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PROJECT PERFORMANCE ASSESSMENT REPORT

INDIA

AGRICULTURE DEVELOPMENT PROJECT
(Credit 24330)

November 28, 2005

Sector, Thematic, and Global Evaluation Division
Independent Evaluation Group

Currency Equivalents (annual averages)

Currency Unit= Rupees (Rs.)

1993	US$1.00	30.49
1994	US$1.00	31.37
1995	US$1.00	32.42
1996	US$1.00	35.43
1997	US$1.00	36.31
1998	US$1.00	41.25
1999	US$1.00	43.05
2000	US$1.00	44.94
2001	US$1.00	47.19
2002	US$1.00	48.61
2003	US$1.00	46.59
2004 (January)	US$1.00	45.43

Source: IMF and World Bank databases

Abbreviations and Acronyms

ADP	Agriculture Development Project
ASTEN	Asia Technical
CAS	Country Assistance Strategy
ERR	economic rate of return
GOR	Government of Rajasthan
ICR	Implementation Completion Report
M&E	monitoring and evaluation
MIS	management information system
MTR	Mid-Term Review
NRM	natural resource management
IEG	Independent Evaluation Group
O&M	operation and maintenance
PAD	Project Appraisal Document
PCC	Project Coordination Committee
PPAR	Project Performance Assessment Report
PTI	Program of Targeted Intervention
RAU	Rajasthan Agriculture University
SAR	Staff Appraisal Report
SDP	Strategic Development Plan
WUA	Water Users Association

Fiscal Year

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IEG Mission: Enhancing development effectiveness through excellence and independence in evaluation.

About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses about 25 percent of the Bank's lending operations. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons. The projects, topics, and analytical approaches selected for assessment support larger evaluation studies.

A Project Performance Assessment Report (PPAR) is based on a review of the Implementation Completion Report (a self-evaluation by the responsible Bank department) and fieldwork conducted by IEG. To prepare PPARs, IEG staff examine project files and other documents, interview operational staff, and in most cases visit the borrowing country for onsite discussions with project staff and beneficiaries. The PPAR thereby seeks to validate and augment the information provided in the ICR, as well as examine issues of special interest to broader IEG studies.

Each PPAR is subject to a peer review process and IEG management approval. Once cleared internally, the PPAR is reviewed by the responsible Bank department and amended as necessary. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the IEG Rating System

The time-tested evaluation methods used by IEG are suited to the broad range of the World Bank's work. The methods offer both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (more information is available on the IEG website: http://worldbank.org/oed).

Relevance of Objectives: The extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). *Possible ratings:* High, Substantial, Modest, Negligible.

Efficacy: The extent to which the project's objectives were achieved, or expected to be achieved, taking into account their relative importance. *Possible ratings:* High, Substantial, Modest, Negligible.

Efficiency: The extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. *Possible ratings:* High, Substantial, Modest, Negligible. This rating is not generally applied to adjustment operations.

Sustainability: The resilience to risk of net benefits flows over time. *Possible ratings:* Highly Likely, Likely, Unlikely, Highly Unlikely, Not Evaluable.

Institutional Development Impact: The extent to which a project improves the ability of a country or region to make more efficient, equitable and sustainable use of its human, financial, and natural resources through: (a) better definition, stability, transparency, enforceability, and predictability of institutional arrangements and/or (b) better alignment of the mission and capacity of an organization with its mandate, which derives from these institutional arrangements. Institutional Development Impact includes both intended and unintended effects of a project. *Possible ratings:* High, Substantial, Modest, Negligible.

Outcome: The extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently. *Possible ratings:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project). *Possible ratings:* Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower assumed ownership and responsibility to ensure quality of preparation and implementation, and complied with covenants and agreements, towards the achievement of development objectives and sustainability. Possible ratings: Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

Contents

Principal Ratings ..... **v**

Key Staff Responsible ..... **v**

Preface ..... **vii**

Summary ..... **ix**

1. Background **1**

2. Project Design and Implementation **2**

Project Design *2*

Project Components and Financing Plan 2

Project Implementation *3*

3. Evaluation Findings **4**

Relevance 4

Efficacy 5

Efficiency 9

Outcome *10*

Sustainability *10*

Institutional Development impact *11*

Bank Performance *11*

Borrower Performance *12*

4. Lessons **13**

Annex A. Basic Data Sheet **17**

This report was prepared by Nalini Kumar, who assessed the project in October-November 2003. Tomas Caspellan and Helen Phillip provided administrative support.

Principal Ratings

	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Satisfactory	Moderately Satisfactory
Sustainability	Likely	Likely	Likely
Institutional Development Impact	Substantial	Substantial	Substantial
Bank Performance	Satisfactory	Satisfactory	Unsatisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible operational division of the Bank. The ICR Review is an intermediate Independent Evaluation Group (IEG) product that seeks to independently verify the findings of the ICR.

Key Staff Responsible

Project	*Task Manager/ Leader*	*Division Chief/ Sector Manager*	*Country Director*
Appraisal	Ralph Hanan	Shawki Barghouti	Heinz Vergin
Completion	Deepak Ahluwalia	Ridwan Ali	Edwin Lim

Preface

This is the Project Performance Assessment Report (PPAR) for the Agriculture Development Project Rajasthan (Cr. 24330), for which a credit in the amount SDR 73.1 million (US$106.0 million equivalent) was approved in November 1992. Actual disbursements were US$95.3 million. US$7.2 million of the credit was canceled. The project closed on September 30, 2000, one year behind schedule because more time was needed to strengthen institutional mechanisms for some project components. An Implementation Completion Report (Report No. 21902) was submitted by the South Asia Region on February 26, 2001.

This report was prepared by the Independent Evaluation Group (IEG) based on the completion report, the Staff Appraisal Report (Report No. 11001, October 23, 1992), the Development Credit Agreement, review of Bank files, and a survey of the literature. An IEG mission traveled to India in October-November 2003 where it discussed the project with Bank staff, relevant government officials, nongovernmental organizations, beneficiaries, donors, consultants, and academics. The cooperation and assistance of all stakeholders and government officials is gratefully acknowledged as is the support of the staff of the World Bank Country Office in Delhi.

Following standard IEG procedures, the draft PPAR was sent to the Borrower for comments before being finalized. No comments were received. In accordance with the Bank's disclosure policy, the final report will be available to the public following submission to the World Bank's Board of Executive Directors.

Summary

Agriculture and animal husbandry are the major source of livelihood for more than 70 percent of the population in the Indian state of Rajasthan and account for about 40 percent of its GDP. Over time, the Government of Rajasthan has taken a variety of measures to promote development of agriculture. Since 1971, the World Bank has supported this effort through projects in research, extension, irrigation, forestry and watershed protection, dairy development, and improved storage and marketing facilities. The FY 1993 Rajasthan Agriculture Development Project (ADP) was conceived as a way to overcome the limited ability of single sub-sector projects to resolve overarching policy issues relevant to inter-related sub-sectors.

The objectives of the Rajasthan ADP were to help the state government implement the agricultural policies set out in its Agricultural Strategy Paper, namely (a) to accelerate agricultural growth through improved technical, financial, and economic use of resources; (b) to enhance long-term sustainability of growth through appropriate management and conservation of natural resources; and (c) to improve equity by better targeting of development programs to the poorer strata of the rural population. The objectives remained unchanged throughout the implementation period. The project was first prepared as a sector adjustment loan, but prior to approval the Bank and the Government of India agreed to make it an investment operation. In its final form the project included both a policy reform program and investment components in crop husbandry, horticulture, animal husbandry, water resource planning, rural roads, agriculture research and training, and environmental strengthening. Hence it was a very complex operation the implementation of which involved coordination across 12 state government departments. At appraisal, total project cost was estimated to be US$130.3 million. Actual total project costs were US$121.3 million.

The IEG assessment rates the project outcome moderately satisfactory. Physical objectives were largely met but project monitoring and evaluation (M&E) was weak, and a workable system was not established to monitor and subsequently evaluate the contribution to the achievement of project objectives of either the policy reform or investment components. Policies and legislation for full cost recovery on several goods and services were passed, although their actual implementation was slow. Also, little progress was made on enhancing the state government’s environmental oversight for agriculture.

The project provided for the construction of 2,228 kilometers of roads linking about 600 previously unconnected villages, but the achievements of this component were overshadowed by land acquisition issues. Even in November 2003, more than three years after project closing, these had not been settled. Numerous crop, fodder, and fruit and vegetable demonstrations were held under the crop husbandry and horticulture components and though the area under fruits and vegetables is reported to have increased, the weak M&E makes it difficult to say how much of this increase can be attributed to the project. More than a million women were trained, through mostly one-day courses administered by Department of Agriculture field staff. Infrastructure, facilities and equipment were built or upgraded at the Departments of Agriculture, Animal Husbandry and Irrigation, and the Rajasthan Agricultural University and the Maharana Pratap University, but it remains to be seen whether those new buildings and facilities will be used effectively or maintained. Overall, the

project generated a large volume of outputs, but these were not clearly linked to outcomes or to project objectives. Both the government's coordination unit and the Bank supervision missions were caught up in getting the multiple departments to meet their targets and gave less attention to how these achievements supported the government's agricultural strategy.

On balance the assessment rates sustainability likely even though the state government's tight fiscal situation hindered work under several components. The increased understanding of water resource management issues that the project helped develop has informed state laws and policies. Various government departments have been technically strengthened and are better positioned to effectively manage the state's agriculture sector.

Institutional development impact is rated substantial and Borrower performance is rated satisfactory. However, Bank performance is rated unsatisfactory, primarily because of a violation of a safeguard policy related to resettlement. In addition, the project was a very complex operation and its implementation arrangements were inadequate for that level of complexity, several components were not well prepared, supervision was weak, and monitoring and evaluation was not given adequate emphasis.

The experience of the Rajasthan ADP project offers four lessons for future Bank-supported state-wide multisectoral interventions in the agriculture sector in India and elsewhere.

a) When several policy reforms and investments are required in a sector, a multi-phase operation over a longer period may be more appropriate. Early attention could then be focused on critical policy reforms and the most crucial investments to create the right platform for subsequent investments. This would avoid the simultaneous preoccupation with meeting multiple targets at the expense of a sound policy framework.

b) Monitoring and evaluation of outcomes should be integral to project design. Realistic targets and indicators need to be linked to objectives.

c) Complex Bank interventions like the Rajasthan ADP require strong and constant Bank management oversight to ensure the alignment of implementation and design and strict adherence to Bank procedures and policies.

d) Adequate understanding of the financial situation of the government at the appraisal stage can help ensure the financial health of a project during implementation and the sustainability of activities supported after closure.

Vinod Thomas
Director-General
Evaluation

1. Background

1.1 Rajasthan, India's largest state, is in the northwest of the country and borders Pakistan. About 58 percent of its 34.2 million hectares is under cultivation, 5 percent is grazing land and pastures and 7 percent is barren and uncultivable land.[1] Agriculture and animal husbandry are the major sources of livelihood for more than 70 percent of the population and account for about 40 percent of the state's gross domestic product even though Rajasthan is a desert state and has only one percent of the country's water resources. The average annual rainfall is 575 millimeters with large variation across different zones. Only about one-third of the cultivated land is irrigated and most of it is concentrated in the districts of Ganganagar and Hanumangarh.

1.2 Rajasthan has the largest livestock population in India and accounts for about 40 percent of the wool and 10 percent of the milk produced in the country. Animal husbandry is an important occupation in all areas of the state, and is the main rural activity in the arid western districts. According to the most recent estimates, about 20 percent of the state population lives below the poverty line (World Bank 2004) and animal husbandry is a significant source of supplemental income for a large percentage of the landless rural poor and marginal farmers.[2]

1.3 Despite the state's fragile natural resource endowment, agriculture grew at about 4.1 percent per annum between 1980 and 1994. The Government of Rajasthan (GOR) historically has provided considerable support for development of irrigation, rain-fed agricultural production, soil and water conservation, fodder production, livestock (including sheep and cattle), horticulture, agro-forestry, and processing and marketing facilities. Improving communication within the state through development of a rural road network has also been a government priority.

1.4 Since 1971, the World Bank has supported the state government's efforts to develop agriculture through projects in research, extension, irrigation, forestry and watershed protection, dairy development, and improved storage and marketing facilities. The Agriculture Development Project (ADP) was developed to allow the government to take a strategic view of the sector as a whole. The ADP model became popular in response to the experience of single sub-sector projects which were not able to do justice to overarching policy issues. In that model once the Bank had agreed with a state government on a broad strategy for agricultural growth, the prime focus was to be on policy reform though investments considered critical to promoting sustainable growth were also supported.

1.5 The objectives of the Rajasthan ADP were to help the state government implement the agricultural policies set out in its Agricultural Strategy Paper, namely (a) to accelerate agricultural growth through improved technical, financial, and economic use of resources; (b) to enhance long-term sustainability of growth through appropriate

[1] Agriculture Rajasthan Statistical Abstract 2003. http://www.rajamb.com/statabstract2003/landuse.htm

[2] 50 percent of the total landholdings are small or marginal and account for 10 percent of the cultivated area.

management and conservation of natural resources; and (c) to improve equity by better targeting of development programs to the poorer strata of the rural population. These objectives were to be achieved through a policy and institutional reform program and investments in crop husbandry, horticulture, animal husbandry, water resource planning, rural roads, agriculture research, and training. Project objectives remained unchanged throughout the implementation period.

2. Project Design and Implementation

PROJECT DESIGN

2.1 The Rajasthan ADP was initially designed as a sector adjustment loan but in February 1992, the Bank and the Government of India agreed to make it an investment operation. The project was approved in November 1992 and became effective in January 1993. Over a six–year period it was to implement a complex and ambitious policy reform agenda as well as an investment program that required coordination across 12 government departments and agencies.

Project Components and Financing Plan

2.2 Policy reforms were to address public expenditure issues, the incentive framework, and constraints to private sector development. The reforms included: (a) full-cost pricing of goods and services supplied by the public sector to encourage greater participation by the private sector; (b) reduction or elimination of subsidies provided by the Government of Rajasthan; (c) improvement of the efficiency of water use and strengthening of measures in support of sustainability of the resource; (d) review of constraints to the development of agro-industries and marketing; (e) increase in programs for the development of livestock to exploit its potential for growth and poverty alleviation; (f) institutional reforms of rural cooperatives to make them more democratic and responsive to their members; (g) strengthening of the state government's capacity to evaluate public investments through financial and economic analysis; and (h) enhancing of state government's environmental oversight for agriculture. The policy reform agenda was to be accompanied by investments for:

- **Rural Roads (US$41.7 million at appraisal, US$53.3 million actual)**, the largest component, was implemented by the Public Work Department and the Rajasthan State Agricultural Marketing Board.
- **Water Resources (US$17.1 million at appraisal, US$19.4 million actual)**, the second-largest component, included several sub-components aimed at improving data collection and processing, strengthening the Remote Sensing Application Center through purchase of equipment, training, and technical assistance.
- **Agriculture Research and Training (US$20.7 million at appraisal, US$18.7 million actual),** was implemented by the Rajasthan Agricultural University (RAU) and included preparation of a Strategic Development Plan (SDP) to help

the RAU plan for future demands and make the necessary institutional changes and investments.

- **Animal Husbandry (US$14.9 million at appraisal, US$7.4 million actual)**, implemented by the Department of Animal Husbandry, was to support breed improvement, animal markets, management information systems, disease surveillance, privatization of veterinary services, and strengthening of the Rajasthan Institute of Livestock Management and existing para-veterinary schools.
- **Crop Husbandry (US$19.9 million at appraisal, US$15.1 million actual)**, implemented by the Department of Agriculture, was to carry out demonstrations and training on selected farmers' fields with a focus on land rehabilitation, improved efficiency of water use, fodder development, and promotion of new crops. This component also supported sodic land reclamation activities.
- **Horticulture (US$7.9 million at appraisal, US$4.8 million actual)**, implemented by the Department of Horticulture, was to promote cultivation of higher-value crops. Investments were to include development of nurseries, progeny and demonstration centers, training, advertising, marketing and processing.
- **Environment Strengthening (US$1 million actual and appraisal)** was to strengthen GOR's capability for environmental oversight in the agriculture sector. A permanent Environment Cell was to be established in the office of the Development Commissioner with the responsibility for assessing the environmental and sociological impact of investment plans, initially for the project and progressively for all proposed for all proposed investments in the agriculture sector.
- **Project Coordination (US$8.2 million at appraisal and US$2.5 million actual)** was to be carried out at two levels, through the Project Guidance Committee (to be headed by the Chief Secretary) and the Project Coordination Committee (PCC, headed by the Development Commissioner). The PCC was supported by a full-time Project Coordination Unit.

2.3 At appraisal, total project cost was estimated to be US$130.3 million of which the IDA share was US$106 million (equivalent), and government/beneficiaries were to provide US$24.3 million. Actual project costs were US$121.3 million of which the IDA share was US$95.3 million and government/beneficiary contributions totaled US$26 million. US$7.2 million was canceled. The project closed in September 2000, one year behind schedule. The project was extended because more time was needed to strengthen institutional mechanisms for agricultural research and training, to consolidate water user groups (WUGs), and to strengthen institutional capacity in the Environment Cell.

PROJECT IMPLEMENTATION

2.4 Coordinating project activities between 12 government departments/agencies was a managerial challenge for the project. Some components, in particular the RAU component, lagged in performance. As late as February 1996 the Bank had not received government recommendations on the Strategic Development Plan for the university, Bank approval of which was a condition of disbursement. The civil works for RAU,

originally to be completed by April 1999, were also held up by the delay in commissioning the SDP.

2.5 At appraisal, little need for land acquisition was foreseen because roads were to be built on existing alignments. However, during implementation land acquisition became a major issue and delays in announcement and payment of land acquisition awards hindered project implementation. The establishment and staffing of the Environment Cell was also delayed.

2.6 The project's mid-term review (MTR) took place in February-March 1997, at which time of the total IDA commitment of US$103.4 million, about US$44 million remained undisbursed. This included savings from exchange rate movements since the start of the project. The credit agreement was amended after the MTR and the size of the rural roads component was increased to use the saving. Some revisions were also made in the procurement procedures.

2.7 Project implementation was negatively affected after the MTR when the State Finance Department imposed expenditure restrictions in 1997-98 to contain overall expenditure growth. The restrictions affected the flow of funds to several departments and impeded progress on several components. The fiscal situation also slowed progress on the SDP and the compensation payments for land acquired for rural roads as well as causing processing delays in procurement packages. Further, elections due in some of the rural cooperatives were delayed because of the national elections in January 1998.[3]

3. Evaluation Findings

Relevance

3.1 Project relevance is rated **substantial.** The project was to assist the government of Rajasthan in implementing its new agricultural strategy and was fully consistent with the Bank's assistance strategy for India in the agriculture sector. The three project objectives – focused on growth, appropriate management and conservation of natural resources, and improved equity by better targeting – were aligned with the Bank's overall development goals, though as stated they were too broad and not easily monitored. Further, the project was highly complex and too ambitious in what it was trying to achieve in its six-year implementation period.

3.2 The project had four design shortcomings. First, though agriculture is a state subject, the design gave less attention to whether all the policy reforms could be

[3] Most cooperatives in India started with public sector seed capital. Because of this predominant shareholding and the limited managerial capability of the cooperative membership, state governments appointed civil servants as directors and managers of these institutions. Over time, this made most Indian cooperatives essentially public enterprises. The proposed policy changes in Rajasthan were intended to initiate the process of weaning selected rural cooperatives from State control and putting their management in the hands of true voluntary associations of their members. This process was adversely affected by the delay in the elections.

effectively implemented at the state level. For example, some proposed policy reforms, like increasing flat rate rural power tariffs to ensure equivalence with the metered rate were politically difficult to implement at the state level as neighboring states did not pursue similar policies. Second, the road component was inadequately prepared as too little time and resources were budgeted for land acquisition. The design of the sheep and wool sub-component in the animal husbandry component also had shortcomings. It was unrealistic to expect imported exotic ewes and their lambs to thrive under local harsh migrant conditions. Third, there was some lack of consistency between the policy reform measures and the investment program. While the policy reform agenda favored reduction or abolition of government subsidies, the sub-component on sodic land reclamation was based on the provision of subsidized gypsum. However early supervision missions suggested revisions in the program to ensure no subsidy on gypsum. Finally, as already noted, the project was extremely complex which made smooth implementation a challenge.

Efficacy

3.3 Efficacy is rated **substantial.** While several objectives of the reform agenda were met, progress was limited, especially on enhancing the state government's environmental oversight for agriculture. Environment strengthening was a small component (Table 1), but its importance for achievement of the second objective was far greater than the financial resources devoted to it. It is also not clear how much success was achieved on strengthening the state government's capacity to evaluate public investments through financial and economic analysis. No rate of return was calculated for the project (see section on efficiency) and a workable system to monitor and subsequently evaluate the contribution of the policy reform measures and each investment component to the achievement of project objectives was not effectively established. While the outputs of the project were noteworthy (Box 1, following paragraph 3.7), too little attention was given to linking outputs to clear outcomes and project objectives. M&E also was focused on ensuring an input-output balance.

Table 1: Project Components and Rating

Component	***Appraisal estimate as % of total project cost***	***Actual as % of total project cost***	***PPAR Rating***
Rural Roads	32	44	Satisfactory
Water Resources	13	16	Satisfactory
Agriculture Research and Training	15	15	Moderately Satisfactory
Animal Husbandry	11	6	Unsatisfactory
Crop Husbandry	15	12	Moderately Satisfactory
Horticulture	6	4	Satisfactory
Environment Strengthening	1	1	Unsatisfactory
Project Coordination	6	2	Satisfactory

3.4 The complexity of the operation meant that the Government's coordination unit and the Bank supervision missions (including the MTR) gave more attention to getting

individual departments to meet their targets and less to how these achievements contributed to supporting the government's agricultural strategy. After the mid-term amendments to the project, 44 percent of the total cost was devoted to the road component, and the intervention became a rural roads project more than anything else. However, the achievements of this component were overshadowed by land acquisition issues. Even as late as November 2003, when IEG undertook its field visit for this assessment, more than three years after project closing, these issues had not been settled.

3.5 The paragraphs below provide information on project achievements by objectives:

Objective 1: Contribution to acceleration of agricultural growth in the state through improved technical, financial and economic use of resources (Mostly Achieved).

3.6 A recent agricultural sector review (World Bank 2004a) found a 2.3 percent average annual growth rate for agriculture and allied services in Rajasthan between 1991/92 and 2000/2001, lower than the previous decade when it grew at 4.4 percent. The broad nature of the project's objectives and the weak M&E makes it impossible to assess how much the project may have contributed to this growth. The project introduced the borrower to several innovative ideas that probably contributed to agricultural growth in the state. Several of these ideas have now been integrated into the state strategy in particular sub-sectors. For example, the water resource component piloted water user associations (WUAs). Since then GOR has passed a new act to provide for farmers' participation in the management of irrigation systems. While policies and legislation for full cost recovery have been passed for several goods and services, they have not always been effectively applied and political pressures could still reverse the gains that have been made. Nevertheless, the project's emphasis on cost recovery has led several government departments (like irrigation, animal husbandry) to appreciate the importance of the concept to promote efficient management resources, though the incentives for those departments to 'push' for application of policies remain low: currently any gains from actions taken by individual departments are deposited in a general treasury account and the departments therefore do not benefit directly from their efforts.

3.7 Rural roads, the largest component, increased the access of remote villages to potential markets. Under the crop husbandry component numerous crop demonstrations were held (Box 1), but of the six new crops demonstrated only castor proved relevant for farmer adoption in Jodhpur division. The pilot drainage demonstrations program failed to take off and pilot programs to introduce more client driven extension also did not succeed. Further, the impact of the forage development demonstrations was limited as neither the alley cropping patterns nor urea/molasses treatment proved adoptable. Though numerous training courses were held for women, it is difficult to imagine that the mostly one-day events administered by Department of Agriculture field staff could have resulted in much improved incomes for the trainees. Few women interviewed by the assessment mission reported tangible economic gains, and some confirmed that little gain in skills could be expected from one short-term training. The horticulture component succeeded in increasing the number of departmental and private nurseries, the availability of high-quality planting material, and the area planted under fruit and vegetables, though little information is available on survival rates of trees planted. It is also difficult to tell how

much of the increase in the area brought under fruit and vegetables can be attributed to the project.

Box 1. Impressive Progress on Physical Outputs

Rural roads: 2,228 kilometers of roads were constructed linking about 600 unconnected villages.

Crop husbandry: Six new crops were demonstrated at a total of 38,000 sites. Various green fodders, alley cropping systems, and urea/molasses treatment of dry fodder were promoted through an extensive program of about 37,000 demonstrations and some 95,000 promotion seed kits. Sodic land at 6,300 sites – amounting to 3,400 hectares – was successfully treated with gypsum. The Farm Women's Training Program reached 1.2 million women. Rural Artisan Training was given to about 600 local artisans in agricultural equipment repair and manufacture.

Horticulture: 39,000 fruit demonstrations and 33,000 vegetable demonstrations were conducted. Twenty-eight departmental nurseries and 83 private nurseries were established and distributed 173 million plants during the project period.

Animal husbandry: 1,100 *gopals*(veterinary volunteers at the village level*)* were trained and 41 animal exchange markets at the *panchayat samiti* (block level) level and 25 at the municipal levels were established.

Water resources: Hydrometeorological data collection, processing and use were strengthened. Using remote sensing techniques a groundwater atlas and hydrogeomorphological and arable land use maps for the state were prepared. Three hundred and fifteen community lift irrigation schemes were established.

Environment strengthening: An Environmental Cell was established in the Development Commissioner's Office.

Agriculture research and training: Infrastructure and capacity for agricultural research were built at the Rajasthan Agricultural University at Bikaner and at the Maharana Pratap University of Agriculture and Technology at Udaipur.

3.8 Equipment for the information media and Management Information System (MIS) helped strengthen the Department of Agriculture, hydrometeorological data collection and processing was strengthened, and the Rajasthan Institute of Livestock Management was constructed with hostel accommodation. However, it remains to be seen whether the new buildings and equipment will be effectively used and maintained. In addition, RAU's agricultural research facilities and buildings were upgraded. Research was not successfully aligned with field-level realities and the objective of developing RAU as a center of excellence still remains elusive. As acknowledged by a Bank supervision mission, the decision to create a second state agricultural university also led to compromise of the objective of promoting economic use of resources.

Objective 2: Enhance long-term sustainability of growth through appropriate management and conservation of natural resources (Partially Achieved).

3.9 The project contributed to improved understanding of water issues in the state. The Water Resources Planning Study resulted in the preparation of a State Water Policy approved by the State Cabinet in September 1999. The state government also passed legislation in 2000 to provide for farmers' participation in the management of irrigation systems. While user groups are increasingly being formed (including under the later

Rajasthan Water Sector Restructuring Project) and could contribute to improved delivery of irrigation services in the long run, the organizations do not yet have the capacity needed for sustainable water resource management. An external study of the working and impact of WUAs formed under the project notes this lack of capacity and also questions the extent to which there was genuine farmer participation in selection and execution of works. A recent Supervision Mission report (November 2004) on the formation and fostering of WUAs under the Rajasthan Water Sector Restructuring Project also noted that while these organizations have been formed, efforts by the Irrigation Department were still inadequate for their sustainable development.

3.10 The component for Environmental Strengthening was not successful. While the Environmental Cell was established it has not yet assumed responsibility for monitoring the environmental and sociological aspects of public investments in the entire agricultural sector (including irrigation) in the state. This is largely because the borrower was not convinced about the usefulness of environmental and sociological oversight and also because the government did not have the required environmental expertise.

3.11 A significant amount of sodic land was reclaimed, but it is unclear whether the operation and maintenance of drainage was given adequate attention. An IEG assessment of the Sodic Land Reclamation Project in Uttar Pradesh found that too little attention had been given to drainage and soil fertility issues creating considerable risk that the reclaimed land could return to its former state.[4]

Objective 3: Improving equity through better targeting of development programs to the poorer strata of the rural population (Partially Achieved).

3.12 The increase in the rural road network has increased accessibility of remote and poor villages and created opportunities available to hitherto poorly connected areas of the state to contribute to and benefit from agricultural growth. Further, small and marginal farmers have been given an opportunity to increase their incomes through their participation in community lift irrigation schemes. However, there are no studies using baseline data that could demonstrate this potential impact on poverty. Supervision reports noted the need for intensification of agriculture and horticulture extension in the area under community lift irrigation schemes. While training of women and rural artisans was expected to lead to increased incomes for the poor, the largely one day training courses provided do not seem likely to have led to much increase in opportunities for the women trainees. The completion report however quotes an external evaluation which reportedly showed increase in artisan income after training.

3.13 The animal husbandry component, which was expected to make the largest contribution to achieving this objective, was unsuccessful. Limited progress was made on privatizing veterinary services and the *gopal* (paravet or veterinary volunteers at the village level) program had disappointing results. The Sheep and Wool sub-component also faced major problems and failed to contribute to the project objective. The

[4] For more on this issue see OED Project Assessment of the Uttar Pradesh Sodic Lands Reclamation Project Report No. 29124.

completion report notes that the failure of this component meant that a "chance to meet poverty alleviation and equity objectives was lost."

Efficiency

3.14 A qualitative assessment of efficiency for the project suggests a rating of **modest**. No economic rate of return (ERR) was calculated for the project as a whole. The appraisal document explains that since the project investment components were largely supportive in nature and were designed to improve the enabling environment for agricultural growth, strengthen the government's capability to provide high-quality services and plan for sustainable exploitation of natural resources, benefits could not be easily attributable to specific components. Hence an economic rate of return (ERR) was calculated only for the rural roads component. However, an attempt at calculating the ERR of some of the other components – crop husbandry, horticulture, animal husbandry, and water resources – should have been made at least at the ICR stage. The absence of baseline data, though, inhibits the measurement of economic impact of the project.

3.15 For the roads component, the ERR is reported to have increased from 17 percent at appraisal to 26 percent at completion. The increase has been attributed to traffic volumes that were higher than anticipated. Benefits were estimated based on savings made on vehicle repairs because of road improvement, beneficiary productive time saved, and increased transport of goods by vehicles. The assessment questions the credibility of the ERR reported for at least four reasons: First, only 50 percent of the total investment costs are used in estimating the ERR because the calculation assumes that the quantifiable benefits are 50 percent of total benefits – but it is not clear why this assumption was made. Second, the costs were also underestimated because they did not consider the opportunity cost of land. In the appraisal the roads were largely expected to use existing alignments. Third, the ERR calculations assumed a constant maintenance cost. The ERR calculations at the ICR stage were made over 23 years. It is unrealistic to assume that the maintenance costs of a rural road would be the same in the first five years as in the twentieth year of its life. Work done by the Central Road Research Institute in New Delhi shows wide variation in maintenance costs over the years.[5] Fourth, project coordination costs were not considered. When the ERR is recalculated using 100 percent of the investment costs, a percentage of the project coordination costs, the cost of compensation for acquired land, and variable maintenance costs the ERR drops to 10 percent, which while acceptable is disappointing when compared with the original expectations.[6]

[5] Project files reveal that calculations made by the Central Road Research Institute in New Delhi show that the maintenance cost for rural roads Rs. 5000 per year per km in the initial years increasing to Rs. 35,000 per year per km in the 7th year of service.

[6] In making this re-calculation, the cost of the compensation made is assumed to be a proxy for the opportunity cost of land. No opportunity cost is assumed for government land which is 40 percent of the total land acquired. The maintenance cost in the original calculation was assumed to be constant at 3 percent of cumulative investment cost. In the revised calculations, maintenance cost is assumed to be 3 percent of cumulative investment costs for the first three years and 5 percent of cumulative investment costs thereafter. Further, 44 percent of the project coordination costs were taken into account since the road component was 44 percent of the total project.

3.16 The road component was 44 percent of the total project cost. When a qualitative assessment of the returns from some of the other components, like crop and animal husbandry, agriculture research and training are considered, an efficiency rating of modest seems justified. The returns from the crop demonstrations do not appear to be commensurate with costs as noted in para 3.7. The overall performance of the animal husbandry component was unsatisfactory. The establishment of the second agricultural university by the account of supervision staff led to an inefficient use of resources (para 3.8). Further, the Environmental Cell was established but did not achieve its purpose.

OUTCOME

3.17 Based on the evidence of substantial relevance, substantial efficacy, and modest efficiency, IEG guidelines indicate that the project's outcome should be rated **moderately satisfactory**.

SUSTAINABILITY

3.18 Sustainability – the resilience to risk of net benefits over time – is rated **likely** though this was a close call. The state government's tight fiscal situation limited the use of facilities created, several construction activities could not be completed, and work under several components was hindered by lack of resources and significant capacity building work remains to be done to ensure sustainability of the WUAs**.** However, the assessment considers the sustainability rating for the overall project to be likely for five reasons. First, 44 percent of the project was rural roads and maintenance of these roads is an insignificant percentage of the State Public Work Department's road maintenance budget. If other ongoing pilot schemes that allow for maintenance of highways through private contractors are expanded, substantial resources could be available for maintenance of rural roads. Second, the increased understanding of water resource management issues brought about by the project has informed state policies – the law promoting farmer participation in irrigation management, experience of the project with WUAs are examples. Further, the experience of the project with WUAs provided important lessons for the later Rajasthan Water Sector Restructuring Project. Third, various government departments have been technically strengthened. For example the information, media, and management information system capacities have been strengthened at all levels in the Department of Agriculture, the Ground Water Department has been able to undertake several relevant studies, digital image processing equipment at the State Remote Sensing Application Center has enabled production of hydromorphological and arable land use maps for all districts in the state. These technical inputs are playing a major role in the development of the agriculture sector in the state. Fourth, chances of reversal in certain practices – such as the shift from seedling to grafted plants in horticulture and uptake of drip irrigation – is extremely unlikely. Private nurseries have also played a significant role in increasing the area under fruits and vegetables in the state. Among the various fruit plants *amla* cultivation has increased dramatically. Fifth, some components that failed (like animal husbandry) nonetheless have helped design better policies for providing support for veterinary services and sheep and cattle breeding.

INSTITUTIONAL DEVELOPMENT IMPACT

3.19 Institutional development impact is rated **substantial**. The project introduced the borrower to several innovative ideas that have now been integrated into the state strategy in particular sectors. For example, the water resource sub-component piloted WUAs, which led to passage of an act to provide for farmers' participation in the management of irrigation systems.[7] Further, partly because of efforts undertaken under the project, the Government of Rajasthan adopted a state water policy. In water resources, the studies financed contributed to the understanding of the water sector in Rajasthan.

3.20 Though full cost recovery for all publicly provided goods has yet to be achieved, the project's emphasis on cost recovery has led several government departments to appreciate the importance of the concept to promote efficient management of resources and insist on full cost recovery for several goods and services and in several cases to reduce or eliminate input subsidies.

3.21 A considerable amount of infrastructure and facilities was constructed and technical capacity was upgraded under the project in the Department of Agriculture, horticulture and under RAU.

3.22 However, work remains to be done on consolidating the capacity of the WUAs to work effectively, especially in accounting and financial management, and in ensuring the effective use of the infrastructure and facilities created. Further, the creation of the second agricultural university has created a need to coordinate activities between the two.

BANK PERFORMANCE

3.23 Bank performance is rated **unsatisfactory** for several reasons.

3.24 First, a safeguard policy was violated and IEG's guidelines call for Bank performance to be rated as unsatisfactory when there are any such violations. Initially the project was to be an Environment Category A because, as noted by the Final Executive Project Summary, the construction of roads "could have adverse environmental effects due to loss of agricultural or forest land, soil erosion, or traversing protected habitat." However, Bank staff were confident that the roads would be constructed on existing alignments and therefore would involve no land acquisition or displacement of people. Avoiding these concerns was to be one of the criteria for road selection. If land acquisition became necessary for broadening the alignment the appraisal document noted that "the land acquisition process would be completed and compensation paid prior to calling for tenders." Further, the environmental strengthening component was to assess the environmental and sociological impact of the state government's agricultural investments under the project. Hence the project was designated as Category B.[8] Ultimately, the Environmental Cell did not work as expected and during implementation

[7] The Rajasthan Farmers' Participation in Management of Irrigation Systems Act came into effect in July 2000.

[8] It is disappointing that these issues were not picked up at the MTR stage when confusion about the EA classification of the project remained.

a large amount of land (4,800 hectares, 60 percent of it private land) was acquired. As of November 2003, when the assessment mission was in the field, the total compensation for land acquisition had not been paid.[9] The fact that the roads had been constructed and complete compensation not paid for two years after project completion is a safeguard violation.[10]

3.25 Second, the project was very complex and its implementation arrangements were inadequate for the level of complexity. At the project design stage the coordination required to implement such an ambitious operation across several departments was not thoroughly assessed. Neither was adequate allowance given to how normal government working procedures (flow of funds, official transfers) could hinder implementation. The number of investment components should have been limited to those considered most critical and suited to Bank financial support. Further, the capacity of the government to provide financial support for a large multisectoral project was not analyzed.

3.26 Third, some investment components were inadequately prepared at appraisal. This was true for the sheep sub-component, as acknowledged by the completion report, as well as for the roads component. A well-prepared road construction component would have at least roughly estimated the amount of land that would have to be acquired and costs involved in making compensation payments. Further, at mid-term when the size of the road component was increased, adequate management oversight should have been provided to assess the time that would be required to handle acquisitions based on the experiences in the early years of implementation. Also the safeguard violation should have been at least flagged at this stage.

3.27 Fourth, monitoring and evaluation was not adequately emphasized at the design stage.

3.28 Fifth, for such a complex intervention, Bank supervision was weak. Staffing of supervision missions was inadequate for livestock issues. Other components, like the Environmental Cell, could not be set up as planned and continued to be unsatisfactory throughout the implementation period. While supervision missions raised concerns about the inadequate functioning of the Environmental Cell those concerns were not adequately addressed. This is not surprising since no environmentalist participated in supervision missions until the MTR.

BORROWER PERFORMANCE

3.29 Borrower performance is rated **satisfactory**, though only marginally so. Government ownership of the project was strong, and the coordination unit functioned well even though 12 government departments were involved. The broad scope and the

[9] While the Government officials interviewed by the assessment mission reported that the delay in disbursement for land compensation was mainly on account of intra-family disputes resulting in finalization of total amount of land acquisition payments, project files show that the tight availability of resources and procedural problems, like delays in acquiring succession certificates from local revenue officers, were also partly responsible.

[10] The Region in its comments notes that the Bank missions made substantial effort to resolve this issue.

complex design was a mistake and the project achieved what it did only because of the high level of interest of the senior Government of Rajasthan officials. However frequent staff changes at senior level in government departments had a negative impact on implementation. The implementation of the rural roads component was also delayed by frequent staff changes at senior levels. Since the approval of the SDP in 1997 there have been four Vice Chancellors at RAU, slowing the pace of SDP implementation. The absence of a full-time Vice Chancellor at RAU for some time during 1999 also contributed to delays in that component. As already noted in para 3.8, the GOR's decision to create a second agricultural university compromised the objective of promoting economic use of resources.

3.30 On account of the tight fiscal situation in the state, expenditure restrictions imposed by the Finance Department in 1997/98 to contain overall expenditure adversely affected project implementation, especially after the MTR. Several departments faced problems in obtaining clearances for bills at the local treasury offices – even though expenditures from externally aided projects were exempt from several restrictions.

3.31 Government responsiveness in following up on the advice of Bank supervision mission was also slow. Senior staff changes in implementing departments also led to delay in following up of recommendations of Bank supervision missions. However, several recommendations were also not effectively followed. For example, the poor performance of the *gopal* scheme had been noted by supervision missions, but steps were not taken to address the problem earlier. To be fair, however, the complex design of the project is partly to blame for this as the coordinating unit and the implementing departments was preoccupied with meeting project targets and had little time to actually redesign components that were not functioning well. Financial reporting and compliance with audit requirements was generally satisfactory.

4. Lessons

4.1 The experience of the Rajasthan ADP project offers four lessons for future Bank-supported state-wide multisectoral interventions in the agriculture sector in India and elsewhere.

Lesson 1: When several policy reforms and investments are required in a sector, a multi-phase operation over a longer period may be more appropriate. Early attention could then be focused on critical policy reforms and the most crucial investments to create the right platform for subsequent investments. This would avoid the simultaneous preoccupation with meeting multiple targets at the expense of a sound policy framework.

The Rajasthan ADP was a hybrid policy reform cum investment project. In fact the design began as a policy reform project and then was changed at a later stage into an investment operation. It was a complex state-wide operation that involved 12 government departments. This made Borrower coordination and monitoring and Bank supervision very demanding. Both the Government's coordination unit and the Bank supervision missions were caught up in getting individual departments to meet their targets and gave

less attention to how these achievements contributed together to supporting the Government's agricultural strategy, the real project objective.

Lesson 2: Monitoring and evaluation of outcomes should be integral to project design. Realistic targets and indicators need to be linked to objectives.

In the Rajasthan ADP, M&E of the outcome of policy reform and the investment components should have been an integral part of the project. The fact that it was not, resulted in focus on project outputs rather than progress on achieving outcomes.

Lesson 3: Complex Bank interventions like the Rajasthan ADP require strong and constant Bank management oversight to ensure the alignment of implementation and design and strict adherence to Bank procedures and policies.

The safeguard violation could have been avoided had there been greater vigilance exercised in applying the Bank's Operational Directives. It is well known that road construction, and even improvement, can potentially involve some measure of land acquisition. Hence the Operational Directive on Involuntary Settlement should have been triggered and the Bank should have worked with the borrower from the beginning to ensure that the Bank's safeguard policies were met.

Lesson 4: Adequate understanding of the financial situation of the government at the appraisal stage can help ensure the financial health of a project during implementation and the sustainability of activities supported after closure.

Particularly after MTR, the tight fiscal situation of the government adversely affected progress on a number of project activities. No analysis was done at the project design stage to realistically assess government capacity to meet its financial commitment to a complex and demanding multi-sectoral operation. Such an analysis would have allowed the Bank to be aware of possible financial constraints that the government could face and plan upfront for such situations. IEG's Sector Lessons Note (World Bank 2003) suggests that at the appraisal stage the following information should at least be compiled: information on local funding needs for the project period and at least five years beyond and including other significant incremental projects in the sector; information on the past five years of budget allocation to that sector and analysis of any gap; supporting evidence of changed government priorities for sectoral budgetary allocations if budget demand is shown to be significantly beyond past actuals.

References

World Bank. 1976. The Economic Analysis of Rural Road Projects Staff Working paper No. 241

World Bank. 2003. Sector Lessons Note OED's Seven Leading Rural Lessons.

World Bank. 2003a. India Sustaining Reform, Reducing Poverty. A World Bank Development Policy Review. Oxford University Press.

World Bank. 2004. Country Strategy for India.

World Bank. 2004a. India Re-energizing the Agricultural Sector To Sustain Growth and Reduce Poverty. Rural Development Unit South Asia region. July 30.

Annex A. Basic Data Sheet

AGRICULTURE DEVELOPMENT PROJECT (CREDIT 24330)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Total project costs	130.3	121.3	93.1
Loan amount	106.0	95.3	89.9
Cofinancing			
Cancellation		7.18	
Institutional performance			

Cumulative Estimated and Actual Disbursements

	FY93	*FY94*	*FY95*	*FY96*	*FY97*	*FY98*	*FY99*
Appraisal estimate (US$M)	5.3	21.2	42.4	63.6	84.8	100.7	106.0
Actual (US$M)	4.9	3.9	17.3	14.9	16.11	9.6	13.9
Actual as % of appraisal	92.5	18.4	40.8	23.4	19.0	9.5	13.1
Date of final disbursement:							

Project Dates

	Original	*Actual*
Appraisal	05/15/92	05/15/92
Board approval	11/12/92	11/12/92
Signing	12/17/92	12/17/92
Effectiveness	01/28/93	01/28/93
Closing date	09/30/99	09/30/2000

Staff Inputs (staff weeks)

	Actual/Latest Estimate	
	N° Staff weeks	*US$('000)*
Identification/Preparation	100.5	207.2
Appraisal/Negotiation	29.6	115.2
Supervision	240.9	270.4
ICR	9.0	38.0
Total	380.0	630.8

Mission Data

Stage of Project Cycle	Date (month/year)	No. of persons	Specializations represented	Performance rating	
				Implementation Status	Devel. Objectives
Appraisal/ Negotiation	05/93	10	Economist (3), Agriculturist, Livestock Specialist, Horticulturist, Irrigation Engineer, Civil Engineer, Private Sector Specialist, Environmentalist		
Supervision	01/93	4	Agriculturist, Civil Engineer, Procurement Specialist, Irrigation Engineer	HS	HS
	04/93	5	Agriculturist, Civil Engineer, Economist, Procurement Specialist, Research Specialist	HS	
	07/93	2	Agriculturist, Procurement Specialist	HS	
	12/93	6	Economist, Agriculturist, Research Specialist, Irrigation Engineer, Civil Engineer, Procurement Specialist	S	
	05/94	4	Economist, Agriculturist, Research Specialist, Procurement Specialist	S	S
	10/94	6	Economist, Agriculturist, Research Specialist, Irrigation Engineer (2), Procurement Specialist	S	S
	05/95	5	Economist, Agriculturist, Research Specialist, Irrigation Engineer, Procurement Specialist	S	S
	01-02/96	5	Economist, Agriculturist, Civil Engineer, Procurement Specialist, Agricultural Research Specialist	S	S
	06/96	2	Agriculturist	S	S
	MTR 02-03/97	8	Economist, Agriculturist, Livestock Specialist, Irrigation Engineer, Agricultural Research Specialist, Procurement Specialist, Environmentalist	S	S
	10/97	5	Economist, Livestock Specialist, Irrigation Engineer, Civil Engineer, Agricultural Research Specialist	S	S
	05/98	7	Economist, Water Resources Specialist, Civil Engineer, Agricultural Research Specialist, Financial Analyst, Procurement Specialist, Social Development Specialist	S	S
	12/98	8	Economist, Irrigation Engineer, Civil Engineer, Agricultural Research Specialist, Financial Analyst, Procurement Specialist, Environmentalist, Information Technology Specialist	S	S
	05/99	7	Economist, Irrigation Engineer, Civil Engineer, Agricultural Research Specialist, Procurement Specialist, Environmentalist, Social Development Specialist	S	S
	11/99	6	Economist, Irrigation Engineer, Civil Engineer, Agricultural Research Specialist, Financial Specialist, Environmentalist, Social Development Specialist	S	S
	04/00	7	Economist, Irrigation Engineer, Roads Engineer, Agricultural Research Specialist, Financial Specialist, Procurement Specialist, Social Development Specialist	S	S
ICR	09-10/00	6	Economist, Financial Analyst, Ag Economist, Agronomist/Ag Res. Sp. Irrigation Engineer, Civil Engineer (including FAO team of 4 persons)	S	S