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**PROJECT PERFORMANCE ASSESSMENT REPORT**

**INDIA**

**UTTAR PRADESH SODIC LANDS RECLAMATION PROJECT  
(Credit 2510)**

**June 9, 2004**

*Sector and Thematic Evaluations Group  
Operations Evaluation Department*

## 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

CDD	Community-Driven Development
CBD	Community-Based Development
GOUP	Government of Uttar Pradesh
ICR	Implementation Completion Report
IIML	Indian Institute of Management Lucknow
M&E	Monitoring and Evaluation
MK	<i>Mitra Kisan</i> (farmer friend)
MMK	<i>Mahila Mitra Kisan</i> (women farmer friend)
MIS	Management Information System
MTR	Mid-term Review
NSS	National Sample Survey
OED	Operations Evaluation Department
O&M	Operation and Maintenance
PPAR	Project Performance Assessment Report
PTI	Program of Targeted Interventions
SAR	Staff Appraisal Report
SIC	Site Implementation Committee
UP	Uttar Pradesh
UPBSN	<i>Uttar Pradesh Bhumi Sudhar Nigam</i> (UP Land Development Corporation)
WUG	Water Users' Group

## Fiscal Year

April 1 - March 31

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**About this Report**

The Operations Evaluation Department 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, OED 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 OED. To prepare PPARs, OED 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 OED studies.

Each PPAR is subject to a peer review process and OED 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.

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**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.

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This report was prepared by Nalini Kumar, who assessed the project in November 2003. Anju Gupta prepared the household, focus group and key informant interview instruments and analyzed the household data with contributions from Barbara Pozzoni. George Garner Woodall analyzed the qualitative data. William Hurlbut edited the report. Helen Phillip provided administrative support.

## Principal Ratings

	<i>ICR*</i>	<i>ICR Review*</i>	<i>PPAR</i>
Outcome	Satisfactory	Satisfactory	Moderately Satisfactory
Sustainability	Likely	Likely	Unlikely
Institutional Development Impact	Substantial	Substantial	Substantial
Bank Performance	Satisfactory	Satisfactory	Satisfactory
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 Operations Evaluation Department (OED) product that seeks to independently verify the findings of the ICR.

## Key Staff Responsible

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Manager</i>	<i>Country Director</i>
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## Preface

This is a project performance assessment report (PPAR) for the Uttar Pradesh Sodic Lands Reclamation Project (Credit 2510). A credit in the amount US\$54.7 million was approved for the project in June 1993. The credit was closed on schedule in March 2001 and fully disbursed. Total project costs were US\$103.7 million; 29 percent greater than the appraisal estimate.

The report was prepared by OED based on the Implementation Completion Report (Report No. 22886, September 28, 2001), the Staff Appraisal Report (Report No. 11715, May 13, 1993), the development credit agreement, a review of Bank files, reports prepared by the Indian Institute of Management, Lucknow and a survey of the literature. An OED mission traveled to India in November 2003 where it discussed the project with Bank staff, relevant government officials, nongovernmental organizations, beneficiaries, donors, consultants, and academics. Subsequently, surveys (1,200 households, 60 key informant interviews, and 60 community-level focus groups) were undertaken in three blocks of Raebareli district in Uttar Pradesh by the Center for Development Economics, Delhi School of Economics, India. The project assessment draws on the findings of the fieldwork. Annex C discusses reasons why Raebareli district was selected for the fieldwork and gives information on sources of data, selection and sampling procedures, methodology, data collection, and analysis.

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 New Delhi. Financial support from the Norwegian Consultant Trust Fund for undertaking the fieldwork is also gratefully acknowledged.

Community participation was an integral part of project design and implementation in the Sodic Lands Reclamation Project and the project was chosen for assessment primarily as an input into an ongoing OED evaluation of community-driven development (CDD) efforts supported by the Bank. Box 1 in the report provides a brief summary on the participatory aspects of project design for which details are available in Annex A.

Following standard procedures, the draft report was sent to the Borrower for comments. Borrower comments were received and are included as Annex F.



## Summary

Agriculture is the main source of livelihood for 75 percent of the population in the Indian state of Uttar Pradesh (UP) and accounts for about 40 percent of its GDP. Intensive irrigation and the package of agricultural inputs from the Green Revolution brought about a major increase in foodgrain production in the state between 1960-61 and 1995-96. Unfortunately, the expansion of the canal network was not accompanied by adequate soil and water management practices. Consequently, large tracts of agricultural land in the command areas of major canals became increasingly waterlogged, saline, and alkaline. Although the government invested considerable resources to reclaim the land, its efforts had varying degrees of success.

The Sodic Lands Reclamation Project (1993-2001) was the first Bank support for reclamation of sodic soils in India. The project was part of a long-term program to improve agricultural productivity in areas with high concentration of sodic lands and was to be implemented over a 7-year period in 10 districts of UP. It had three objectives: (i) to develop models for environmental protection and improved agricultural production through large-scale reclamation of sodic lands; (ii) to strengthen local institutions to manage such schemes; and (iii) to contribute to poverty alleviation of the families concerned.

The project design built on UP's experience with land reclamation and emphasized community participation. Although the reclamation technology itself was not new, its application was supported by agricultural inputs and, most significantly, tenure security measures intended to increase the incentives for farmers to undertake agricultural production on reclaimed lands. Launched as a pilot to allow it to develop effective arrangements for farmer participation, the project monitored the environmental aspects of reclamation work and explored the opportunity for diversifying cropping systems.

Actual total project costs at US\$103.7 million were 29 percent higher than appraisal estimates. This was because the area of land reclaimed was 52 percent higher and the number of beneficiaries was nearly double the appraisal estimates. The beneficiary contribution to project financing, though principally in kind, increased from 15 percent estimated at appraisal to 36 percent.

The OED assessment rates the project outcome moderately satisfactory. The project exceeded expectations in carrying out large-scale reclamation of sodic soils. Over 68,400 hectares were reclaimed with farmer participation. The project also contributed to poverty alleviation by helping increase returns to many small and marginal farmers. But this success is tempered by several significant weaknesses. First, though the project objectives were relevant for poverty reduction and consistent with Bank assistance strategy for India, it gave inadequate attention to several critical systemic issues, among others economic incentives for use and management of water, resources for operation and maintenance of drainage, that are essential to developing a long-term program for improving agricultural productivity in areas with high concentration of sodic lands and deteriorating environment conditions. Second, since the improvement in the quality of soil has been marginal in several areas, and drainage and institutional issues related to soil fertility management have not received enough attention, there is considerable risk that the reclaimed land will revert to its former state. Third, monitoring of environmental impact has not been adequate. The latest monitoring technology is available to the Remote Sensing Application Center, but the large amount of data being generated is not being used effectively. Fourth, the implementation of the participatory process was given inadequate

attention and, hence, instead of putting the communities in a position of decision-making and control, the process appears to have created a sense of dependency. Finally, the project efficiency was rated modest after adjusting downwards the unduly optimistic assumptions in the ICR about future crop yields and maintenance of drainage, which had not appropriately accounted for the risk that the reclaimed land could revert to its former state.

The assessment rates sustainability as unlikely for several reasons. The most serious threat to sustainability is continuing inadequate attention to drainage issues. Moreover, institutional constraints related to soil fertility management have not been addressed. These two factors leave the reclaimed land at risk of resodification. Further, lack of coordination between various government departments undermines project achievements.

On balance, the assessment rates Bank performance as satisfactory. The project was generally well supervised, the latter largely from the Bank Country Office in New Delhi with support from Washington. This positive performance is offset somewhat by two factors. The first is the inattention to critical systemic issues in the project design. The other was policy issues like the frequent transfer of government officials, which the Bank should have handled at the level of the state or central government at the design stage and which have had substantial negative implications for the quality of implementation. Borrower performance is rated satisfactory.

The project experience offers four lessons:

- A holistic approach to sodicity requires not only remedial measures but also adequate attention to critical systemic issues, among others, economic incentives for use and management of water, resources for operation, and maintenance of drainage. Failure to do so can undermine project sustainability.
- It is important to plan and execute an evaluation of the pilot experience before a larger follow-on intervention is designed and approved. While this may lead to delays in the effectiveness of the larger project, it is important to allow lessons of experience from the pilot to inform the design of larger interventions.
- In innovative and complex operations like the Sodic Lands Reclamation project, where the long-run environmental impact is not easy to forecast, its monitoring and evaluation should be given sufficiently high priority in project implementation. This requires not only identification of an appropriate system as was done in this intervention, but also a plan to ensure that observations are evaluated and feedback is effectively used.
- It takes time to build a constituency for community participation, and project design must plan for it. The Bank's time-bound approach to project implementation made it difficult for the relevant implementing agency to do justice to the critical process issues. Further, the socio-economic community context needs adequate attention as participatory processes can bring about complex and irreversible changes in the social, economic, and political fabric of society. Adequate attention needs to be given to incentives and returns to farmers as individuals and as a group, both during implementation and in the post-project period.

Gregory K. Ingram  
Director-General  
Operations Evaluation

## Background

1. Uttar Pradesh (UP), one of the largest and most populous states of India, is located centrally in the northern plains.<sup>1</sup> Though official estimates based on the most recent National Sample Survey (NSS 55<sup>th</sup> Round, 1999-2000) show a dramatic decline in the number of poor, the state continues to be one of the poorest in the country, with 31 percent of the total population below the poverty line. The extent of poverty also varies across the state, with poverty levels increasing from west to east (World Bank 2002).
2. Agriculture is the major livelihood of 75 percent of the population and accounts for about 40 percent of the state's GDP. The 17 million hectares under cultivation in UP account for nearly 10 percent of India's net sown area and about 25 percent of India's total irrigated area. Major irrigation canals have been constructed since the 19<sup>th</sup> century in the state, the Green Revolution latterly providing a major incentive for the expansion of the canal network that now irrigates about 12 million hectares. Greater availability of water, combined with increased agricultural inputs, raised foodgrain production in the state from 14.5 million metric tons in 1960-61 to 42.5 million tons in 1995-96.
3. Although expansion of the canal network was critical to the growth of agricultural production, poorly managed soil and water management practices have contributed to a growing incidence of waterlogging, soil salinity, and alkalinity. In the command areas of major canals (Lower Ganga Canal, Upper Ganga Canal, and Sharda Sahayak) foodgrain productivity has declined as a result. With time, the problem increased and nearly 10 percent of the total cultivable area in the state was sodic (*usar*) in the early 1990s.<sup>2</sup> The government has invested considerable resources to reclaim this land with varying degree of success.
4. The World Bank has supported UP's agriculture sector through financing for development and rehabilitation of surface and groundwater irrigation capacity, watershed management, agricultural services such as credit, extension, research, and forest sector development. The Sodic Lands Reclamation Project was the first Bank support for land reclamation.

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1. In recent years the Himalayan Region of UP has been made into a new state called Uttaranchal.

2. Though some of the alkaline lands in the state have been known to occur from time immemorial, a large extension of these lands occurred after the spread of canal irrigation. Sodic land formation results from inefficient water management in areas where the soil has abundant salts and ineffective drainage. Salinity results from the accumulation of salts over time, through natural processes, in the soil or groundwater. Sodicty is a secondary result of salinity in clay soils, where leaching through either natural or human-induced processes washes soluble salts into the subsoil, and leaves sodium to form an electrochemical bond with clay particles in the soils. The high buildup of sodium carbonate in the soil progressively raises the alkalinity, which limits and eventually stops plant growth (as water and air cannot penetrate). The resulting soil is white, appears powdery when dry and sticky when wet. In the dry summer months, the wind blows the dry soil and airborne saline soil particles contribute to respiratory diseases. The weather in UP, which alternates between heavy monsoon and prolonged dry periods, contributes to the problem.

## **Project Design and Implementation**

### **Project Design**

5. The Sodic Lands Reclamation Project was part of a long-term program to improve agricultural productivity in areas with a high concentration of sodic lands and was to be implemented over a 7-year period in 10 districts of the state. It had three objectives: (i) to develop models for environmental protection and improved agricultural production through large-scale reclamation of sodic lands; (ii) to strengthen local institutions to manage such schemes; and (iii) to contribute to poverty alleviation of the families concerned. The objectives were not revised.

6. The project design built on past experience in the state with land reclamation. Since 1945, UP has implemented several state and central government-sponsored schemes to reclaim sodic lands. However, these past efforts had little farmer participation, weak institutional support, and limited coordination. The Sodic Lands Reclamation Project emphasized community participation along with an integrated approach to land reclamation. Though the reclamation technology itself was not new, its application provided for land tenure security to increase the incentives for farmers to undertake agricultural production on reclaimed lands, and input support for agriculture development. Launched as a pilot to allow it to develop effective arrangements for farmer participation, the project monitored the environmental aspects of reclamation work and explored the opportunity for the diversification of cropping systems.

7. As designed, the project was expected to reclaim about 45,000 hectares of land of which 39,000 hectares were to be devoted to foodgrains and 3,000 hectares to salt-tolerant horticultural crops. A further 3,000 hectares was to be reclaimed on community land and devoted to tree cultivation for fuel and fodder. The package for sodic lands reclamation was to be carried out in every village for four years. The design emphasized flexibility and the reclamation program was intended to proceed in phases, district by district, allowing for changing the scope of components and operational modalities in response to lessons learned during the early years.

8. The project was designated a program of targeted intervention (PTI), signaling a poverty focus. A socio-economic study at the project preparation stage established that 95 percent of the landowners in UP's sodic areas were small and marginal farmers with holdings of less than one hectare.

### **Box 1: Participatory Aspects of Project Design: A Brief**

The project design included eight measures to promote community participation.

- Increasing the access of the beneficiary communities to information. The strategy was to improve the understanding of sodic issues among rural households and communities and convince them to come together and work for their own benefit.
- Creating village-level institutions through which villagers could share information, discuss, and make decisions on critical reclamation issues. Participation in these organizations was also expected to increase the ability of the village beneficiaries to demand services from local-level government institutions in the future.
- Distinguishing those activities that can be pursued through a private approach from those that are public in nature, and putting in place an adequate system for privatization of identified activities. Though a significant amount of sodic land was communal, the project took steps to privatize it before initiating reclamation activities.
- Promoting a group approach for those activities that are public in nature. Water user groups were formed to not only share water but to also work as a reclamation team developing and maintaining a network of field and link drains and irrigation channels. A shortcoming here was limited attention to the issues important for sustainability of the user group in the post-project phase.
- Raising awareness of the importance that guarantee of financial returns plays in building farmer commitment. Unfortunately, the importance of this link was not recognized for all project activities.
- Building the capacity in the farmers to participate effectively in reclamation activities. Field days were arranged to build farmers' confidence in reclamation programs and provide intensive technical support.
- Ensuring accountability and transparency of activities undertaken.
- Building flexibility in project design to allow for increase in farmer participation in project activities where possible.

Source: Annex A.

9. The UP Bhumi Sudhar Nigam (UPBSN) was the project implementing agency.<sup>3</sup> A Project Management Committee headed by the Agriculture Secretary with heads of the participating agencies as members was appointed to ensure inter-departmental coordination. The Remote Sensing Application Center (RSAC) was responsible for site identification and selection and for monitoring of changes in soil and groundwater environments.<sup>4</sup> The Indian Institute of Management Lucknow (IIML) provided support for development of the computerized project management information system. IIML also worked as the external monitoring and evaluation (M&E) agency.

3. UPBSN is a Government of UP undertaking registered under the Companies Act. It is under the Department of Agriculture, and the Agriculture Production Commissioner is its ex-officio chairman. It was set up in 1978 with the mission of preserving the health and productivity of land resources.

4. The sodic land was categorized into three classes: Class C, which was barren, uncropped land (most severe case of sodicity); Class B, which was single-crop (kharif) land; and Class B+, which was double-crop (kharif and rabi) land but with low productivity.

**Table 1: Project Components and Costs**

<i>Component</i>	<i>Costs (US\$ million)</i>	
	<i>Appraisal</i>	<i>Actual</i>
<b>Institutional development</b> through strengthening of the UPBSN and the RSAC.	7.05	10.84
<b>Land reclamation</b> through provision of an effective drainage network; application of gypsum, irrigation development, and support for the establishment of food and tree crops on privately owned land and forest tree species on community land.	64.80	66.91
<b>Agriculture development and technology dissemination</b> comprising demonstration of reclamation models for the production of crops, fruit trees, and forestry species on sodic lands, nursery development for fruit tree seedling production, extension support involving motivational campaigns, production of publicity material using mass communication techniques	4.70	23.41
<b>Reclamation technology development and special studies</b> comprised adaptive research to improve existing reclamation technology, diversification of cropping systems, and development of methods for preventing further expansion of sodicity.	3.60	2.55
<b>Total Project Cost</b>	<b>80.2</b>	<b>103.7</b>

10. The IDA share of the total project cost at appraisal was US\$54.70 million. Actual total costs at US\$103.7 million were 29 percent higher than appraisal estimates. This was because the area of land reclaimed was 52 percent higher and the number of beneficiaries was nearly double the appraisal prediction. The beneficiary contribution to project financing, though principally in kind, increased from 15 percent estimated at appraisal to 36 percent. The IDA credit was totally disbursed.

### **Implementation Experience**

11. The project was approved in June 1993 and became effective in August of the same year. The midterm review (MTR) took place in April 1997 and the project closed on schedule in March 2001. The project was implemented initially (1992-93) in three eastern districts—Raebareli, Pratapgarh, and Sultanpur. Four more districts—Aligarh, Etah, Etawah, and Mainpuri—were added in 1993-94. The project was at its peak in 1994-95 when three additional districts (Allahabad, Fatehpur, and Hardoi) were included.

12. The project design was complex and implementation faced several challenges. However, there was good progress in achieving project physical targets, which were revised at the MTR by over 50 percent from 45,000 to 68,800 hectares for land reclamation, drainage, and cultivation. Flexibility in the project design allowed for adaptations on the basis of lessons of experience. For example, the initial design had provided for a subsidy to farmers on C Class sodic land (see footnote 4) for digging and maintenance of field drains and irrigation channels. However, during implementation it was possible to get the farmers to do this work without the subsidy, so it was removed. The off-loading of this and other similar costs onto farmers was one of the main reasons why the project was able to reclaim more land than originally planned. In another example, the afforestation program on community land was abandoned when it was found to be unsuccessful. In the horticulture sub-component, the high mortality of fruit

trees planted (because of poor plant quality and transportation losses) prompted rethinking of the source of supply of the planting material.<sup>5</sup>

13. Drainage was one of the biggest challenges throughout the implementation period. Remodeling and maintenance of main drains by the government was slow, lagged behind other project activities, and was not given the attention it deserved. Implementation of drainage was also handicapped by the coordination problems between the project and the Irrigation Department.<sup>6</sup>

14. Farmer participation was central to the reclamation effort, but establishing it was not easy. Site Implementation Committees (SICs)<sup>7</sup> and Water User Groups (WUGs)<sup>8</sup> were created in villages where reclamation activities were carried out. However, lack of experience with participatory procedures in the early years led to forcing formation of these institutions too quickly in accordance with land reclamation targets rather than readiness of beneficiaries. Realization that these were not working effectively led to arrangements for training of UPBSN staff by NGOs in WUG formation and development processes. A participatory cell was also set up in UPBSN. Considerable emphasis was also given to creating awareness and motivating villagers. The project effort in sequencing activities helped harness farmer commitment for agricultural development on reclaimed lands.<sup>9</sup>

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5. The original design provided for planting material from Department of Horticulture nurseries. However, the need to provide good quality planting material led to identification of local nurseries for plant supply.

6. The experience of the Project Management Committee was encouraging except in the case of the Irrigation Department. Remodeling of the main drains was very often late and had a negative impact on project activities. Part of the problem was caused by the reporting structure in UP. The Agriculture Secretary reports to the Agriculture Production Commissioner, whereas the Secretary of Irrigation reports to the Chief Secretary.

7. The SIC was the village-level body for dissemination of project-related information, decision making, and implementation of reclamation activities. It was made up of beneficiaries from the village as well as village-level officials of various government departments, Mitra Kisan, Mahila Mitra Kisan, NGO representatives, and project staff. The Gram Pradhan was the president of the SIC. SIC activities included distribution of inputs (such as gypsum) for land reclamation, allocation of work for construction of link drains, land classification, maintenance of the drainage system, and conflict resolution. Plan maps that show WUG boundaries, land classification, boring sites, irrigation and drainage networks, and proposed crops were also approved by SIC.

8. A WUG is an informal group of farmers (approximately 10-15 farmers) that hold a four to five hectare piece of land in geographical juxtapose. The field staff of UPBSN and the NGO motivate the beneficiaries to form a WUG. Members of each WUG select a chairman and a co-chairman. A bore well is drilled (or an existing boring is used) on the land of one of the farmers. The pump set could be owned by an individual or a group. These groups were formed to allow for sharing of water from one boring for irrigation purposes. Since individual farmers cannot develop the required network of field drains and irrigation channels, WUG members were to work together as a team for their construction and maintenance. A WUG was, in effect, an operational unit of the village SIC and it was through the WUG that inputs for reclamation of sodic land and agricultural activities were distributed. Payments for all on-farm development works were also made through WUG Bank accounts.

9. For example, the transparent land titling was done before undertaking of technical solutions to sodicity.

## Evaluation Findings

### Relevance

15. On balance, project relevance is rated **substantial**. The project objectives were relevant to poverty reduction and fully consistent with Bank assistance strategy for India and objectives in the agriculture sector. The basic strategy for agricultural growth is to strengthen agricultural, irrigation and forestry programs at the state level. The Government of India and state governments have strongly supported innovative community-based rural initiatives that directly attack rural poverty. The Government of UP placed a high priority on reclamation of sodic areas due to increasing population pressure on available agricultural lands, the concern for the deteriorating natural resource base, and high potential social benefits of the program. World Bank involvement was expected to enable development and dissemination of sustainable production technologies and allow for strengthening of local institutions involved in reclamation work.

16. Though the project was seen at appraisal as part of a long term program to improve agricultural productivity in areas with high concentrations of sodic lands and deteriorating environment conditions, this assessment is concerned about its inattention to several systemic issues as these have some bearing on the project's relevance as a pilot program. The project focus was on developing participatory models for large-scale land reclamation; however, there is an inconsistency here as a "long term program to improve agricultural productivity" and development and dissemination of sustainable production technologies requires adequate attention to among others, economic incentives for use and management of water, resources for operation, and maintenance of drainage, tackling of which calls for policy reform measures. As a pilot, the project should have combined relatively shorter-term "curative" measures for sodicity with longer-term "preventive" policy measures that can mainly be tackled at the state level perhaps with Government of India support. Box 2 notes some of the systemic issues that need to be addressed to allow for a holistic approach to the problem of sodicity.

## **Box 2: Important Systemic Issues that have a Bearing on Land Reclamation**

**Seepage, as the majority of the large canal network in UP continues to be unlined.** While budgetary constraints have major implications for what can be done in the short run, a realistic long-term strategy for seepage prevention or reduction over time is at least as relevant to sodicity as short-term reclamation.

**Adequate recognition of the importance of drainage and sufficient resources for the operation and maintenance of the drainage network.** The UP Water Sector Restructuring Project (FY 2002) includes a pilot component for reform options in irrigation and drainage, but it is not clear how much the pilot will succeed in focusing adequate attention on this critical issue. Drainage was inadequately addressed during the project under assessment and continues to be a challenge during the implementation phase of the follow-on Sodic Lands Reclamation II project. Drainage had never been a priority for the Irrigation Department or for the farmers. Moreover, there are several aspects to the drainage issue that are not currently well appreciated by both stakeholders.<sup>a</sup> Politicians do not see immediate returns from drainage and several individual farmers are not aware that they cannot “solve” the drainage problem on their own land unless a coordinated effort is undertaken by all stakeholders in an area.<sup>b</sup> Others are aware, but see community action as too difficult given the likelihood of free-riders.

**Government policies that encourage the right incentives for use and management of water.** Subsidies through the power sector for groundwater irrigation and through low tariffs for surface irrigation continue to be a problem (Pitman 2002). The price of canal water in India is not fixed on the basis of sound economic principles, and little attention is given to calculation of rates that would allow for an adequate balance of surface and groundwater use. In many areas where canal water is easily available, groundwater exploitation has fallen because of the high cost associated with exploitation of this resource, particularly with use of diesel pumps (as noted in Joshi and Jha 1992). Though these issues have begun receiving attention, they are not easily addressed and a much more systematic effort is needed. The pricing of canal water is of critical importance to the development of an approach that provides for conjunctive use of surface and groundwater to avoid problems of salinity and waterlogging. The midterm review of the project under assessment introduced a pilot subproject to develop appropriate water and soil management practices with farmer participation. The pilot reported limited progress on efforts to promote conjunctive use of surface and groundwater primarily because “farmers would never prefer to take water from a tubewell which is 12 times costlier...” Borrower ICR, Volume III, p. 119.

a. “Although investment in drainage is recognized as an essential technical component of sustainable irrigation, it is often deferred, for example, on grounds of political or financial expediency, until the deleterious effects of a raised water table become severe, or, finally, because drainage is unpopular with the farmers, as it requires substantial extent of land (approximately 15 percent for open drains) and capital, whereas its rate of return is not obvious, or may be low due to delays.” (Datta and Jong 1997).

“At the policy level, land drainage was neglected because the effect of water logging and secondary salinisation is slow to become apparent. So always the funds allocated for it are shifted to the extension of the irrigation network or spent for drought and flood control. It happens because in our policy documents drainage is always attached with irrigation or with flood control or with both. Secondly, due to financial and political constraints, the commitment of national policy makers to forestall agro-ecological deterioration is often diminished by short-run perspectives owing to their brief tenure as leaders. Thirdly, maintenance as well as management is always a big problem and it is true that when drainage is not managed properly it will create another environmental (health) hazard. Fourthly, the government has already spent about Rs. 40,000 per hectare on surface irrigation, now for drainage additional funds are required; if drainage is treated as a public issue, then it is again a big financial burden on the government.” (Datta and Jong 1997)

b. This is because the drainage “technology” can be successful only if it is provided over a large and compact area.

## Efficacy

17. Efficacy—the extent to which the project objectives were achieved—is rated **substantial**.

### **Objective 1: To develop models for environmental protection and improved agricultural production through large-scale reclamation of sodic lands (Partially Achieved)**

18. Though the project exceeded expectations in carrying out large-scale reclamation of sodic soils with active farmer participation, it did not succeed in creating adequate awareness among communities and the Irrigation Department about the technical aspects of managing sodicity. Monitoring of environmental impact remains a concern and there is also a need for more attention to sustaining agricultural incomes through better extension and better coordination among agencies (Box 3).<sup>10</sup>

#### **Box 3: Lack of Coordination Between Various Government Departments and Its Implications**

Reclamation activities began in Pahremau village in the Amawan block of Raebareli district in 1993-94 and a total of 46.27 hectares were reclaimed. Fifteen WUGs were formed, with 13 new borings and rehabilitation of 2 old ones. The village has 102 beneficiaries, 85 of them marginal farmers and 17 of them small farmers. In 1997-98, the Minor Irrigation Department constructed a deep tube well in the village with a command area of 100 hectares. The deep well was powered by electricity, while the majority of the shallow-bore wells were run on diesel fuel. The cost of operating a diesel pump is nearly twice that of operating an electric pump. Hence, a number of farmers in the village began obtaining water from the deep well and the diesel pump owners in the WUGs began finding it difficult to “sell” their water. Ultimately, several of them sold their pump sets. In November 2003, when the OED mission visited the village, about 5 of the WUG pumps were reported to be functioning. However, the Minor Irrigation Department deep tubewell was also not functioning because of some technical problems. As a result, the beneficiaries currently do not have an assured water supply. When asked what they would do, they said they would find a solution and that they would not allow their lands to go back to being sodic. However, it was not clear what options they had. When asked whether they would be able to buy new pumps for their shallow wells, those present acknowledged that they did not have the resources. The UPBSN staff, including the irrigation expert, who had accompanied the mission, were not even aware that the Minor Irrigation Department had constructed the deep tubewell and jeopardized the sustainability of the reclamation investments.

10. The Borrower in its comments is concerned about OED observations on lack of coordination between government departments (see Annex F). In response to Borrower comments, OED notes that even if the Minor Irrigation Department was constructing electrified deep tubewells which could eventually benefit the project, the tubewell was set up without considering the implications for the working of WUGs which were to manage the shallow diesel run tubewells constructed under the project. OED drew on the incident to illustrate the negative implications of lack of interdepartmental coordination. UPBSN staff were not even aware that the Minor Irrigation Department had constructed the deep tubewell in the village. Consequently they could not be expected to consider the implications for the working of user groups, maintenance of link drains etc. OED clearly notes in its report in para 45 that “It is not clear whether this was an isolated occurrence or is a more generalized problem, but the implications for sustainability are disturbing.” Further, there is also the issue of coordination with the Irrigation Department on drainage which has implications for sustainability which has been brought up in various parts of this report.

### ***Agricultural Productivity Improved***

19. Reclamation was successful on 68,414 hectares of sodic lands (152 percent of the SAR target) in 1,003 villages in the project districts. More than 50 percent of the reclaimed area was totally barren Class C land. The value of all three classes of reclaimed land has increased substantially. Most of the reclaimed area, 92 percent, was brought under rice and wheat cultivation; 7.6 percent was brought under horticulture. There was a significant increase in cropping intensity: paddy and wheat yields are reported to have increased from 1.49 tons and 1.67 tons per hectare respectively in the pre-intervention period to 2.99 tons and 2.61 tons per hectare in the post-intervention period. OED's quantitative and qualitative data collected from Raebareli district confirm this increase. Household data from the treatment and matched (control) villages shows that, though both report increase in foodgrain production, the treatment group indicated significantly higher improvement compared to the matched "without project" group. The data also reported an increase in the area under irrigation in the treatment villages as compared to matched villages. Project impact in terms of increase in agricultural production appears positive. The qualitative data from focus group sessions confirms this finding.

20. These are impressive achievements, but there is little room for complacency. Though a substantial amount of land has been reclaimed, the improvement in the quality of soil has been marginal in several areas.<sup>11</sup> In most areas that have been reclaimed the pH is reported to have decreased by 1 to 1.5 units at the surface, while the subsoil remains highly alkaline. In these areas, the potential is high for reversion to sodic land, if proper crop and water management practices are not followed. This leaves a high-risk situation, since drainage and soil fertility issues have not been given adequate attention during the project and the institutional arrangements for both are not in place.

### ***Agriculture Extension Was Inadequate***

21. Extension weakness in emphasizing the important role that green manuring plays in maintaining the fertility of the reclaimed soil was a major project shortcoming that could lead to gradual reversion of reclaimed land in the coming years.<sup>12</sup> The actual

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11. "Most of the barren sodic soils have pH above 10 and very slow to slow hydraulic conductivity of surface and subsurface. Reclamation did improve the soil pH; on the whole reduced to 9.5. However, 60 percent of the surface soil still has pH in the range of 9.5 to 10.0." OED made this observation on the basis of a presentation by the RSAC Lucknow to the assessment mission in November 2003. Commenting on this footnote the Borrower clarifies that "the pH reported has been taken from another study where samples were collected after 1-3 years of reclamation. The objective of the study were to study the physical properties like hydraulic conductivity, bulk density and infiltration rate. The ASM (Annual Soil Monitoring) study which is based on 5-6 years of soil data show that 60 % plots (out of 216 monitored) show the reduction in pH by 1 to 1.5 units while 25 % did not show any improvement. The remaining 15% showed improvement initially but the quality started deteriorating in later years." Both the studies however illustrate the point that OED is making in the text, that the improvement in the quality of soil has been marginal in some areas.

12. "The project functionaries laid undue emphasis on the nitrogen-saving role of green manuring. They did not focus on soil-improvement role of Dhaincha. On the nitrogen saving ground the farmers are not ready to accept green manuring as normal farming practice." Monitoring and Evaluation Report Part III Agricultural and Socio-economic Impact Assessment 2001 IIML Lucknow. There is a difference of perspective between what is observed above by the external monitoring agency (IIML) and the Borrower who in its comments notes that the project emphasized alternative means of improving soil quality e.g. NADEP, vermin-composting etc. instead of green manuring which is comparatively costlier. On the basis of findings in the field OED agrees with the evidence provided by IIML.

cultivation of the green manure crop (*Dhaincha*) is expensive, as it requires at least two irrigations for its growth. In the first year, the project provided seeds and irrigation charges to farmers. However, in the second year only seeds were provided. Villagers understand the nitrogen-fixing role but not the soil-improvement role of green manuring. Reports show that several of them have not undertaken green manuring.<sup>13</sup> At Rs. 50 per hour for irrigation, and with substantial plowing costs, few farmers (the majority of whom own very small plots of land and, hence, are poor) are convinced of the financial returns from *Dhaincha* cultivation. This increases the risk of reversion combined with the drainage concerns.

### ***Environmental Monitoring Is Not Management-Oriented***

22. Monitoring of environmental impact is also a concern. A project environmental reconnaissance in 1991 raised the possibility of long-term negative effects on groundwater resources and quality. Though RSAC is monitoring groundwater quality, given the increasing number of tubewells and the percolation of water from the irrigated and cultivated soils, the depth and quality of the groundwater resource may change in the future. On the basis of conversations with government officials and a review of reports and files, the assessment mission was not convinced that the RSAC will be able to exercise the continuous extreme vigilance required over such a large area of reclaimed land. Though a large amount of data is being generated even during the follow-on project, supervision reports have voiced concern about its effective use. In its functioning, the institution appears to be more supply-driven than demand-driven. Further, even if RSAC was able to report changes in quality and quantity of groundwater, the project did not help put in place a plan of action to deal with potential problems, like decline in water quality and quantity. Drilling of shallow wells was to provide a constant source of irrigation so that assured water supply was available to keep the ground under crop cover year-round. However, little thought was given to alternatives were the water table to fall below a critical minimum level.<sup>14</sup>

### **Objective 2: To strengthen local institutions to manage such schemes (partially achieved)**

23. The project helped strengthen UPBSN, RSAC, and NGOs. Issues related to strengthening of these organizations are dealt with in the section on institutional

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13. "Even during the post reclamation first and second years when farmers were provided project help, green manuring coverage was only about 50 percent. After withdrawal of project support, it goes down dismally. Scientists treat green manuring as prerequisite for sustainability of reclamation. In this light, farmers will have to be adequately sensitized towards its necessity....There is need for change in the entire extension strategy towards green manuring" Monitoring and Evaluation, Part III, Agricultural and Socio-Economic Impact Assessment, IIML, 2001, Lucknow.

14. The Borrower in its comments notes that RSAC has not reported decline of water level below the critical level anywhere in the project so far. They further note that wherever deterioration in quality of water has been reported by RSAC UPBSN has responded immediately as for example in Kanpur district. On the basis of the findings in the field OED is not convinced that RSAC will be able to exercise the continuous vigilance required to report deterioration in quantity and quality over such a large area of reclaimed land. While UPBSN may have been able to respond in the case of Kanpur district, it does not imply that a long term plan has been put in place to deal with problems as and when they arise. Borrower comments do not mention the kind of corrective action taken and it is not clear what kind of measures can be taken to immediately correct for deterioration in water quality. Capacity to respond to emergencies will be particularly limited after the closure of the follow-on project.

development. This section describes the project experience with village-level local institutions.

***The Nature of Community Participation Was Managed by the Implementing Agency***

24. The project was designed to give substantial control over decisions and resources to the community by involving them in planning, implementation, and monitoring. It is unfortunate that the actual implementation of the participatory process, instead of putting the communities in a position of decision making and control and building in them the capacity to handle the technical aspects of sodicity in the post-project phase, created in them a sense of dependency. In this sense, UPBSN was the “benefactor” and the villagers the “beneficiaries.” The village-level institutions created under the project (SIC, WUGs) were also regarded by the beneficiaries as temporary bodies for project implementation and not permanent organizations that can promote empowerment and beneficiary control over resources and decision making.<sup>15</sup>

25. This is not to say that the intention of the implementing agency was misdirected. To them, the project objective was to help reclaim a certain amount of land with a certain amount of money in a definite number of years. According to this target approach, the implementing agency did very well, because the area of land reclaimed was 52 percent higher and the number of beneficiaries was nearly double the appraisal prediction. From the implementing agency perspective, the most important aspect of community participation was ensuring farmer commitment to the reclamation process and sharing of reclamation costs. Hence, for them, even if they “directed” and “controlled” the discussion in the village-level implementing bodies (SIC, WUGs), it was not a concern, as long as farmers participated and contributed and the reclamation was undertaken as per the technical standards. As a result, UPBSN officials exercised control over the process.<sup>16</sup> The ESSD report (Alsop et al. 2002, p. 18) notes, “In Uttar Pradesh project staff dominate group decision making.” Participants in the focus group sessions also reported

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15. The Borrower in its comments notes that the project had laid down suitable arrangements under its exit policy by networking the SICs into Farmer club/ school. Also according to them the project made an effort to give SIC a legal status by making it a sub-committee of the *Gram Panchayat*. However they acknowledge that this was not formalized. They further note that efforts made to develop WUGs as permanent institutions like men’s self help group also met with limited success. OED has already acknowledged the substantial effort made by UPBSN in formulating an exit strategy elsewhere in the report (para 40 and 45). The concern is that the exit strategy does not have adequate budgetary and policy support to be able to institutionalize the linkages between the various institutions and the knowledge and information needs of the average *kisan*.

16. The Borrower in its comments notes that this point and the observation that “the project was not community driven but UPBSN driven and community followed” should be seen in the context of project design. According to the Borrower ““Project design” is structured with well laid procedures & provisions right from selection of land, classification of land, entitlements based on land typology instead of farmers category etc. Although project at its later stage introduced the concept of micro planning i.e. formation of site specific implementation plan by the farmers themselves so as to incorporate ground realities in the planning process and ensuring farmers commitment, accountability and ownership towards the plan, but due to structured and time bound project design the project has limited scope to incorporate some of the priorities & demands raised by the community which do not commensurate with project design such as demand for Electricity, installation of Hand pumps, opening of Primary Schools etc. As it was expected in the project design, that the project will be implemented in a set framework & in a time bound manner; at each stage, project staff facilitated the farmers by informing them about the actions required at each stage. This act of facilitation by staff would have been misunderstood by the surveyors as “controlling & dominance” but the role is rather “facilitating and informing.” OED has no disagreement with this statement. It directly supports lesson 4 emerging from this assessment.

control of the process by implementing agency staff. The household survey data also show how the villagers considered UPBSN as the key implementing authority for the project, and do not give themselves an important decision-making role.

***The Emphasis Was on Short-Term Results, Not Long-Term Capacity Building***

26. The household survey data show that when the project was initiated, a large percentage of the villagers considered lack of agricultural inputs, drinking water, and roads as bigger problems for their village than sodicity.<sup>17</sup> However, when money was being provided to tackle the sodicity problem, the villagers were quick not to miss the opportunity. The farmers were willing to contribute and participate because they saw a potential economic gain and were shrewd enough to realize that UPBSN would not give them the benefits without their contribution. As observed in one focus group session, the villagers mainly saw participation in the development project as a requirement for them to meet a part of the project cost. As a result, they contributed labor, incurred the cost of transporting gypsum from the storage center to the beneficiary plot, and contributed Rs. 2 per bag for gypsum to the WUG. However, they continued looking to the UPBSN for guidance and support throughout the implementation phase. They were simply not aware that they were expected to take charge of activities. Neither did they see the village-level organizations created by the project as something permanent. Qualitative data reveal that the SIC was mostly regarded by the beneficiaries as a forum for getting information on project activities and formalizing arrangements.<sup>18</sup>

27. It can be argued that it would be unrealistic for villagers to take charge because of the technical nature of the process. On the other hand, had adequate time been budgeted to implement the participatory process, it would perhaps have been possible for the villagers to actually take charge of the whole reclamation exercise. Eventually, the kind of community participation that ultimately emerged was “paternalistic participation,” where the communities were dependent on outside support and had not accepted the project as their own. The farmers continued to think of the reclamation activity as an “outside” effort brought to them by UPBSN rather than something that they had to carry out on their own. It is understandable then that they would think that the drainage problem too would be “taken care” of by UPBSN and the Gram Pradhan. The fact that farmers continue to be known as “beneficiaries” also created an unequal relationship in the minds of other government officials. Hence, in reality, the project was not “community driven” but “UPBSN driven and community followed.” The relationship was that of the implementing agency as the stronger and superior partner and the villagers playing a role in compliance with government directions.

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17. Here it is important to note that, even though sodicity may not have been regarded as the most important problem by individual villagers, the government had identified it as a major problem and it was relevant for the Bank to support the intervention.

18. The Borrower in its comments on the statement clarifies that SIC has been a forum for decision making, for all the crucial project activities right from the beginning (see comments Annex F). OED has already recognized the important role played by the SIC in para 14 and footnote 7. The statement was only reporting the perspective of the beneficiaries as reported in the focus group sessions.

*The Participatory Approach Endorsed the Status Quo*

28. The implementation of the participatory aspect also gave little thought to the social and economic context of village society when attempting to establish community participation. Caste is an important social institution in the villages of rural India and determines one's position in society. In UP, the higher castes generally are also economically stronger and are likely to hold decision-making positions in village society.<sup>19</sup> Hence, though all beneficiaries were expected to have equal opportunity to express their views and have an equal say in all matters in the SIC and WUGs, the reality was different. Since the pressure from the Bank was on disbursement and meeting targets, UPBSN staff found it more efficient to deal predominantly with getting villagers involved in sharing the costs and had little time to ensure that equitable participation actually was taking place.

29. Qualitative data from the 19 treatment villages in Raebareli confirm that most of the WUG leaders were those who could afford to pay for the cost of the pump, that is, those who were economically better off.<sup>20</sup> The village *pradhan* was the chairman of the SIC. Focus group reports and household survey data confirm the important role played by the village *pradhan* in all village matters. It is highly unlikely that his role could be different in the context of a project-created institution. Hence, though in theory the decision making in the WUGs and SICs was meant to be completely participatory, in reality the WUGs and SICs were dominated by the elite. While this is inevitable to some degree, it could have been improved by greater understanding of the socio-political context of village society. The marginal and small farmers, by virtue of also belonging to the lower caste, were also likely to be less vocal. The ESSD report (Alsop et al. 2002, p. 16) notes, "wealthier people more often attend user group and local governance meetings." Data from the household survey carried out for the OED assessment indicate that the wealthier beneficiaries attend these meetings more frequently than the poorer beneficiaries. The marginal farmers most often do not even have the time to attend meetings as they are busy trying to make ends meet. The SIC was to act as the watchdog ensuring proper utilization of inputs and resources provided under the project. However, since official positions were held by the elite there was little chance for it to be an effective monitoring authority against appropriation by powerful village members. The project did take specific measures to ensure accountability and transparency; however, there is evidence from some focus groups where participants claim that the benefits were appropriated by the elite (Annex E). Though it is inevitable to some extent, it is disconcerting to think that the project may have actually contributed to strengthening the position of the better-off sections of village society because their social position was reinforced in a Bank project context. Household survey data shows that social position is significantly correlated with economic status.

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19. "Most economically marginal households are also the ones who belong to lower castes and sub-castes." Vijjalalakshmi Das August 1993 UP Sodic Lands Reclamation Project A Study on Group Savings and Credit Management.

20. The Borrower in its comments explains that the comment "most of WUG leaders were those who could afford to pay for the cost of pump" needs to be seen in the light of project provision for the functioning of the WUGs. According to the project design, the individual on whose land the boring is installed is responsible for arrangement of the pump set (see Annex F for detailed comments).

**Objective 3: To contribute to poverty alleviation of the families concerned (achieved);**

***The Project Contributed Significantly to Poverty Alleviation***

30. The project contributed to poverty alleviation by helping increase the returns to many small and marginal farmers. The project is reported to have benefited 155,892 farmers, of which 94 percent were small and marginal farmers. Landlessness is an important cause of poverty in rural areas and a large number of poor families were given rights to land for the first time. However, analysis above shows that the benefits to the poor could have been greater had the project given more attention to the process of participation.

31. A total of 2,166 women self-help groups were formed up to March 2001 and have helped a large number of poor families meet their immediate social and economic needs.

**Efficiency**

32. Project efficiency is rated **modest**, even though the re-estimated economic rate of return (ERR) was 28 percent, against the appraisal estimate of 23 percent. The ERR analysis both at the appraisal and completion stages was done over a 20-year project life. The higher ERR at completion relative to the appraisal stage was influenced by the expanded area of reclaimed land. The assessment was not able to undertake an independent economic analysis; however, completion report calculations appear to have been based on unrealistic assumptions. The calculations assumed that weaknesses related to maintenance of drains and provision of extension services will be overcome, that farmers will continue to develop technical and managerial skills, and that yield levels will remain static. The Bank's ICR did a sensitivity test to measure the impact if drainage was neglected and the institutional constraints with regard to addressing the soil fertility issues were not sorted out. It found that the ERR is very sensitive; a 12 percent reduction in output of both wheat and rice would reduce the return to zero. The ICR was written in September 2001. The assessment mission was undertaken in November 2003. There is now enough evidence, noted under the section on sustainability, to show that the fairly strong assumptions (weaknesses related to maintenance of drains and provision of extension services) noted above are unlikely to hold.

33. In assessing the benefits and costs it is worth noting that there were substantial benefits in terms of increased agricultural productivity. Reclamation of degraded land and bringing it under crop cover also helped remove some of the causes of respiratory diseases in the area (footnote 2). The impact of these changes, while difficult to assess, can be substantial. On the cost side, it is important to note that the reclamation technology that was used by the project was expensive. Other lower-cost but slower technologies without gypsum (such as using simple drainage, irrigation, and green manuring) have yielded promising results. However, it is not clear whether any of these cheaper technologies can be effectively applied to carry out large-scale land reclamation as is possible with gypsum. It is interesting to note that project files reveal that a cheaper technology was brought to the attention of the Bank (press mud and molasses) in 1993 but was not pursued. The land reclamation and improved production package used by the

project required that apart from chemical inputs, seed and other inputs were needed. In addition, the project also provided support for digging bore wells, link drains, and other physical works. The costs varied by kind of sodic land (Class B+, B, or C) and the subsidy element was especially high in the case of Class C land. The Borrower ICR notes that the cost of reclamation with gypsum was high largely because of its high transportation costs. The project envisaged adaptive research to further develop the reclamation technology, especially with a view to reducing reclamation cost.

**Table 2. Land Reclamation and Agriculture Costs (US\$/hectare)**

<i>Class of Sodic Land</i>	<i>Total Cost Class Wise</i>			<i>Project Contribution</i>			<i>Farmer's Contribution</i>		
	<i>B+</i>	<i>B</i>	<i>C</i>	<i>B+</i>	<i>B</i>	<i>C</i>	<i>B+</i>	<i>B</i>	<i>C</i>
Cost of Land Reclamation	557	685	749	266	433	510	291	252	239
Cost of Agriculture Cultivation	221	221	224	37	166	199	184	55	25
<b>Total</b>	<b>779</b>	<b>906</b>	<b>973</b>	<b>303</b>	<b>599</b>	<b>709</b>	<b>475</b>	<b>307</b>	<b>264</b>

*Source:* UPBSN office. The cost data is from the follow on project where the technology was the same.

*Notes:* Calculations were made at the exchange rate of Rs. 42 to a dollar.

## **Outcome**

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

## **Institutional Development Impact**

### *The Government Agency Was Strengthened*

35. Institutional development impact is rated as **substantial**. Project support allowed UPBSN to mature as an institution and its operational capacity in areas of land reclamation, participatory management, and technology dissemination has been strengthened. The organization was restructured, key functions were separated under full-time managers, and offices were established at the district level. Though UPBSN authorities claim that the project helped rebuild the faith of the common man in the government, the household data from the treatment and matched communities indicate that there is no significant difference between the responses of respondents from matched and treatment communities on whether they trusted local government officials and UPBSN staff. However, the response rate was low for UPBSN staff in the matched community.

36. It is difficult to assess project impact on the Irrigation Department, as there was no provision under the project to strengthen the department itself. Though there have been some efforts by the Government of UP to allocate resources for drainage, as indicated in para. 41, progress has been limited. Drainage does not seem to have begun receiving higher priority.

### *NGOs Played a Positive Role*

37. The project helped strengthen the capacity of NGOs to provide services for community mobilization, motivation, and awareness campaigns. NGOs were to act as catalysts to mobilize farmers, disseminate technology, and help village-level institutions develop links with government agencies. Several village-level institutions (WUG, SIC, self-help groups) were created and helped implement project activities. Though communities “participated” in project implementation, however, as seen in paragraphs 24-27, the actual implementation of the participatory process, instead of putting the communities in a position of control, created a sense of dependency in them. However, the reclamation activities and the efforts of the UPBSN have increased the awareness and skill level of the villagers, and increased their confidence in their own capacity. The results of the household surveys indicate that the skill levels improved significantly among project participants compared to non-participants.

38. RSAC was strengthened to enable it to carry out its function of selecting reclamation sites and the planning, monitoring, and evaluation of environmental perimeters, including impact on soils, crops, and groundwater. Though it is important to note that such capacity was slow to develop and may not be adequately utilized (para. 22).

### *The Project Had a Positive Gender Impact*

39. Village-level women’s self-help groups were successfully formed to promote thrift, micro-enterprises, and other income-generating activities. The household survey data show that about 23 percent of the respondents in the treatment villages now see self-help groups as a source of borrowing for small amounts of money. Regression analysis confirms that fewer respondents in “without project” villages feel that self-help groups can be a source of credit as compared to the treatment villages. The project also contributed to the overall development of village women through literacy campaigns, health awareness programs, and similar activities.

### **Sustainability**

40. On balance, sustainability—the resilience to risk of net benefits over time—is rated **unlikely** even though farmer commitment to continue farming the reclaimed lands is high. <sup>21</sup>A follow-on operation is continuing to provide support to UPBSN and NGOs; and other projects in the agriculture sector are ongoing. However, there are few resources allocated under these projects for Sodic I areas. <sup>22</sup>The assessment is concerned that

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21. The Borrower in its comments notes that the issue of sustainability is being seriously looked at by UPBSN management and that they are in the process of giving the local level institutions formed under the project a formal status and also establishing the formal linkages with the Departments of Agriculture and Irrigation, KVKs, Agriculture Universities, Rural development etc. at the district level. The Borrower further note that the policy level interventions are being pursued with the Government of Uttar Pradesh. OED notes that if these issues are resolved they will have implications for the sustainability of the follow on operation. Coming as they do so late in the process, their impact on the project areas under the first operation is likely to be limited.

22. The Borrower in its comments disagrees. It notes that the chances of reversal of sodicity is very low due to the continuous addition of organic matter on the topsoil (see comments Annex F for details). Based on evidence from the field and the problems with drainage, OED is not convinced.

inadequate attention to the operation and management of drainage is a critical shortcoming. The exit strategy formulated by the implementing agency, while an expression of its commitment, does not address adequately the critical institutional constraints related to drainage, especially the problem with the maintenance of the main drains. Its major focus is the institutional aspects of soil fertility management on which it has had limited success so far.<sup>23 24</sup>

### ***Inadequate Attention to Drainage***

41. The most serious threat to sustainability is inadequate attention to drainage issues. More than 45 percent of the household survey respondents in the treatment villages noted that O&M of main drains was bad. More than 34 percent of respondents in the treatment villages also noted deterioration in maintenance of main drains. Focus group participants likewise noted that the maintenance of main drains was poor. The main drains are not adequately maintained by the Irrigation Department. A 25/75 percent agreement for availability of funds for drain maintenance between the Irrigation Department and the Rural Development Department for these activities was created. However, the Irrigation Department continues to have difficulty getting funds for drain maintenance.<sup>25</sup> This concern has been voiced by supervision reports of the follow-on project also. Currently, under the follow-on project, even with a unit dedicated to drainage under the Irrigation Department, availability of funds for drain maintenance remains a challenge. Things are likely to be worse on closure of the second project. UPBSN staff had informed the assessment mission that because of the increase in production, the political pressure from the farmers would be sufficient to ensure that the government provides adequate resources to the Irrigation Department to maintain the main drains. However, the household survey indicates that the majority of the farmers in the treatment communities (96 percent) are unaware that the Irrigation Department has the major responsibility for maintaining the main drains. Further, the findings from the household survey indicate that most villagers are not even aware of the critical importance of drainage for containing sodicity. When asked what main factors

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23. Initially it was thought that after project completion, post-reclamation management would be taken care of by the Department of Agriculture (DOA) through their field functionaries, that is, *Kisan Sahayaks* (farmer supporters). However, a restructuring in the government led to the merging of the *Kisan Sahayaks* with the Panchayati Raj department, making it impossible for DOA to fulfill the responsibility. UPBSN then framed an exit strategy to deal with the vacuum created. During the closing years of the intervention, the agency contracted with NGOs for the services of experienced motivators (a skeleton staff of one in each sub-unit of the 10 districts) to continue working for a year and a half after project closure to address issues relevant to project sustainability. Despite the agency's effort, the limited progress on post reclamation management threatens sustainability.

24. The Borrower in its comments notes that the exit policy was formulated late during the project cycle of the Sodic I intervention and there was little time available with UPBSN for its institutionalization. They further note that the issues of drainage and technology support for the farmers are being well addressed in Phase-2. On the basis of evidence from the field OED is not convinced that UPBSN's exit strategy has adequate budgetary and policy support. As regards the issue of drainage, supervision reports for the second project continue to report unsatisfactory progress on that front. Conversations with irrigation department officials during the mission indicated the institutional constraints in reaching a solution to the problem.

25. The Borrower in its comments notes that "We have taken proper care to address the challenge of availability of funds for drain maintenance and due to these efforts the funds for some of the districts have recently been released and the maintenance has been done. For the other districts the matter has strongly being pursued with the state government." Based on evidence in the field, supervision reports of the follow on project, OED is not convinced that the drainage problem has been resolved and notes the need for the government to take urgent steps to deal with the institutional constraints.

would help prevent the land from going back to being sodic, only about 6 percent of the farmers in the treatment villages considered regular and proper drainage to be the first or second most important factors. Most farmers consider application of gypsum, regular water supply, and application of fertilizers to be the important factors to prevent return of sodicity. These findings make significant political pressure seem unlikely.

42. On project closure, the qualitative data also show that there is limited incentive for the WUGs to continue working as a group and take responsibility for field and link drain maintenance. Household survey respondents reported that maintenance of link and field drains was between fair and bad. Further, qualitative data indicate that villagers do not consider it their responsibility to maintain link drains. Focus group participants in some villages noted that they had dug the link drains because they were paid to do so.<sup>26</sup>

43. Maintenance of the field drains is a particular concern. The farmers had to dig them on their own land, reducing the cultivable area of an already small plot. During the reclamation process these drains were essential to carry out the leached water, which contained substantial amounts of salt. In subsequent years, the drains were to help clear excess water from fields and prevent waterlogging. However, qualitative data indicate that many of the farmers have begun plowing the land that had been used for the field drains. Focus groups reported that in several areas excess water simply flows from one field to another. As a result, some land is constantly waterlogged.

44. The limited capacity of the small and marginal farmers to invest in the land is also a concern. Most of the benefited farmers are still marginal and are unable to pay for irrigation and other essential inputs needed to keep the land under crop cover.<sup>27 28</sup>

### ***Limited Attention to Soil Fertility Issues***

45. Soil fertility issues were not given adequate attention during the implementation of the project. Along with lack of adequate water management, this factor has serious implications for reversion of reclaimed land. A host of departments and institutions are currently active at the village level—the *krishi vigan kendras* (KVKs), Regional Institute of Rural Development, polytechnics, and Department of Agriculture agents—and together have the potential to provide adequate guidance to the farmer on fertility issues, but there is little coordination of their activities. Field visits to project sites and conversations with local government officials show that UPBSN's exit strategy, while in the right direction, may not

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26. The Borrower in its comments notes that "On the issue of limited incentive for the WUGs to continue working for the maintenance of link drains, it is worth mentioning here that the SIC has the provision of maintaining the link drain maintenance accounts where all the farmers contribute their share for the corpus. This fund is used as incentive against the labor for the link drain maintenance." However evidence from household surveys and focus group sessions indicates that whatever the reason, the strategy does not seem to be working.

27. Most borewells run on diesel fuel, which is expensive when compared to electric tubewells. The Borrower's ICR, Volume III A notes: Rate of canal irrigation is Rs. 320/- ha for unlimited number of irrigations in paddy or wheat crop and the rate is half if a lift device is used. Whereas pumpset charges after rate of diesel has escalated from Rs 30/- to Rs. 45-50/- per hour. A single irrigation of one ha land of wheat crop takes 16 hours by pumpset with a 3-inch delivery pipe.

28. The Borrower in its comments notes that alternative credit resources have been formed through self help groups to develop the capacity of small and marginal farmers to invest in the reclamation of land. However elsewhere in their comments the Borrower also acknowledges that men's self help groups have not been successful.

have adequate budgetary and policy support to be able to institutionalize the linkages between the various institutions and the knowledge and information needs of the average *kisan*. Government officials are aware of the negative impact of the lack of coordination. While the second phase project is under implementation there are committees at the highest level to review progress on reclamation (see para. 9), which can help sort out many interdepartmental coordination issues. However, in practice achieving coordination has not been easy and will be much more difficult on project closure. The negative implications of lack of interdepartmental coordination are illustrated in Box 3. It is not clear whether this was an isolated occurrence or is a more generalized problem, but the implications for sustainability are disturbing.

### ***Beneficiaries See Little Need for Continued Involvement in Project Created Institutions***

46. Beneficiary organizations created at the village level focused on project implementation and not longer-term operation and management of sodic lands. There are few incentives to motivate the village-level organizations to continue on project closure. Members of user groups formed under the Sodic I project today do not demonstrate ownership of the groups, nor are these groups integrated with other social, political, and economic institutions in the community. Most villagers saw them as necessities for project implementation. The study done by ESSD in March–June 2000 (Alsop et al. 2002) clearly noted in the context of the project under assessment that group members viewed the “community-level project-induced organizations as a means of accessing individual, short-term benefits rather than as mechanisms of cooperation for long term shared benefits.” (op. cit.:14) The qualitative and quantitative data collected as a part of the fieldwork for the current assessment confirms this. The household survey data indicates the limited awareness today of WUGs among villagers. More than 62 percent of the respondents in the treatment communities said there was no user group in their village, while an average of 6 to 8 WUGs were formed in every treatment village. Further, availability of alternate sources of water supply (Box 3) or private wells have reduced the need to cooperate. Focus group participants indicated that where water is shared from a single borewell, the owner sets the charges for the supply of water to the other group members, indicating that the concept of consultation that was the basis for formation of the WUG has not become popular. It is worth noting that even during project implementation it was found that after completion of leaching and first year cropping, WUGs lost focus as there was no task for the group as a whole to perform. Although attempts were made to start men’s self help groups to provide a perennial binding force for the group members. However, the men’s self-help groups have not been successful.

### **Bank Performance**

47. Bank performance is rated *satisfactory*, though marginally so since lack of attention to preventive measures was an important quality at entry shortcoming. Another shortcoming was lack of attention at the design stage to several policy issues the Bank should have handled at the state or central government level. One of these issues is the

frequent transfer of government officials, particularly the managing director of UPBSN (para. 49, below).<sup>29</sup>

48. Other than these, the project was well supervised largely from the World Bank Country Office in New Delhi with support from Washington. Despite the technical nature of the project, social and participatory issues were given significant importance.

### **Borrower Performance**

49. Borrower performance is rated **satisfactory**, though frequent change in project management was an issue. In addition, lack of adequate coordination with other government departments (Box 3) was a concern. However, the performance of the implementing agency, UPBSN, was strong. The government gave the implementing agency substantial flexibility and authority to undertake its activities. It took steps to adapt the project design as and when required. This was critical to achievement of project physical outputs. The implementing agency also showed enormous commitment, as is evident from its attempt to formulate an exit strategy when a vacuum was created as a result of government restructuring. UPBSN staff also played a critical role in helping create commitment to land reclamation among thousands of poor farmers by worked with them to negotiate the complex process of ensuring clear land titles. NGOs have been effectively used to motivate beneficiaries to organize themselves to design, implement, and monitor the program.

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29. "...the bureaucracy is becoming increasingly subject to political interference, a phenomenon most manifest in the shrinking average tenure attached to many government positions, especially at the state level." India Poverty in India The Challenge of Uttar Pradesh May 08, 2002.

## Lessons

50. Four project-specific lessons are identified here.

**Lesson 1: A holistic approach to sodicity requires not only remedial measures but also adequate attention to critical systemic issues. Failure to do so can undermine project sustainability.**

The focus of the UP Sodic Lands Reclamation Project was on developing participatory models for large-scale land reclamation, and it did not give adequate attention to critical systemic issues such as economic incentives for use and management of water, resources for operation and maintenance of drainage, tackling of which call for policy reform measures. Adequate attention to these issues is critical to ensuring that need for large resources for remedial measures do not arise in the future. This was also a serious shortcoming because the sustainability of the reclaimed land is dependent on effective handling of these systemic constraints.

**Lesson 2: It is important to plan and execute an evaluation of the pilot experience before a larger follow-on intervention is designed and approved. While this may lead to delays in the effectiveness of the larger project, it is important to allow lessons of experience from the pilot to inform the design of larger interventions.**

In the case of the Sodic Lands Reclamation Project, the pilot closed in March 2001 and the follow-on was approved in December 1998 and became effective in March 1999. There was no time for the project team to step back and look at the experience of the pilot and learn from it effectively.

**Lesson 3: In innovative and complex operations like the Sodic Lands Reclamation project, where the long-run environment impact is not easy to forecast, its monitoring and evaluation should be given sufficiently high priority in project implementation. This requires not only identification of an appropriate system as was done in this intervention, but also a plan to ensure that observations are evaluated and feedback is effectively utilized.**

Though RSAC was strengthened, and a large amount of data is being generated, it is not being utilized effectively. Even if RSAC was able to report changes in quality and quantity of groundwater, the project did not put in place a plan of action to deal with problems when they occur.

**Lesson 4: It takes time to build a constituency for community participation, and project design must plan for it. The Bank's time bound approach to project implementation made it difficult for the relevant implementing agency to do justice to the critical process issues. Further, the socio-economic community context needs adequate attention as participatory processes can bring about complex and irreversible changes in the social, economic and political fabric of society. Adequate attention needs to be given to incentives**

**and returns to farmers as individuals and as a group, both during implementation and in the post-project period.**

Even though the success of the Sodic Lands Reclamation Project depended on adequate community participation, sufficient time and resources were not devoted to these issues in the project preparation and implementation phase. Neither was M&E of process issues given the attention it deserved. As a result, community participation as actually implemented differed from what was envisaged by the project design. There are indications that the approach to community participation as implemented in UP has created a sense of dependency in the beneficiary communities. Further, because the social conditions and the power relations in the village society were not given adequate attention, the gains to the poor were less than the project could have promoted. The project benefited them economically, but gains to the richer sections of village society in terms of reinforcing their superior social position seem to have been substantial. Adequate attention to the heterogeneous nature of village society and village power relations while promoting community participation would have allowed the project to deal adequately with this issue.

Only when farmers were assured of economic returns were they willing to devote their time and resources to project activities. It is to the credit of the project team that they recognized this early on and emphasized securing land titles for farmers before the reclamation efforts started. This created strong incentives for participation by individuals. However, the incentives for continued participation are not so clear in the case of village-level institutions created for project implementation. Members of WUGs and SICs had adequate incentives to function as a group while the project was ongoing. On project closure it is not clear that the benefits of cooperation are larger than the costs incurred in terms of time spent in getting together in regular meetings. Today, even though WUGs could be important to ensuring adequate maintenance of link and field drains, a large number of them have become dormant. The SICs similarly do not have a well-defined role to play on project closure. In the case of the women's self help groups, on the other hand, the economic returns to the group members were substantial and the benefits of cooperation far outweigh the costs of getting together.

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## Annex A. Participatory Aspects of Project Design

The Bank has supported several projects that feature community participation in India—either community-based development (CBD) or community-driven development (CDD).<sup>30</sup> Community participation was an integral part of project design and implementation in the Sodic Lands Reclamation Project. Though not a typical CDD project as understood today, in the sense that it did not give communities choice in the selection of investments that meet priority needs, nevertheless, the Sodic Lands Reclamation project can be regarded as a CDD-type operation since there was considerable emphasis in project design on giving control over decisions and resources to communities in the selected activity. Land reclamation was to be carried out by the farmers and beneficiary participation in project activities was expected to promote empowerment of the communities.<sup>31</sup> The project design included eight measures to promote community participation.

**First**, the project emphasized increasing the access of the beneficiary communities to information. With the first visit itself, implementing agency staff sought to increase the awareness of the villagers about the problems of sodicity, the possibility of reclaiming sodic lands, the project and its provisions, and the role that beneficiary farmers were expected to play in project activities. In this respect the project was following the approach that has been taken by several Bank-supported agricultural operations. As in several other operations, it also used NGOs as facilitators. The strategy was to improve the understanding of rural households and communities on sodic issues and convince them to come together and work for their own benefit. Cultural troupes were organized in villages and posters, pamphlets, and other printed materials in the local language were freely distributed to facilitate better understanding of proposed activities. Radio programs helped broadcast information on the reclamation technology to farmers. Exposure visits were organized for farmers. Farmer-to-farmer extension was to be promoted through a *Mitra Kisan* (MK) and a *Mahila Mitra Kisan* (MMK), who were identified from among the villagers and trained to help create awareness and motivate communities.

**Second**, the project created village-level institutions like the WUGs and SICs provided the forum for people to share information, discuss and make decisions on critical reclamation issues. Participation in WUGs and SICs was expected not only to provide the missing element to create stakeholder commitment and ownership of project activities but also to strengthen collective decision making. Participation in these organizations was also expected to increase the ability of the village beneficiaries to demand services from local-level government institutions.

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30. There is no clear distinction between CBD and CDD approaches either in the literature or in the Bank. However, there is increasing consensus within the Bank that projects with higher levels of participation—those that give control over resources and decisions to communities (that is, those that collaborate and empower or are substantially “driven” by the community)—are now understood to be CDD as distinct from those that are considered to be CBD, where less control over decisions and resources are given (which inform and consult) but which are nevertheless participatory.

31. The World Development Report 2000/2001 defines empowerment as the strengthening of the capacity of poor people to affect decisions that have a bearing on their lives and removing barriers that prevent them from engaging effectively in political, social, economic activities.

**Third**, the project design included a unique strategy that has not been commonly adopted by other CDD operations to build farmer commitment and support. It clearly separated those activities that can be pursued through a private approach from those that are public in nature. Where a public good could be converted into a private good, it was. For example, experience had shown the difficulty in ensuring sustainability of interventions in which individual returns could not be ensured.<sup>32</sup> Hence, though a significant amount of sodic land was communal, the project took steps to privatize it before initiating reclamation activities. *Gram sabha* land was distributed to the landless. Land was distributed through a land management committee of the village after approval by the sub-divisional magistrate. Efforts were also made under the project to give possession of land that had been allotted in earlier years but had not been distributed. This was a path-breaking step, as numerous Bank interventions have failed in the past because of insufficient attention to land tenure issues.

**Fourth**, for those activities that are public in nature, the project stressed a group approach. WUGs were formed to not only share water but to also work as a reclamation team developing and maintaining a network of field and link drains and irrigation channels for the 4 hectares in the command of the WUG. A shortcoming here was limited attention to the issues important for sustainability of the user group in the post-project phase.

**Fifth**, the project strategy showed awareness of the importance of guaranteed economic returns to building sustained farmer commitment. Unfortunately, the importance of this link was not recognized for several other project activities that beneficiaries were expected to continue without any economic or social returns. Where land titling preceded reclamation activities, economic returns were guaranteed. However, the MKs and the MMKs were expected to function without economic remuneration. During project implementation, it can be argued, the social status that association with a Bank project can provide to an individual villager and the training opportunities were a sufficient incentive for the villager to play the role of a local extension worker. However, it was unrealistic to expect the MK/MMK to continue to function as local-level extension workers without any remuneration after the withdrawal of the project.

**Sixth**, building the capacity in the farmers to participate effectively in reclamation activities was given considerable importance in the project design. Field days were arranged to build farmers' confidence in reclamation programs and provide intensive technical support.

**Seventh**, considerable emphasis was put on ensuring accountability and transparency of activities undertaken. This was expected to be achieved by providing for the delivery of input and services through a group approach. All payments for activities was to be through the WUG bank account and its verification done in SIC meetings. Each beneficiary was to receive written communication about the selection of his plot and the level of support that he would receive.

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32. This was also a lesson that had been learned from past Bank projects in India, for example the Social Forestry projects, where community plantation had failed primarily because the element of individual profit was missing.

**Finally**, the flexibility in project design was to allow for increase in farmer participation in project activities where possible.

Despite some weaknesses, the project design had several features to ensure that communities could actually get empowered.

## Annex B. Basic Data Sheet

### INDIA UTTAR PRADESH SODIC LANDS RECLAMATION PROJECT (CREDIT 2510-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 cost	80.2	103.7	29%
Credit Amount	54.70	54.67	99.95 %

#### Project Dates

	<i>Original</i>	<i>Actual</i>
Departure of Appraisal Mission		12/29/1992
Board approval		06/10/1993
Effectiveness	09/22/1993	08/04/1993
Closing date	03/31/2001	03/31/2001

#### Staff Inputs (staff weeks)

	<i>Actual/Latest Estimate</i>	
	<i>No Staff weeks</i>	<i>US\$US\$('000)</i>
Identification/Preparation	30	105
Appraisal/Negotiation	70	245
Supervision	98	340
ICR	18	80
Total	216	770

**Mission Data**

	Date (month/year)	No. of persons	Specializations represented	Performance Rating	
				Implementation Progress	Development Objective
Identification/ Preparation	11/89-8/91				
Appraisal/Negotiation	9/91-6/92	5	Agronomist (1); Irrigation/Drainage Engineer (2); Economist (1); Sociologist (1)		
Appraisal/Negotiation	01-05/93	5	Agronomist (2); Irrigation/Drainage Engineer (1); Economist (1); Sociologist (1)		
Supervision 1	09/93	4	Agronomist (2); Procurement Specialist (1); Financial Analyst (1)	S	S
Supervision 2	12/93	1	Agronomist	S	S
Supervision 3	01/94	4	Agronomist (1); Procurement Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 4	08/94	5	Agronomist (1); Sociologist (1); Procurement Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 5	04/95	3	Agronomist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 6	12/95	3	Agronomist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 7	06/96	5	Agronomist (1); Sociologist (1); Procurement Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 8	06/96	4	Agronomist (1); Procurement Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 9	04/97	6	Agronomist (2); Procurement Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1); Environmental Specialist (1)	S	S
Supervision 10	10/97	4	Agronomist (1); Water Res. Specialist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 11	04/98	3	Agronomist (1); Irrigation/Drainage Engineer (1); Financial Analyst (1)	S	S
Supervision 12	09/98	4	Agronomist (1); Irrigation/Drainage Engineer (2); Sociologist (1)	S	S
Supervision 13	05/99	3	Agronomist (1); Irrigation/Drainage Engineer (1); Sociologist (1)	S	S
Supervision 14	11/99	7	Agronomist (1); Irrigation/Drainage Engineer (1); Sociologist (1); Procurement Specialist (1); Financial Analyst (1); Environmental Specialist (1); Economist (1)	S	S
Supervision 15	05/00	5	Agronomist (1); Irrigation/Drainage Engineer (1); Sociologist (1); Procurement Specialist (1); Environmental Specialist (1)	S	S
Supervision 16	11/00	5	Agronomist (1); Irrigation/Drainage Engineer (1); Sociologist (1); Environmental Specialist (1); Economist (1)	S	S
ICR	05/01	5	Agronomist (1); Irrigation/Drainage Engineer (1); Sociologist (1); Financial Analyst (1); Economist (1)	S	S

**Other Project Data**

Borrower/Executing Agency:

***FOLLOW-ON OPERATIONS***

<b><i>Operation</i></b>	<b><i>Credit no.</i></b>	<b><i>Amount (US\$ million)</i></b>	<b><i>Board date</i></b>
Uttar Pradesh Sodic Lands Reclamation Project II	3152	194	12/15/ 1998

## Annex C. Details on Fieldwork

Fieldwork was carried out in 30 villages in Amawan, Maharajganj and Harchandpur blocks of Raebareli district in December 2003 by the Center for Development Economics, Delhi School of Economics. The village names and their distribution by block are noted in Table B1.

Raebareli district was selected for the fieldwork for several reasons. First, it is one of the earliest project districts (para 11). Second, the World Bank's Environmentally and Socially Sustainable Development (ESSD) Network had carried out a study (Alsop et al 2002) of the performance of community level user groups in the management of a shared natural resource in three India states in March-June 2000. One of the states was Uttar Pradesh where fieldwork was carried out in Raibareli district. Although it was not possible to draw comparisons between the earlier data set and OED's data because the questions in OED's study were framed to be relevant for the CDD evaluation, nevertheless, access to both made it possible for this assessment to articulate a clear and consistent story.

**Table B1. Villages Where Fieldwork Was Carried Out**

		Amawa	Maharajganj	Harchandpur
1	treatment	Baghai Ahalwar		
2	treatment	Bakhara		
3	treatment	Balla Bawan		
4	treatment	Bhadur Nagar		
5	treatment			Hidain
6	treatment		Janai	
7	treatment	Jarella		
8	treatment		Kair	
9	treatment	Khaira		
10	treatment	Kharana		
11	treatment	Mohabbat Nagar		
12	treatment	Onei Jungle		
13	treatment	Oye		
14	treatment		Pali	
15	treatment			Pedepur
16	treatment		Phokarni	
17	treatment			Pyarepur
18	treatment			Seri
19	treatment	Sharipur		
20	matched	Budhanpur		
21	matched	Chak Dadar		
22	matched			Dighora Som Mau
23	matched	Dusauti		
24	matched	Jamalpur Karaundi		
25	matched	Muzaffarpur		
26	matched		Othi	
27	matched	Rukunpur		
28	matched			Seonthi
29	matched	Thulwasa		
30	matched		Took	

## SOURCES OF DATA

The community level fieldwork involved household surveys (40 households in 30 communities for a total of 1,200 households), key informant interviews (2 per community for a total of 60 interviews) and community-level focus group sessions (2 per community for a total of 60 focus groups).

Data was gathered in three ways during the field component of this assessment. The first data source was a structured household questionnaire. The majority of the questions in the questionnaire were multiple choice. There were some open-ended questions that sought to bring out perceptions and explanations relating to different issues. The second data source was semi-structured focus group interviews. The questions and issues were broadly decided before the interview, but the interview itself was free-flowing. The third data source was key-informant interviews of local leaders and committee members.

**Household surveys:** Household surveys were conducted in 30 villages. Nineteen of these villages had received World Bank support through the Sodic Lands Reclamation Project. The treatment villages were matched with 11 neighboring villages that exhibited similar geographic, socioeconomic, and cultural characteristics and had sodicity as a problem. Forty households were randomly selected from each of the 30 communities. In each community, approximately 20 females and 20 males were interviewed.

**Focus groups:** Focus groups helped access the change in the nature of social interactions and collective decision-making before and after the Bank intervention. One all-female and one all-male focus group of 10-15 self-selected participants was conducted in each village.

**Key informant interviews:** Two types of key informant interviews were undertaken per village. First, an interview of a village leader was conducted in each of the 30 villages. This interview consisted of questions about community facilities, ethnic mix, and other matters of fact. Second, an interview of a village committee member was conducted with questions similar to the ones in the focus group survey, where issues were pre-specified but perception and explanations on different issues were sought.

## SELECTION AND SAMPLING PROCEDURES

**Treatment village selection:** The choice of treatment villages was based on availability of some baseline data. A previous Bank study, (Alsop et al 2002), had covered 15 of the 19 villages finally selected for survey. The other 4 were selected with the help of UPBSN staff from the 1994-95 phase of the project since the former study had not covered any villages from this phase.

**Matched community selection:** A comparison group methodology was adopted to select matched communities. All of these villages have the sodicity problem as well. In some cases the government has intervened to take care of the problem and in others no effort has been made to resolve the problem.

**Household selection:** The last step involved the selection of 40 households in each village. In villages where households were numbered, the total number of households in

the “community” was divided by number of interviews to be conducted (40) to get an interval  $V$ . The households were then arranged in a concentric manner on the drawing board and a random starting household was selected. Every  $V$ th household was selected until the required number of interviews was complete. In rural communities where households were not numbered, in dispersed settings and arrangement of houses, the strategy was modified slightly. A central household was selected based on the input of the local leaders. Subsequent households were selected by a selection interval, progressing in a widening concentric fashion until the desired number of interviews was achieved. The interval is based on a rough estimate of number of households in the village provided by local leaders.

**Selection of focus groups:** Participants of the focus group interviews in the village were self-selected. However, the nature and composition of focus groups was based on inputs from local leaders and staff of UPBSN.

**Selection of key informants:** The local contractor selected “local key informants” based on availability of the same on the day of the field visit.

#### **DATA COLLECTION**

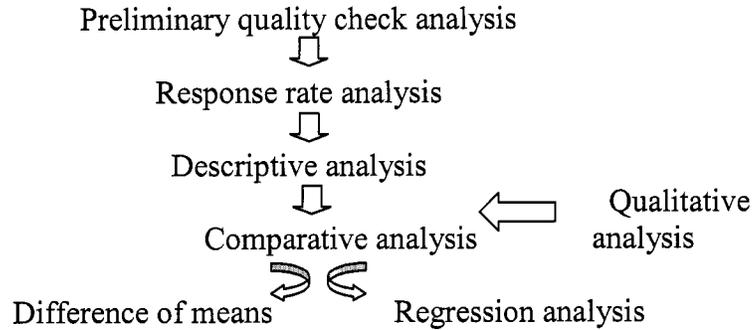
In each community, roughly 20 women and 20 men were interviewed, each from a different household. The survey was a structured interview with common set of multiple-choice questions. The survey had five sections. Section one gathered information on the informant – age, sex, education, gender, occupation, marital status, etc. Section two gathered information on the informant’s economic status – number and age of various producer and consumer goods and assets. Section three gathered information on individual awareness of village problems and participation in village-level project institutions. Section four gathered information relevant to assessing sustainability of project activities. Section five focused on capacity building, social capital, and empowerment.

The focus group interviews within the village covered the following: major problems now and before project implementation; addressing priority needs; process of project selection, implementation, and operation; access to information; community leadership, accountability, and responsiveness; and community empowerment.

The local key informant interview aimed at eliciting information about the various facilities in the community, number of donors, local committees and groups, and on community trust, cohesion, and solidarity.

#### **FRAMEWORK AND METHODOLOGY**

Different stakeholders can have different (even opposing) perspectives on the various aspects and impacts of a project. Hence, it is important to collect information from different stakeholders to get a complete picture of alternative perspectives. The quantitative and qualitative data collected for this evaluation are two different ways of revealing the processes and dynamics that influence alternative perspectives relating to the CDD approach. The qualitative data were used to confirm the quantitative testing and illuminate reasons why there may be differences or similarities between different stakeholders. The analysis proceeded in five steps and is depicted in the diagram below:



### **Preliminary Quality Check Analysis**

A preliminary step in the analysis was a quality check on the data gathered. Basic demographic and economic information collected on all participants gave a profile of the respondents and showed the potential biases that may arise. The data gathered was assessed for biases that may have resulted during the fieldwork or transcription processes, as well as for areas in which the information can be deepened by referring back to the original material.

A program in SPSS or STATA was created to check for consistency within each household questionnaire. For example, a respondents that answers “No” to a question like “Do you have a SIC?” cannot respond “Yes” to a subsequent question “How was the SIC formed?” Cross-checks with original material indicated whether the respondent was trying to give inconsistent responses or whether the flaw occurred due to incorrect coding, or incorrect reporting on the result. A questionnaire was discarded if many errors of the first type were found. All other questionnaires were retained and the response to a particular question may have been dropped or corrected based on original material.

### **Response Rate Analysis**

The next step in the analysis was an overall response analysis for each question. This helped determine the number of responses for each option within each question. The number of “not applicable” and “no comment” responses were tabulated. Questions with very high “no comment” or blanks (low response rates) were dropped from analysis since they could not be used to generalize for the village. The responses were sorted by gender for some questions.

### **Descriptive Analysis**

The descriptive analysis of the quantitative data refers to calculating and tabulating: (i) mean and proportion for each of the questions; and (ii) correlation between questions within each sub-theme.

The mean and proportion for each of the questions were tabulated by community based on the treatment-matched and on gender. These cross-tabulations revealed any systematic differences that exist in the responses to the various questions. For example, was the proportion of women attending the self-help group meeting more than the proportion of men attending the meeting?

The questions from the household questionnaire that are proxies for each of the sub-theme were tabulated. A correlation matrix was created for each sub-theme. Only one of each set of two questions that had high correlation coefficient was retained for further analysis. This resulted in a more specific and reduced set of relevant questions for each of the sub-themes.

### **Comparative Analysis**

The analysis aimed at measuring the impact of a World Bank-funded project using the CDD approach by comparing the responses of the beneficiaries from these communities to the matched community with similar problems. The differences in responses of beneficiaries of CDD communities and their counterparts in non-CDD communities indicated whether differences existed in level of participation, awareness, social capital, and empowerment.

### **Difference of Means (Proportion) Analysis**

Data from the questionnaires enabled performing both “before and after” and “with and without” comparisons. Difference-in-difference and difference-in-means/proportions approaches were used to analyze impacts due to the adoption of CDD approach.

The difference-in-difference approach exploits both “with and without” and “before and after” information simultaneously. The difference in “before and after” situations was calculated for each relevant question for each project and the project in the respective matched pair community. Then, the difference in “with and without” the World Bank-funded CDD project was calculated for each “already differenced” question. The advantage of this technique is that it largely eliminates the impact of all possible factors other than the one under consideration.

The difference-in-means or difference-in-proportions approach (Students’ t-test) draws inferences on the difference-in-means/proportions of two populations with similar variance. For example, the technique will be used to answer the question, “Is the proportion of people attending the meetings more in CDD communities as compared to its matched community?” In making this comparison, the study assumed that the data from the CDD community and its matched pair community had equal variance before the intervention. The null hypothesis was that no difference exists between the means/proportions of responses. Hence,  $H_0: m_1 - m_2 = 0$  where  $m_1$  refers to the population mean/proportion in the World Bank-funded CDD community and  $m_2$  refer to population mean/proportion in the matched pair community. The alternative hypothesis was that the mean/proportion of the former community is greater than the mean/proportion of the latter community,  $H_A: m_1 - m_2 > 0$ . If the calculated t-statistics lies in the rejection region, then we rejected the null hypothesis. The advantage of this technique is that it helps to make comparisons between two matched populations at any point in time.

The counterfactual test was conducted to determine how the CDD community has improved as a result of the intervention. For example, the test of differences-in-means of the responses to question—change in the circle of friends and acquaintances since the

start of the project—would capture the extent of expansion in the relationships within community members in the CDD community compared to its matched pair. Some assumptions were analyzed using counterfactual analysis, for some other assumptions it was irrelevant. For example, for the question “Have you heard about the Sodic Lands Reclamation project?” there is no appropriate counterfactual, but the comparison with the matched community was still useful for determining the extent to which the matched community had heard about the CDD project compared with the matched community.

### **Regression Analysis**

Regression analysis was performed to identify conditions influencing performance of each dependent variable. The dependent variables for the regressions are the index created for each of the sub-themes and themes were (i) participation, (ii) level of satisfaction, (iii) sustainability, (iv) local organizing power, (v) accountability, (vi) awareness, (vii) social capital, (viii) access to information, and (ix) institutional development impact.

The group of independent variables included dummy variables to isolate the effects of project, community, household, respondent type, and social and economic status. The project dummy variable helped to distinguish the impact of the intervention between the CDD community and the matched pair community. For example, a project dummy took a value 1 if it was project-funded using CDD approach and value 0 if not. The community dummies for Amawa and Maharajganj were introduced to capture block impact. To capture village level impact an index of access to basic facilities (school, health center, village market and rural bank) was created for each village.

Probit/ordered probit have been performed for the regression analysis to identify conditions influencing performance of the dependent variable. This was selected since most of the dependent variables are either binary variables or variables with ranking. Certain questions were not administered to respondents who had answered “No” to a preceding questions. For example, the respondent’s perception of the role of WUG was not asked if the respondent indicated that there was no WUG in the village. A probit/ordered probit on role of WUG would yield biased results. To correct for this bias, the Heckman two-step procedure was adopted.

## Annex D. Statistical Annex

### Set A

Question	Treatment	Control	t-Statistics
Over the past 10 years has your household's production increased/ remained same or decreased for foodgrains	2.74	2.39	-8.77 **
How would you rate the maintenance of the link drains (4 = Very good, 3 = Good; 2 = Fair; 1 = Bad)	1.90	1.67	-3.63 **
How would you rate the maintenance of the field drains (4 = Very good, 3 = Good; 2 = Fair; 1 = Bad)	1.93	1.69	-4.26 **
Do you trust [ENTITY] a 3 = lot; 2 = somewhat; 1 = very little? (Local Elected Officials)	2.18	2.20	0.36
Do you trust [ENTITY] a 3 = lot; 2 = somewhat; 1 = very little? (UPBSN)	2.64	2.36	-1.47
Over the past 8 years, has your ability to do boring, construct field drains, link drains and/or construct irrigation channels 3 = improved; 2 = remained same; 1 = deteriorated?	2.63	2.42	-6.40 **
Over the past 8 years, has your ability to organize in self-help groups and raise resources from within the village to take care of village needs 3 = improved; 2 = remained same; 1 = deteriorated?	2.66	2.37	-9.11 **
Over the past 8 years, has your ability to raise resources from outside the village (tap donors, NGOs, govt. officials) to take care of village needs 3 = improved; 2 = remained same; 1 = deteriorated?	2.43	2.15	-7.85 **
What is the primary source of credit in your village? (Self-help group)	0.23	0.03	-2.56 **

\* 99% confidence level

\*\*95% confidence level

**Set B**

Question	Treatment	No. of respondents
Who is primarily responsible for the maintenance of the main drains?		
Irrigation Department	3.83%	757
Gram Pradhan	19.95%	757
UPBSN	11.10%	757
In your opinion, what are the two most important aspects that will prevent the land from becoming sodic again? (Drainage)	12.42%	757
Do you or did you have this Organization? (WUG)	38.18%	757
Who had the most important role in the following aspects related to selection and decisions for various activities under sodic land reclamation?		
Selection of village for sodic land reclamation (UPBSN)	48.82%	508
Selection of village for sodic land reclamation (Beneficiaries)	2.76%	508
Selection of site for construction of link drains (UPBSN)	42.33%	437
Selection of site for construction of link drains (Beneficiaries)	8.70%	437
Contributions towards the Sodic Land Reclamation Project (UPBSN)	43.05%	374
Contributions towards the Sodic Land Reclamation Project (Beneficiaries)	16.04%	374
What were the three biggest problems facing your village 8 years ago?		
Lack of inputs; production & crop yield	42.93%	757
Lack of roads	38.31%	757
Lack of water supply; handpumps	37.12%	757
Lack of health facility	26.95%	757
Lack of drinking water	26.82%	757
Lack of electricity	25.76%	757
Sodicity	0.79%	757

**Set C**

Question	Economically Better off	Economically Not so better off	t-Statistics
How often do you attend? (1 = Almost every time; 2 = Often; 3 = Seldom; 4 = Once/ never)			
SIC	3.09	3.34	1.93 *
Gram Sabha	3.54	3.72	2.27 *
WUG	2.86	2.95	0.60
Social Network (Number of leader known)	3.20	2.65	-4.83 **

\* 99% confidence level

\*\*95% confidence level

## **Annex E. Statements from Reports on Focus Group Sessions that Support the Findings on Elite Domination**

“There was apparently only one water user group (WUG) in the village headed once again by the mitra kisan Mr.... When questioned about his omnipresence in all village activities specially those related to usar sudhar the group replied that he had the largest land holding in the village and was also instrumental in getting the project to the village.” Hidain men’s focus group

“There were 7 WUGs in the village. There were some disputes. People are not satisfied with the way the project was run. Those who already had tubewells took money for getting boring done and showed old tube wells as new ones. They claim that, as a result, no new borings were done during the project.” Kair men’s focus group

“The boring for the tubewell was done on the field of the farmer who had the larger landholding and who had the capacity to pay for the pump set, fan, labor, and fuel. The farmers were supposed to pay Rs. 20,000 for the pump set. The rent charged for water rights is determined by the owner of the pump set based on the ongoing rates of electricity and diesel.” Khaira men’s focus group.

“Very few people knew about SIC or went to any meeting. They say only the bigger farmers knew.” Mohabbat Nagar men’s focus group

“One of the group participants was an SIC member. However, he said that the maintenance account was handled only by the treasurer and secretary of the SIC. All members of the SIC contributed some money but did not know what was one with the collected amount. The treasurer was a thakur and the remaining members were thus scared in speaking out against him.” Pyarepur men’s focus group

“According to the focus group there are no WUGs in the village. The poor farmers cannot afford the water at the prevalent rates and the canal is usually dry, making irrigation a big problem. It appears as if the WUGs were dominated by the rich farmers and the poor were completely excluded. The opinions of the group mainly represented the poorer section as this interview was conducted in one of the less well off poorvas.” Bhadur Nagar women’s focus group.

“The group, however, did say that there were several problems in the distribution of inputs, i.e., seeds, fertilizers, gypsum, etc. Two women from the group said that they did not get their share of inputs as most of it was taken by the rich farmers. They said that information regarding the distribution of these inputs was never made and they did not know what was the amount that they were supposed to receive either. In the absence of this basic information they always felt that they were being cheated.” Kair women’s focus group.

“The village’s participation in the Usar Yojna was the village’s first experience with an external donor-supported development project. The group participants, however, feel that the project was dominated by the richer classes while the poor remained

excluded....The women said that some families did work as wage labourers for the construction of drains under the Usar Yojna. However, this was restricted to families and households that was close to the pradhan. They said that there were several times that the pradhan would refuse to hire certain people as daily wage labourers.”

Bahaduran women’s focus group

“The group also said that before our visit the pradhan had given them instructions as to what to say and what not to say. Strong-arm tactics are often used to frighten and subjugate the villagers especially the poorer members of the village.” Bhakara women’s focus group.

## Annex F. Borrower Comments: UPBSN

Letter No. 7H/147/04-05/2JM98

Date: - 06 June, 2004.

To,

**Mr. Alain Barbu,**  
Sector and Thematic Evaluation Group,  
Operation Evaluation Department, The World Bank,  
1818 H Street N.W., Washington, D.C. 20433. (U.S.A)  
e-mial Abarbu@worldbank.org.

Subject: Uttar Pradesh Sodic Lands Reclamation Project (Credit 2510-IN) Draft  
Project Performance Assessment Report.

Respected Sir,

**Kindly take the reference of your letter dated 26 April, 2004  
regarding the above-mentioned subject.**

It is highly appreciated for the hard work & sincere effort made to do the evaluation study & preparing this report and critical issues raised. UPBSN agrees with most of the points/issues raised in this report except on few points where it felt that more explanations would have been and on some points more facts would have been gathered. On all these issues we are hereby submitting our comments on the draft.

It will be highly appreciated if these comments are considered before finalizing the Draft Project Performance Report (PPAR).

Thanking you.

Yours faithfully,

Sd/-

**(Dr. B.B. Rai)**

Joint Managing Director

Date: - 06 June, 2004.

Ref. No. 7H/147/04-05/2JM 98

**Copy forwarded for information to: -**

1. OSD to APC for kind perusal of APC, Government of Uttar Pradesh, Lucknow.
2. **Mr. Dharmendra Sharma**, Director (FB), Department of Economic Affairs, North Block, New Delhi, India-110001-
3. **Mr. A.K. Agarwal**, Joint Sec. Ministry of Agriculture, 220J, Krishi Bhawan, New Delhi-110001.
4. **Ms. Nalini B. Kumar**, 1818 H Street N.W., Washington, D.C. 20433. (U.S.A) e-mail NKumar@worldbank.org.

Sd/-

Joint Managing Director

Point No 01 to 13 Agreed.

14- to be redone.

15- Agreed.

16- On the issue of "the lack of co-ordination between various Government departments" on the basis of one incidence of Pahremau village where the Minior Irrigation Department had constructed electrified tubewell, it is to mention that it was for the sustainability only that the project is emphasizing the electrification of tube well, which has more command area and provide cheaper water than the diesel pump sets. Because of this only Minior Irrigation Department had constructed the tube well. The incidence at the time of mission where tubewell was not functioning, is a rare incidence and out of 96 villages reclaimed this happened only in one village of district Raebareli. Therefore, on the basis of this scarce incidence the generalization of the lack of co-ordination between various departments needs to be revisited.

17- Agreed.

18- pH reduced by 1 to 1.5 units is based on ASM results where soil quality was monitored for 5-6 years. we agree that the sub-soil is still sodic/alkaline as it takes longer time to bring the soil conditions to normal, as the gypsum treatment is given to only upper 15 cms.

There are chances of reversion if reclaimed areas are not cultivated or left uncultivated for longer duration. This needs proper drainage also.

To judge the success of reclamation, only pH EC and SAR/ESP are monitored. Improvement in these indicators indicate the improvement of soil health improving physical properties of soil by virtue of which uptake of nutrients by the plant become smooth.

**Comment on footnote 10-**

The pH reported has been taken from another study where samples were collected after 1-3 years of reclamation. The objective of the study were to study the physical properties like hydraulic conductivity, bulk density and infiltration rate.

The ASM study which is based on 5-6 years of soil data show that 60% plots (out of 216 monitored) show the reduction in pH by 1 to 1.5 units

while 25% did not show any improvement. The remaining 15% showed improvement initially but the quality started deteriorating in later years.

- 19- The project has emphasized on alternative means of improving soil quality e.g. NADEP, vermi-composting etc. instead of green manuring which is comparatively costlier.
- 20- RSAC has not reported the decline of water level below the critical level anywhere in the project. Wherever the bad quality of water has been reported by RSAC Uttar Pradesh Bhumi Sudhar Nigam has immediately put up the proper plan in place; for instance the quality of water in district of Kanpur was reported brackish recently and BSN took corrective measures immediately.
21. No comments needed.

Box 1- indicating "A shortcoming here was limited attention to the issues important for sustainability of the user group in the post project phase".

The project emphasized on sustainability of reclaimed land & the role of WUG was envisaged that during the project period, WUG will take important decisions pertaining to OFD, water management, reclamation and cropping etc. to ensure transparency and ownership among the group members and during the post project period WUG will take care of assured irrigation through water sharing to all the group members, & SIC will take care of post project management through its apex level institutions like farmers schools /clubs.

**Point 22** highlighting that "The village level institutions created under the project (SIC, WUGs) were also regarded as temporary bodies for project implementation & not permanent organization that can promote empowerment & beneficiary control over resources & decision making" needs to be revisited as project had laid down suitable arrangements under its exit policy by networking the SICs into Farmer club/ school, a network of 3-8 SICs where progressive farmers undertake the responsibility of technology dissemination and post reclamation management. Also project made effort towards giving SIC a legal status in form of sub-committee of Gram Panchayat needs a mention, which due to certain reasons was not formalized although project put its best effort for the same.

Efforts have also been made to develop WUGs as a permanent institution like MSHGs but due to lack of homogeneity among the members (as group is based on land proximity) very limited success has been achieved in this area.

Point number 23 highlighting "UPBSN officials exercised control over the process" as well as point number 25 indicating "the project was not community driven but UPBSN driven & community followed" should be seen in context of "Project design" & not only "delivery mechanism".

"Project design" is structured with well laid procedures & provisions right from selection of land, classification of land, entitlements based on land

typology instead of farmers category etc. Although project at its later stage introduced the concept of micro planning i.e. formation of site specific Implementation plan by the farmers themselves so as to incorporate ground realities in the planning process and ensuring farmers commitment, accountability and ownership towards the plan, but due to structured and time bound project design the project has limited scope to incorporate some of the priorities & demands raised by the community which do not commensurate with project design such as demand for Electricity, installation of Hand pumps, opening of Primary Schools etc.

As it was expected in the project design, that the project will be implemented in a set framework & in a time bound manner; at each stage, project staff facilitated the farmers by informing them about the actions required at each stage. This act of facilitation by staff would have been misunderstood by the surveyors as "controlling & dominance" but the role is rather "facilitating and informing".

Point number 24 reflecting Role of SIC "mostly regarded as forum for getting information on project activities & formalizing arrangement " also needs to be revisited as SIC has been a forum for decision making, for all the crucial project activities right from.

- ✦ Verification & approval of Land classification.
- ✦ Formation of WUGs.
- ✦ Selection of MK/MMKs, Animators.
- ✦ Approval of planning i.e. approval of technical plan map.
- ✦ Endorsement of decision of boring site selection done by the respective WUGs.
- ✦ Input distribution at SIC.
- ✦ Review of progress of OFD works of WUGs & take decision for dropout of WUGs & beneficiaries in case of non-performance or misappropriation of benefits provided under the project.
- ✦ Selection of WUGs, for construction of LD
- ✦ Monitoring of payments made to WUGs.
- ✦ Resolve inter & intra WUG conflicts as well as monitor the functioning of WSHGs.
- ✦ Contribution in SIC maintenance account after each crop harvesting for Drainage maintenance.

These crucial decisions have been taken by SIC which can be verified through the SIC registers.

Point 27 indicating that "most of WUG leaders were those who could afford to pay for the cost of pump" needs to be seen in the light of functioning of WUGs. According to project design, individual on whose land group boring is installed is responsible for arrangement of pump sets with a commitment of water sharing to all the group members. The project staff also emphasized to sensitize the group member to select boring owner on basis of following criteria to adhere timeliness & effective management:

- ✦ Highest plot so that water can be easily made available to all the plots &
- ✦ Capacity of the farmer to arrange the pumpset.

Project advised this, since WUG has no corpus of its own for arrangement of pumpset & concept of savings in WUGs also was not successful due to lack of homogeneity among members in respect of socio-economic status. The project however also emphasized on management of pumpset by poor farmers through facilitating them in availing loans from NABARD & other government schemes.

On "Sustainability" the Researcher should also have taken into account the institutional arrangements drawn under the project in terms of Farmer clubs/schools & SHGs for post reclamation management. In sodic I Project, Exit Policy was formulated at the later stage of Project hence very little time was available with UPBSN for institutionalization of Exit Policy as well as strengthening of institutional arrangements drawn under Exit Policy. But this component has been well addressed in Phase-2, where right from the 3<sup>rd</sup> year of the project, SIC's have been networked into Farmer schools/ Clubs & efforts of strengthening the schools & establishing their forward linkages are also been addressed within the project period and Farmers Clubs/Schools have been evolved as an institution addressing key issues affecting sustainability like credit, input, management, Drainage & technology dissemination etc.

- ✦ Remodeling of drains is being taken care of at the apex level of GOUP.

WUG were formed to ensure transparent & participatory implementation of the project besides sharing of water. In the post reclamations phase these WUGs take care of assured irrigation through sharing the water to all the group members & also getting water from alternative sources where ever developed at the later stages of the project.

- 30-31-The OED reports suggests the assumptions made for the qualitative report for ERR is not realistic, the BSN would highlight that the ERR was calculated by independent agency during the ICR Mission hence BSN is not in a position to comment.

Drainage, Irrigation and green manuring activities are not low cost and slow technology in land reclamation. Uses of chemical amendments like gypsum, press-mud and pyrite etc. are essential in reclamation of sodic land (Specially alkali land). However, UPBSN is following low cost sodic land reclamation technology as recommended by Uttar Pradesh council of Agriculture Research (UPCAR). One of that is 25% GR value +10 MT composted press mud.

Para 32 to 37 do not need comment.

- 38- Chances of reversal of sodicity is very low due to the continuous addition of organic matter on the topsoil. Organic matter, in turn, does not allow sodium to come up. Hence, the top layer remains capable of continuous cropping. The reversal of sodicity can also be minimized if the continuous cropping ensured this is possible because of the better returns due to the easy market accessibilities, and construction of farm-to-market roads constructed by various schemes/projects. These factors alongwith thorough awareness &

sensitization ensure continuous cropping & thereby decreasing the chances of reversal of sodicity.

Continuous efforts are also being made to improve the fertility of soils by promoting NADEP, vermi composting and other organic manures to improve the soil health.

- 39- We have taken proper care to address the challenge of availability of funds for drain maintenance and due to these efforts the funds for some of the districts have recently been released and the maintenance has been done. For the other districts the matter has strongly being pursued with the state government.
- 40- On the issue of limited incentive for the WUGs to continue working for the maintenance of link drains, it is worth mentioning here that the SIC has the provision of maintaining the link drain maintenance accounts where all the farmers contribute their share for the corpus. This fund is used as incentive against the labor for the link drain maintenance.
- 41- The observations are agreed upon. The Project is taking due care on educating farmers on maintaining the field drains.
- 42- Alternative credit resources have been formed through SHGs to develop the capacity of small and marginal also farmers to invest in the reclamation of land.
- 43- During the implementation of project to improve the soil fertility of the reclaimed area dhaincha seeds were provided for green manuring for two consecutive years in each village by the project.

Since, several shallow tube wells have been installed in the project area and farmers taking water from these tube wells for various purposes as resulting vertical drainage eventually which lowers down ground water level to a safer level. Gradual water level decline is a positive sign for sustainability of reclamation & for the improvement of soil fertility UPBSN has introduced NADEP, vermi compost and other organic matter.

The Para 48 can be looked upon once the report is finalized in the light of comments being sent with this letter.

On the issue of payment made without boring, as the statement recorded in Annexure-E. Para II during focus group discussion, UPBSN revisited the village & the records & found that there was no such incidence occurred and

the records show that 7 out of 8 borings were existing and no payments were made by the project for these borings.

The issue of sustainability is being seriously looked upon by the management of UPBSN and we are in the process of formalizing the local level institutions so formed during the project and establish the formal linkages with Department of Agriculture, Irrigation Department, KVKs, Agriculture Universities, Rural development etc. at district level and also the policy level intervention by the Government of Uttar Pradesh is being pursued with.

