



<b>1. Project Data :</b>		
<b>OEDID:</b>	C1924	
<b>Project ID:</b>	P010310	
<b>Project Name:</b>	Mahakali Irrigation II Project	
<b>Country:</b>	Nepal	
<b>Sector:</b>	Irrigation & Drainage	
<b>L/C Number:</b>	C1924-NEP	
<b>Partners involved :</b>	None	
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<b>Date Posted :</b>	12/21/1998	

<b>2. Project Objectives, Financing, Costs and Components :</b>		
Approved: June 1988; Effective: November 1988; Closed: March 1997 (one year late)		
<b>Project Costs (US\$ million)</b>	<b>Appraisal</b>	<b>Actual</b>
<b>Total</b>	46.7	47.2
<b>IDA credit</b>	41.3	41.9
<b>Farmers</b>	1.1	0.8
<b>Government</b>	4.3	4.5
<b>Objectives:</b>		
<ol style="list-style-type: none"> <li>to raise agricultural production and farm incomes through expanding the area and improving the management of public schemes, construction and rehabilitation of farmer -managed schemes, and restoration of irrigation and river bank protection works damaged by the 1987 flood;</li> <li>improve O&amp;M and cost recovery through increased farmer participation in the project cycle; and</li> <li>strengthen the Department of Irrigation's (DOI) capability to implement a long-term subsector program.</li> </ol>		
<b>Components:</b>		
<ol style="list-style-type: none"> <li>new public sector irrigation and drainage facilities to serve 6,800 ha;</li> <li>an Irrigation Line of Credit (ILC) to enable implementation of the government's new participatory Irrigation Policy in farmer-managed schemes over 9,000 ha;</li> <li>emergency flood rehabilitation over 100,000 ha in 17 Districts; and</li> <li>support for institutional development and strengthening of the Department of Irrigation .</li> </ol>		

<b>3. Achievement of Relevant Objectives :</b>		
<ol style="list-style-type: none"> <li>Increased agricultural production and farm income from new surface water irrigation schemes is modest . Conversely, the rehabilitation and groundwater schemes that have high returns were transferred and completed under another Bank funded project . The flood rehabilitation was fully completed .</li> <li>New public irrigation is partially (30%) functional and neither improved cost recovery nor increased farmer participation is evident.</li> <li>A subsector program for rehabilitated and groundwater schemes was successful, but the program for new schemes was frustrated by DOI's lack of commitment .</li> </ol>		

<b>4. Significant Achievements :</b>		
<ol style="list-style-type: none"> <li>Public sector irrigation and drainage construction target were fully achieved for main and secondary canals and regulating structures, and tertiary structures (but not canals) serving 6,800 ha.</li> <li>Structures damaged by flood were fully rehabilitated .</li> <li>Physical improvements to and building of new DOI offices was completed, as was a MIS .</li> <li>Government has issued regulations and implemented plans to legalize Water user Groups (WUGs) and Farmer Irrigation Associations (FIAs).</li> <li>The phase I project had an important demonstration effect in the region and spawned substantial development of private sector investment in groundwater irrigation during implementation of phase II .</li> </ol>		

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## 5. Significant Shortcomings :

1. Only 2,000 ha (30 percent) of public sector schemes was operational at project closing because revised government policy (following Bank advice) required farmers to participate in and contribute towards construction of tertiary irrigation works (earlier done by DOI and contractors). The ICR reports that only 20 percent of tertiary canals works devolved to farmers were completed and that there is some doubt after Credit closing that sufficient DOI and extension staff would be made available to motivate farmers to complete this task. Less than 10 percent of completed tertiaries have been handed over to WUGs .
2. Project design intends to replace private tubewells (currently irrigating a third of the area ) with economically inferior public sector surface irrigation .
3. Slightly over half of the physical works target area (54 percent or 4,840 ha) for farmer-managed ILC schemes was completed (because changed government policy excluded 3,096 ha of rehabilitation and groundwater schemes that were transferred to Bhairawa -Lumbini Irrigation III Project (Cr.2430-NEP)). Although the ILC was designed to support demand-driven investments, the evidence shows a largely supply -driven program of poorly selected and more expensive new schemes . Farmer co-financing at 4 percent of new scheme cost was less than the 10-50 percent assumed at appraisal . Sustainability is uncertain because of inadequate participation and training of WUGs and FIAs .
4. DOI lacked commitment to train regional DOI irrigation staff, provide FIA organizers and cooperate with the Department of Agriculture to utilize the credit provided under the project for farmers . Frequent changes in project managers of all major project components adversely affected implementation . Pilot joint management of new schemes using the principles of the Irrigation Policy were unsuccessful .
5. Cost recovery in the Stage II area is negligible . Although recovery was high (87 percent) in the Stage I area, charges were doubled in 1997/98 and the ICR reports farmers are dissatisfied with the steep rise of charges and are reluctant to comply . Even so, irrigation charges meet only 40 percent of current O&M costs and how the gap will be closed is unclear .
6. Monitoring and evaluation (M&E) was inadequate.

6. Ratings :	ICR	OED Review	Reason for Disagreement /Comments
<b>Outcome :</b>	Satisfactory	Unsatisfactory	Only a third of the main project component is operational; low ERRs .
<b>Institutional Dev .:</b>	Substantial	Modest	Formation of FIAs and WUGs incomplete, DOI shows little evidence of ownership .
<b>Sustainability :</b>	Likely	Uncertain	Capacity for sound water management not developed. Full funding of O&M unresolved.
<b>Bank Performance :</b>	Satisfactory	Unsatisfactory	Too much attention to engineering, not enough to institutional development
<b>Borrower Perf .:</b>	Satisfactory	Unsatisfactory	Lacked commitment to institutional development.
<b>Quality of ICR :</b>		Unsatisfactory	

## 7. Lessons of Broad Applicability :

- Successful projects should be given time to develop as local growth centers for agricultural innovation and to allow evolution of private sector initiative .
- When projects share common resources (water, a DOI management unit ) project appraisal should ensure that project expansion does not jeopardize the feasibility of, or administratively overload, the parent project .
- Timely M&E would have helped identify redundancies in project design (caused by private sector irrigation development) and restructuring of the project .
- Building the whole system simultaneously from head -to-tail risks too little and too late attention to developing water management and water users' groups, agricultural linkages, and maintenance . If physically feasible, irrigation project should be completed sequentially, section -by-section from head to tail, to enable a gradual build up to full operation, provide models for institutional development, and generate early benefits . It would also allow efficient downsizing as needed .

## 8. Audit Recommended? Yes No

**Why?** What happened to the private sector initiatives in the project area? Did the farmers ever organize and complete the tertiary canal works? Has effective rotational water management and farmer participation been introduced? Does the operation of the phase II project undermine the viability of the phase I operation? Has cost recovery been affected by the rate hike? Were any lessons learned from the unfortunate experience of Narayani III?

#### **9. Comments on Quality of ICR :**

There are unresolved contradictions between the main text, the Aide Memoir and the Borrower's Evaluation . The ICR recalculates the Economic Rate of Return (ERR) for the public sector component at 11.5 percent compared with 16 percent at appraisal, and the ILC new surface water schemes have ERRs in the range -2 to 9 percent. These ERRs are questionable due to optimistic assumptions about increases in crop yields (e.g. rice from 1.8 to 4 tons/ha, and wheat from 1.6 to 3 tons/ha, over a period of 3 years). As it may take 2-4 years for an effective water distribution system to develop, and another 2-4 years for farmers to accept that the system is reliable and take the risk with better quality inputs, it is probably more realistic to allow 10 years to achieve full project yields . Allowing benefits of the public sector schemes to build-up over 10 years reduces the ERR to 8 percent. A comparison with recently audited irrigation projects in Nepal (Narayani III and Sunsari Morang II and Headworks ) shows that the Region needs to standardize methodology and coefficients used for the economic pricing of agricultural commodities in Nepal.