarified to Audit mission during the discussions that the policy lacunas were noticed

during the project implementation. These were related to O&M plans and funding, farmers participation, revision of irrigation rates etc. The GOI in the course of project implementation came out with National Water Policy in 1987 which addresses these issues. A committee on pricing of Irrigation Water was constituted by Planning Commission to study the whole gamut of issues involved in irrigation water rates. The Committee in its report submitted in September, 1992 made some important recommendations which, inter-alia, include adequate provisions for O&M and linking of water rates with recovery of O&M costs in phases. Also, the Tenth Finance Commission seeks to make adequate provisions for O&M based on certain norms. Of late, there has been general awareness in the States of the need to improve the level of maintenance by providing adequate O&M funds and rationalising the existing water rates.

(VI). The unsatisfactory rating given by ICR and Audit mission about the sustainability of the project is not justified in view of the fact that the NWMP was formulated on pilot basis and the policy and other conceptual weaknesses noticed were thought to be made good in the follow up phase. It was considered prudent to seek commitment from the States desirous of participating in the follow up phase to implement the institutional and policy reforms. In fact most of the State had agreed to it. The ICR Mission have highlighted in their aide-memoire that in areas where "reliability of water supply has been assured, use of inputs has gone up and hybrid varieties are replacing local varieties. On the whole, according to them, NWMP has somewhat improved the situation but the project development objectives have not been achieved." They have also in their aide-

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memoire indicated that "in Kerala, Andhra Pradesh and Madhya Pradesh, there is an overall appreciation for water management at higher levels of Government."

(VII). The impression created by ICR and audit mission that there was uncontrolled expansion of the project is not justified. During the course of project implementation, signals emanating from the Bank gave the strong impression that the second phase of NWMP was in the offing and would dovetail with the first phase (pilot phase). This encouraged GOI to clear several projects for implementation even at a later date fully realising that they would not be completed before the closing date of the project. It was presumed that these schemes would continue to receive funds under the follow up phase. The fact that the institutional capability built up at State level after sustained efforts should not be allowed to wither away the tempo it has built up was also gone into planning while taking the above course. This led to thinly spreading out of Resources. The expected results from the investments made could not be fully achieved as can be seen from the fact that only 32 out of 96 schemes could be completed at project closure. While evaluating the project performance, this fact should have been taken into consideration by ICR as well as Audit Mission which unfortunately is not the case.

It is not understood why the auditors feel that under such circumstances it was not proper for the Bank to have permitted additional schemes with a clear understanding to fund the unfinished projects in the follow-up stage. There had been many WB consultants visits from time to time during the implementation of NWMP for the follow

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up phase. It was on the advice of such consultants that a comprehensive follow up project was prepared by the GOI and posed to the Bank for credit assistance. While making such proposals the various lessons which were learnt during the implementation of NWMP were kept in view and suitably provided for, so that the follow-up project was implemented with full success. However, the reports of FAO/CP, IIMI (International Irrigation Management Institute) had been a stumbling block in furthering the project proposals. These agencies for sure never looked into the NWMP programme in its totality and went on all the time criticising the implementation of the project, heavily focusing on certain shortcomings which in any case were being taken into consideration in the second phase proposals.

(VIII). The audit mission's conclusion that national irrigation projects are ineffective, is not correct. Experience shows that the State focused projects suffer from the same early hiccups as faced by national projects. The project implementation progress follows more or less the same path in the case of both type of projects. On the other hand, a national project introduces an additional level of monitoring and coordination that helps in project implementation. Also with several States participating under a project, it becomes easier for them to adopt policy reforms. The solution lies in effective and efficient coordination and monitoring arrangements.

(IX). CONCLUSION

The audit mission have adopted same approach in assessing the project

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performance as of ICR mission. Both point out that the NWMP was highly ambitious. Yet they compared the project performance with such NWMP(SAR) targets. The realistic targets could be fixed as: achievement of 12% ERR, by rehabilitation of systems and with better irrigation planning; and initiating the process of institutional reforms including farmers participation. Assessing by these yardsticks project achieved satisfactory results.

NWMP being a pilot programme has been modestly successful and there exist sufficient cause to have a follow-up phase with World Bank assistance to consolidate the gains, with appropriate changes in approach and scope based on lessons learnt and under stringent institutional obligations.