1. Project Data:

<table>
<thead>
<tr>
<th>Project ID:</th>
<th>P008037</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name:</td>
<td>Irrigation Subsector Project</td>
</tr>
<tr>
<td>Project Costs (US$M)</td>
<td>172.4</td>
</tr>
<tr>
<td>Country:</td>
<td>Peru</td>
</tr>
<tr>
<td>Loan/Credit (US$M)</td>
<td>85.0</td>
</tr>
<tr>
<td>Sector(s):</td>
<td>Board: RDV - Irrigation and drainage (90%), Agricultural extension and research (8%), Central government administration (2%)</td>
</tr>
<tr>
<td>Cofinancing (US$M)</td>
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</tr>
<tr>
<td>L/C Number:</td>
<td>L4076</td>
</tr>
<tr>
<td>Board Approval (FY)</td>
<td>97</td>
</tr>
<tr>
<td>Partners involved:</td>
<td>JBIC</td>
</tr>
<tr>
<td>Closing Date:</td>
<td>06/30/2002</td>
</tr>
</tbody>
</table>

2. Project Objectives and Components

**a. Objectives**

The goal of the project was to raise agricultural production and productivity by enhancing the sustainability and efficiency of existing public irrigation systems and reducing the role of the public sector in irrigation. According to the Development Credit Agreement (DCA) the objectives of the project were:

1. Develop the capacity for decentralized management of irrigation systems by Water Users Organizations (WUOs).
2. Reduce the role of the public sector in irrigation.
3. Ensure cost recovery of capital investment and operation and maintenance of irrigation systems.

(The SAR list three different objectives: (1) strengthening the private sector through local management by the water users' organizations (WUOs) (including operation and management (O&M)); (2) creating an Irrigation Rehabilitation Fund to provide a long-term commercial credit-line to implement irrigation rehabilitation schemes; and (3) allowing the WUOs to define their investment priorities for the design and construction of these schemes). This evaluation is against the DCA objectives.

**b. Components**

**Rehabilitation of the infrastructure** for approximately 25 public irrigation schemes covering about 200,000 ha and 50,000 farming families. Rehabilitation works would be constructed by users who would pay 100% of investment costs to be financed by a credit line channeled through the Peruvian Development Finance Corporation (COFIDE) to retail lenders that would select eligible WUOs and accept the attendant credit risk. Planned US$102.4 million, actual US$60.8 million (59%).

- **Institutional development and strengthening of water users' organizations** and training of their management in the area of administration, finance, and operation and maintenance. Planned US$6.0 million, actual US$13.0 million (217%).

- **An incentive program for technology improvement**, including a training program for private technicians, extension workers, and farmers in irrigation techniques and practices, fertilization, and pesticide management, as well as a pilot matching-grant program to encourage adoption of modern irrigation technology. Planned US$38.1 million, actual US$19.1 million (50%).

- **A nationwide emergency dam safety program**. This covered 5 major dams and included control equipment, valves, gates, low level drains, and other outlet works, generators, and earth stabilization. Planned US$7.0 million, actual US$7.8 million (111%).

- **Project administration and monitoring**. This would support the project monitoring unit including establishment of monitoring and information systems. Planned US$2.9 million, actual US$23.9 million (1,039%).

**c. Comments on Project Cost, Financing and Dates**

In agreement with the Bank and without formal restructuring, US$ 36 million (including $30 million of loan funds) was reallocated for emergency works caused by the 1998 El Nino disaster.

- Effectiveness was delayed a year because difficulties over the subsidiary loan agreement with the COFIDE that
eventually decided not to participate. The failure of the COFIDE agreement, a condition of the Japanese participation, meant that the US$60 million of parallel financing by Japan (JBIC) never became effective. As a result, there was insufficient funding for rehabilitation and in 2001 it was agreed that eligible WUOs would finance only 15% of rehabilitation and 30% for gates and flow-measuring structures (instead of the 100% planned).

- During the life of the project, an IMF - government agreement imposed limits on foreign indebtedness and domestic budget deficits; the resulting expenditure caps slowed project implementation. This, added to the effect of natural disasters and delayed effectiveness, caused the closing date to be extended by two years.

5. Significant Shortcomings (including non-compliance with safeguard policies):

- The SAR's assumption that first-tier and second-tier lending institutions would willingly participate in the project proved to be unfounded because: (a) the expected improvement in macroeconomic conditions and financial sector reforms did not materialize and (b) the onlending arrangements proved unworkable (see below). As this was a condition of JBIC's participation in the project, Japan's US$60 million parallel financing was put on stand-by and not used. In turn, lack of credit seriously undermined the rationale of the project and required government to almost double its contribution (from US$16.4 million to US$31.7 million).

- Financial and institutional risks were poorly appraised. The designated financial intermediary (COFIDE)'s rural sector reforms did not materialize and (b) the onlending arrangements proved unworkable (see below). As this was a condition of JBIC's participation in the project, Japan's US$60 million parallel financing was put on stand-by and not used. In turn, lack of credit seriously undermined the rationale of the project and required government to almost double its contribution (from US$16.4 million to US$31.7 million).

4. Significant Outcomes/Impacts:


- Overall agricultural value-added increased by 31% between 1997 and 2003 and improved irrigation was responsible for much of that increase (the exact contribution of the project is not defined).

- On average, surveyed farmers increased their household incomes by 30% and farm profitability rose 45%.

- The project benefited 135,000 farm families (target was 50,000) over a total area of 435,000 ha (including the additional area as the result of El Nino), created 6,400 new jobs and generally increased agricultural productivity - typically yields have increased between 20 and 50 percent over a large range of crops.

- Within the project's original scope, 42 irrigation and drainage systems were rehabilitated and improved covering 139,000 ha of surface water and 2,655 ha of groundwater-based irrigation.

- 55,744 farmers participated in the extension program of whom 15% fully apply their knowledge.

- 4,076 farmers were trained in business management and 102 demand-led production marketing chains were established.

- 4 dams were upgraded as a result of the Dam Safety Emergency Program and a national dam safety panel was established.

3. Achievement of Relevant Objectives:

1. The objective to develop the capacity for decentralized management of irrigation systems by Water Users Organizations (WUOs) was partially achieved with few shortcomings. The target of training all 64 WUOs in the coastal belt in O&M, charges and tariffs, and institutional management was fully achieved, and in addition 188 of the 614 irrigation commissions were similarly trained. As a result, the number of WUOs eligible for project assistance increased from 2 to 33 (eligibility tests included preparation of realistic budgets and associated irrigation tariffs, and adoption of billing and collection modalities so that 75% of billings were collected.) These WUOs are now fully in charge of their systems including hire of private contractors and technical staff. 21 WUOs have significantly improved their management, while the remaining 10 are just staring to improve irrigation system management.

2. The objective to reduce the role of the public sector in irrigation was partially achieved (in line with the reduced funding.) While the legal authority of the WUOs to manage their schemes predated the project, power to do so was only transferred during the project. As a result, WUOs are now active partners with the Ministry of Agriculture in the selection of contractual arrangements, financial decisions and prioritization of different works. Most farmers still rely on government for technical assistance on extension issues - only 10% use the private sector. The greatest achievement, however, is that role of the irrigation district administrator is now advisory and that WUOs undertake and finance all routine O&M.

3. The objective to ensure cost recovery of capital investment and operation and maintenance of irrigation systems was substantially achieved with some shortcomings. The failure of the Irrigation Rehabilitation Fund to provide WUOs with long-term commercial credit-line to implement capital investment in irrigation rehabilitation schemes jeopardized achievement of the plan to achieve 100% private financing. Even so, users' share of capital investment costs met 15-40% revised targets - a remarkable achievement by global norms. Although activities under the incentive program to improve irrigation technology began late, 252 improvements covering 4,033 ha (75% of the target) and 1,022 farmers were successfully installed. Contribution by beneficiaries rose from an initial 28% to 45% for pressurized irrigation systems. Overall, farmers' own investment priorities for improved technology met 40% of the total investment cost of US$12.4 million, the balance coming from government subsidies. As a result of water efficiency and yield improvements under the rehabilitation and technical improvement components, farmers were willing and able to pay higher water tariffs - tariff recovery rose from US$7 million in 1999 to US$20 million in 2004 and government no longer finances any routine O&M work.

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was unable to identify a viable system of collateral for its credits because farmers were unwilling to cede their land as collateral to the WUOs.

- Farmers were never consulted about their willingness to pay 100% of capital costs.
- Limited markets for high-value crops constrained their adoption and led to lower economic rates of return - 24% vs the 39% anticipated.
- Institutional development costs were significantly (117%) more expensive than SAR's estimates and when project administration and monitoring costs are added, the total cost of the "soft" components was US$36.9 million or about 30% of total project costs. While economic efficiency may be acceptable, these numbers raise questions about organizational and managerial efficiency in Peru.
- Project administration and monitoring costs overrun by 824% reaching US$15.6 million. The substantial additional management and administration costs of the El Nino mitigation effort allied was the principal cause.

Even so, whatever the explanation, these overheads appear excessive particularly given that (a) the increment is almost equal to the substantial cut-back in government financing of the institutional development fund for WUOs and the incentive fund for technological improvement, and (b) government has requested the Bank to provide an additional US$10.3 million to complete strengthening of the WUOs.

- The monitoring and evaluation (M&E) system was only established two years before the project was completed and no baseline data were established.
- There were six changes of project coordinator (although the project's technical staff remained mostly unchanged).

<table>
<thead>
<tr>
<th>6. Ratings:</th>
<th>ICR</th>
<th>OED Review</th>
<th>Reason for Disagreement /Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong>:</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
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<tr>
<td><strong>Institutional Dev.</strong>:</td>
<td>Substantial</td>
<td>Substantial</td>
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<td><strong>Sustainability</strong>:</td>
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<td>Likely</td>
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<tr>
<td><strong>Bank Performance</strong>:</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>Unsatisfactory appraisal was rescued by proactive and effective supervision.</td>
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<td><strong>Borrower Perf.</strong>:</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
<td>Notwithstanding concerns about the efficiency of the borrower's line organizations.</td>
</tr>
<tr>
<td><strong>Quality of ICR</strong>:</td>
<td>Satisfactory</td>
<td></td>
<td></td>
</tr>
</tbody>
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**NOTE:** ICR rating values flagged with * don't comply with OP/BP 13.55, but are listed for completeness.

**7. Lessons of Broad Applicability:**

- Be careful about building major project components on reform expected in other sectors - if that reform fails (as it did in this project) then project objectives may be jeopardized.
- Always consult with beneficiaries and, in projects where they are expected to provide collateral for credit, always check that they know what is expected on them, have acceptable collateral arrangements, and that there are no unacceptable risks. In this project, stakeholders appear not to have been consulted on key financial issues and the way in which the credit was to be collateralized by the WUOs.
- If there are significant changes in project objectives or components, the project should be restructured to reflect the new reality. Not to do so creates false expectations.

**8. Assessment Recommended?** ☑ Yes ☐ No

**Why?** This was a rich learning experience and could yield lessons for Bank-wide application. A PPAR should examine, however, why the ID components proved to be so expensive as this could reduce their chances for replication elsewhere.

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

Overall a comprehensive account of this project. The evaluation would have been helped by a more systematic listing in an annex of achievements (against SAR targets) for each of the selected schemes assisted by the project. The Region provided additional explanation for overhead cost overruns after the first round of ES review - but this probably accounts for less than half of the administrative overheads.