

Report No. 16418

# Sri Lanka Impact Evaluation Report

Kurunegala Rural Development Project (Credit 891-CE)  
Second Rural Development Project (Credit 1079-CE)

March 28, 1997

Operations Evaluation Department



**Currency Equivalents** (annual averages)*Currency Unit = Rupees (Rs)*

1978	US\$1.00	15.80
1982	US\$1.00	20.80
1986	US\$1.00	27.95
1990	US\$1.00	40.24
1994	US\$1.00	50.23

**Abbreviations and Acronyms**

ADB	Asian Development Bank
ARTI	Agrarian Research and Training Institute
CCB	Coconut Cultivation Board
CRI	Coconut Research Institute
DANIDA	Danish International Development Assistance
DAS	Department of Agrarian Services
DEA	Department of Export Agriculture
DoA	Department of Agriculture
DRC	Domestic Research Cost
EAC	Export Agriculture Crops
ERR	Economic Rate of Return
FAO	Food and Agriculture Organization
FO	Farmers' Organization
GOSL	Government of Sri Lanka
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ID	Irrigation Department
IDA	International Development Association
IER	Impact Evaluation Report
IIMI	International Irrigation Management Institute
INMAS	(Programme for) Integrated Management of Major Irrigation Systems
IRDP	Integrated Rural Development Programme
ISMP	Irrigation System Management Project
KRDP	Kurunegala Rural Development Project
MANIS	Management of Irrigation Systems
MFPEA & NI	Ministry of Finance, Planning, Ethnic Affairs and National Integration
MT	Metric ton

NGO	Nongovernmental Organization
NIRP	National Irrigation Rehabilitation Project
NORAD	Norwegian Agency for International Development
OED	Operations Evaluation Department
OFC	Other Field Crops
O&M	Operation and Maintenance
PAR	Performance Audit Report
PCR	Project Completion Report
RDD	Regional Development Division
RDP	Rural Development Programme
SAP	Structural Adjustment Programme
SAR	Staff Appraisal Report
SIDA	Swedish International Development Authority
SRDP	Second Rural Development Project
UNICEF	United Nations International Children's Fund
WRDP	Water Resources Development Project

**Glossary**

anicut	diversion scheme
chena	slash and burn or "shifting" agriculture
maha	northeast monsoon season (October to January)
paddy	unhusked rice
tank	reservoir for local rainwater storage
yala	southwest monsoon season (March to June)

**Fiscal Year**

Government: January 1–December 31

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March 28, 1997

**MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT**

**SUBJECT: Impact Evaluation Report on Sri Lanka:  
Kurunegala Rural Development Project (Credit 891-CE)  
Second Rural Development Project (Credit 1079-CE)**

Attached is an impact evaluation report (IER) on two rural development projects in Sri Lanka. The IDA credits were approved in FY79 and FY81, and closed in FY86 and FY90. The evaluation was based on a review of Bank files, including project completion and audit reports, field visits to a large number of project sites, and interviews with beneficiaries and Government and Bank staff. The evaluation team, led by the UN Food and Agriculture Organization (FAO), used a variety of participatory techniques to obtain the views of the principal stakeholders, direct beneficiaries (principally farmers), line agencies, project managers, and the government.

In the late 1970s, Sri Lanka launched the Integrated Rural Development Programme (IRDP) to support development in districts which had not benefited from major government investments. The Kurunegala Rural Development Project (KRDP) was the first of these, and attempted to produce a replicable regional development model, based on multisectoral planning for an entire district, and centered on agriculture. It was followed by the Second Rural Development Project (SRDP) in Matale and Puttalam districts. The three districts were among Sri Lanka's poorest, and about 90 percent of their population lived in rural areas. The projects, supported by IDA credits of US\$34 and US\$40 million respectively, financed a range of investments designed to increase farm production and rural incomes.

The projects' objectives were ambitious and their operations extensive and complex. They centered on agricultural development and included (i) rehabilitating or improving about 800 small irrigation tanks and 30 larger irrigation schemes; (ii) stepping up subsidized programs for replanting, intercropping and fertilizing small coconut plantings, and supporting expansion of export crops by smallholders; and (iii) expanding agricultural facilities and services, including credit, to encourage more intensive use of agricultural inputs. Complementing these agricultural programs, which accounted for about two-thirds of costs, were investments in rural infrastructure for health, education, transport, water supply and electricity.

The evaluation estimated the ERRs for the agricultural components at just under 10 percent, compared to appraisal estimates ranging from 24 and 34 percent. These shortfalls derived from a range of causes. Particularly in the KRDP, the extent to which the area planted to paddy could be increased by rehabilitation of village tanks was greatly overestimated. Design and construction flaws on these small schemes also reduced benefits. However, yield increases in the schemes assisted were still above average for the districts and the country. Increases in production of coconuts and export crops also fell short of targets because of rising labor and fertilizer costs and over-ambitious expectations. The credit program had mixed results. Short-term loans for inputs were not popular, but there was a high demand for medium-term loans, particularly for small tractors. However, the objective of creating a credit

system to reach a significant share of poor households were not achieved. Almost all the infrastructure targets were met, and many were exceeded.

The beneficiaries were dissatisfied with some aspects of the agricultural components, yet the overall goals of raising incomes and improving the living standards of the rural population were partially met. The beneficiaries clearly saw benefits from the infrastructural components, noting the fact that the wells improved water quality and improved health, especially among children, and that electrification opened up opportunities for small business. They felt that the roads were the most useful addition to their daily lives, especially where roads replaced footpaths. The roads allowed trucks and buses to reach villages, greatly expanding access to markets and employment opportunities and health and educational facilities. However, many farmers felt that the projects missed an opportunity by not involving them more in the design, implementation, and oversight of the rehabilitation works. Discussions with beneficiaries before and during work were cursory, and conflicts between farmers and contractors were common. As a result village irrigation facilities are frequently poorly maintained; farmers are reluctant to maintain facilities which they consider unsatisfactory, and which they believe the government has a duty to correct before they assume full responsibility.

One particular strength of the IRDP in Sri Lanka has been the strong effort made from the outset to learn from the initial experience and modify approaches. The KRDP and SRDP were innovative in that they relied on existing line agencies and departments to carry out operations, and were in line with the government's objectives of decentralizing planning and implementation. However, the top down nature of the initial planning limited the benefits from this. Since the responsible agencies had been excluded from the original planning process, and project funds remained in the hands of the central ministries, horizontal coordination was weak.

Three main lessons have been taken from these early projects. First, that flexibility of design is more effective than a "blueprint" approach for rural development schemes carried out in areas with varying conditions. Second, that participation by beneficiaries in all phases of a project—including evaluation—is important for long-term sustainability. Finally, that if the poor are to benefit from such projects, specific efforts need to be made to target them. Today, the "blueprint" approach has been replaced by a more flexible, process oriented approach, in which government facilitates the provision of services, rather than seeking to provide all services on its own, and in which projects follow a one- to two-year rolling plan, and use monitoring as a planning and management tool.

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke, positioned in the lower right quadrant of the page.

Attachment

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This report was prepared by John English (Principal Evaluation Officer) and based on the report prepared by a team led by Vanda Altarelli (Food and Agriculture Organization) which evaluated the projects in July 1995. Emily Chalmers provided editorial assistance and Rachel Weaving also contributed to the report. Constance Frye, Megan Kimball and Scott Dineen provided administrative assistance.

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	<b><u>IBRD</u></b>
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Second RDP Puttalam District—Road Works and Rural Electification	14949
Second RDP Matale District—Road Works and Rural Electification	14952R

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## **Preface**

The Integrated Rural Development Programme (IRDP) was initiated in the late 1970s and has been a long-term effort to support the development of rural areas in Sri Lanka. A series of projects have been undertaken, operating at a district level and financed by different aid agencies. These have been specifically aimed at assisting the poor and other disadvantaged groups, and have pioneered a number of participative techniques in project planning and implementation. A total of 17 districts have been covered by these projects, with activities precluded in the remaining districts by the ongoing insurrection. The Kurunegala Rural Development Project supported by the International Development Association (IDA), was appraised in 1978 and was the first of these projects. Others followed quickly thereafter, including the Second Rural Development Project also supported by IDA and covering the districts of Matale and Puttalam, which was appraised in 1979.

This Impact Evaluation Report covers both the Kurunegala and Second Rural Development Projects. Given the very broad coverage of the projects, it was decided not to try and review all their aspects, but to concentrate on the components aimed at increasing agricultural production, which accounted for about two-thirds of the expenditure. Other aspects, primarily infrastructure, and the overall institutional impact of the projects, were also covered, but in less detail. Field work was carried out in 1995, primarily by a team led by the Food and Agricultural Organization (FAO). A particular emphasis was placed obtaining input from the beneficiaries using a variety of participative techniques. The team produced an extensive draft report based, in addition, on the project completion reports and performance audit reports, the appraisal reports, loan documents, and on discussions with officials in the relevant ministries and in the implementing agencies at the district level. The main conclusions of the report were discussed at a workshop held in Sri Lanka in March, 1996, and organized by the Regional Development Division of the Ministry of Finance and Development, the coordinating ministry for the IRDP. This report is based on the report of the FAO team and incorporates the major issues raised at the workshop.

The kind cooperation and valuable assistance provided by all those who participated in the group discussions and workshops in Sri Lanka is gratefully acknowledged. Particular thanks are due to Mr. C. Maliyadde, Additional Secretary, Ministry of Finance and Development, and Mr. S. Amarasekara, Director General of Regional Development, without whose support the study would not have been possible.



## Basic Data Sheet

### KURUNEGALA RURAL DEVELOPMENT PROJECT (CREDIT 891-CE)

#### Key Project Data

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of appraisal estimate</i>
Total project costs (US\$ million)	30.00	33.73	112
Total project costs (Rs million)	465.00	726.98	156
Credit amount (US\$ million)	20.00	—	—
Disbursed (US\$ million)	—	17.10	—
Canceled (US\$ million)	—	2.90	—
Economic rate of return (percent)	32	23 <sup>a</sup>	61
Institutional performance	—	Fair	—

— Not applicable.

a. Audit estimate of economic rate of return (ERR) is about 23 percent, while estimate at completion was 38 percent.

#### Cumulative Estimated and Actual Disbursements

	<i>FY80</i>	<i>FY81</i>	<i>FY82</i>	<i>FY83</i>	<i>FY84</i>	<i>FY85</i>	<i>FY86</i>
Appraisal estimate (US\$ million)	3.00	8.00	12.00	16.00	20.00	—	—
Actual (US\$ million)	1.57	3.38	5.00	7.60	9.70	11.6	17.10
Actual as % of appraisal	52	42	42	48	49	58	86

Date of final disbursement: January 21, 1987

— Not applicable.

#### Project Dates

	<i>Original</i>	<i>Actual</i>
Initiating memorandum	—	September 3, 1976
Negotiations	—	February 21–23, 1979
Board approval	—	March 1979
Signing	—	April 1979
Effectiveness	July 1979	August 1979
Credit closing	June 1984	June 1986

**Staff Inputs (staff weeks)**

	Fiscal Year											Total	
	77	78	79	80	81	82	83	84	85	86	87		88
Preappraisal	22.8	16.5	.3	—	—	—	—	—	—	—	—	—	39.5
Appraisal	—	34.2	49.0	—	—	—	—	—	—	—	—	—	83.2
Negotiations	—	—	8.4	—	—	—	—	—	—	—	—	—	8.4
Supervision	—	—	2.8	37.2	14.9	6.8	10.9	9.8	8.3	8.8	—	1.1	100.8
Other	.2	.1	.4	1.2	—	—	—	.4	—	—	—	—	2.3
<b>Total</b>	<b>23.0</b>	<b>50.8</b>	<b>60.9</b>	<b>38.4</b>	<b>14.9</b>	<b>6.8</b>	<b>10.9</b>	<b>10.2</b>	<b>8.3</b>	<b>8.8</b>	<b>.0</b>	<b>1.1</b>	<b>234.2</b>

— Not applicable.

**Mission Data**

	Date (month/year)	No. of persons	Staff days in field	Specializations represented <sup>a</sup>	Performance rating <sup>b</sup>	Types of problems <sup>c</sup>
Through Appraisal	12/76	6	25	E, M, C, A, I	—	—
	06/77	3	6	E, A	—	—
	03/78	6	27	E, A, C, Cr	—	—
	09/78	2	14	E, C	—	—
	01/79	2 <sup>d</sup>	23	E, A	—	—
Supervision 1	09/79 <sup>e</sup>	4	30	E, M, C	1	T
Supervision 2	07/80 <sup>e</sup>	3 <sup>d</sup>	95	A, E, C	2	F, M, T
Supervision 3	12/80 <sup>e</sup>	1	10	E	2	F, M, T
Supervision 4	06/81	1 <sup>d</sup>	10	E	2	F, T
Supervision 5	11/81	1	7	A	2	T
Supervision 6	01/82	4 <sup>d</sup>	7	E, A, C	2	F, T
Supervision 7	09/82	3	5	E, A, C	2	T, M
Supervision 8	07/83	3 <sup>d</sup>	20	E, A, C	2	T, M
Supervision 9	03/84	3 <sup>d</sup>	15	E, A, C	2	T, M
Supervision 10	12/84	2 <sup>d</sup>	11	A, C	2	T, M
Supervision 11	03/85	1 <sup>d</sup>	19	E	2	T, M
Supervision 12	12/85	2 <sup>d</sup>	18	E, C	2	—
Supervision 13	03/86	3 <sup>d</sup>	—	E, A, C	2	—

— Not applicable.

a. E = Economist, M = Monitoring and Evaluation Specialist, C = Civil Engineer, A = Agronomist, I = Rural Industries Specialist, Cr = Credit Specialist.

b. 1 = Problem free, 2 = Satisfactory, 3 = Deteriorating.

c. F = Financial, M = Managerial, T = Technical, D = Others.

d. Multiple purpose missions.

e. Date of return to headquarters.

**Other Project Data**

Borrower/Executing Agency: Government of the Democratic Republic of Sri Lanka (GOSL)

**FOLLOW-ON OPERATIONS**

Operation	Credit no.	Amount (US\$ million)	Board date
Second Rural Development	1079-CE	33.5	12/9/80

## SECOND RURAL DEVELOPMENT PROJECT (CREDIT 1079-CE)

### Key Project Data

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of appraisal estimate</i>
Total project costs (US\$ million)	50.1	29.27	78.4
Total project costs (Rs million)	780.16	1,034.03	132
Credit amount (US\$ million)	33.50	—	—
Disbursed (US\$ million)	—	26.31	—
Canceled (US\$ million)	—	6.69	—
Economic rate of return (percent)	17	—	—
Institutional performance	—	Fair	—

— Not applicable.

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

	<i>FY81</i>	<i>FY82</i>	<i>FY83</i>	<i>FY84</i>	<i>FY85</i>	<i>FY86</i>	<i>FY87</i>	<i>FY88</i>	<i>FY89</i>	<i>FY90</i>	<i>FY91</i>
Appraisal estimate	3.00	9.00	15.50	22.50	30.00	33.50	33.50	33.50	33.50	33.50	33.50
Actual	0.00	1.66	5.92	10.14	11.78	16.41	19.88	22.80	23.62	24.73	26.31
Actual as % of appraisal	0.0	18.4	38.2	45.1	39.3	49.0	59.3	68.0	70.5	73.8	78.5

Date of final disbursement: November 9, 1990

— Not applicable.

### Project Dates

	<i>Date Planned</i>	<i>Date Revised</i>	<i>Date Actual</i>
Identification (Project Brief)	—	—	November 1, 1979
Preparation <sup>a</sup>	November 1979	—	November 26, 1979
Appraisal	November 1979	—	November 26, 1979
Negotiations	October 1980	—	October 6–10, 1980
Board approval	—	—	December 9, 1980
Signing	—	—	February 2, 1981
Effectiveness	May 1980	—	June 2, 1981
Credit closing	June 30, 1986	June 30, 1990	June 30, 1990
Last Credit disbursement	—	—	October 31, 1990

— Not applicable.

a. Prepared by GOSL with assistance from IDA missions.

**Staff Inputs (staff weeks)**

Task	Fiscal Year												Total	
	79	80	81	82	83	84	85	86	87	88	89	90		91
LENP	.1	75.7	—	—	—	—	—	—	—	—	—	—	—	75.8
LENA	—	94.6	12.8	—	—	—	—	—	—	—	—	—	—	107.4
LENN	—	—	10.6	—	—	—	—	—	—	—	—	—	—	10.6
LOP	.2	1.7	8.4	—	—	—	—	—	—	—	—	—	—	10.3
SPN	—	—	7.1	14.0	14.7	9.7	7.4	11.5	14.0	3.1	9.5	7.8	—	98.8
PCR	—	—	—	—	—	—	—	—	—	—	—	—	4.7	4.7
PAD	—	—	—	.2	—	—	—	1.1	—	—	—	—	—	1.3
Total	.3	172.0	38.9	14.2	14.7	9.7	7.4	12.6	14.0	3.1	9.5	7.8	4.7	308.9

— Not applicable.

**Mission Data**

	Date (month/year)	No. of persons	Staff days in field	Specializations represented <sup>a</sup>	Performance rating <sup>b</sup>	Types of problems <sup>c</sup>
Through Appraisal	11/79	7	—	—	—	—
Appraisal through Board approval	12/80	5	—	—	—	—
Board approval through effectiveness	06/81	2	—	—	—	—
Supervision 1	06/81	1	10	AE	2	F
Supervision 2	01/82	4	7	AE, AG (2), CE	1	TM
Supervision 3	09/82	3	5	AE, AG, CE	2	TM
Supervision 4	07/83	3	20	AE, AG, CE	1	TM
Supervision 5 <sup>d</sup>	11/83	1	5	AE	—	—
Supervision 6	12/84	2	11	AG, CE	2	TM
Supervision 7	03/85	1	5	AG	2	TM
Supervision 8	11/85	2	7	AG, CE	2	T
Supervision 9	03/86	3	10	AE, AG, CE	1	T
Supervision 10	12/86	2	9	AE, CE	1	F
Supervision 11	08/87	2	12	AE, CE	1	F
Supervision 12	05/88	2	7	AE, CE	1	FM
Supervision 13	05/89	2	14	AE, CE	1	P
Supervision 14	12/89	2	8	AE, CE	2	FP
Supervision 15	07/90	2	10	CE, AEn	2	FP

— Not applicable.

a. AE = Agricultural Economist, AG = Agriculturist, CE = Civil-Irrigation Engineer, AEn = Agricultural Engineer.

b. 1 = Problem free, 2 = Minor problem, 3 = Major problem.

c. F = Financial (essentially shortage of local counterpart funds), T = Technical, M = Managerial, and P = Political.

d. A short visit was made in November 1983 to review progress in Matale District, one of the two project districts.

## Executive Summary

### The Projects

1. In the late 1970s, the government of Sri Lanka launched the Integrated Rural Development Programme (IRDP) with several ambitious objectives: to decentralize planning and implementation, increase rural incomes in districts with a large proportion of low-income rural residents, and create needed infrastructure to reduce disparities within districts. The initiative concentrated its projects in districts—some of them the country's poorest—that had not benefited from major government investments. This report analyzes the impact of two of these projects: the Kurunegala Rural Development Project (KRDP) and the Second Rural Development Project (SRDP). The KRDP and SRDP emphasized directly productive investments; reductions in intraregional disparities; financial, institutional, and technical replicability; and labor-intensive rehabilitation works (rather than new construction) that would provide immediate returns.

2. The KRDP (total cost US\$34 million) was approved in 1979 and was the first attempt at multisectoral planning for an entire district, although the end result was seen as a compromise between comprehensiveness and manageability. The project was designed to produce a replicable regional development model for raising productivity, employment, incomes, and living standards for the rural population. Because of the importance of agriculture in the Kurunegala District, the KRDP focused on the agricultural sector, particularly on measures that would rehabilitate the production base for paddy and coconut production and improve support services. Funding for institutional and infrastructure development was provided through subcomponents designed to:

- modernize irrigation and water management;
- rehabilitate and replant coconut holdings;
- improve agricultural extension services;
- increase supplies of agricultural inputs;
- expand credit operation and resources;
- improve rural roads and water and electricity supplies;
- upgrade educational and health facilities in rural areas; and
- establish project coordination and monitoring capabilities.

3. The SRDP, with a total cost US\$40 million, was approved in 1981. It concentrated on the districts of Matale and Puttalam, situated to the east and west of Kurunegala, respectively. The objectives of the SRDP closely followed those of the KRDP but included three additional components that focused on forestry, fisheries (in Puttalam), and export agriculture crops (EACs, in Matale). The SRDP did not seek to strengthen extension services, however.

4. Both projects were to be implemented over five years but had to be extended, the KRDP for two years and the SRDP for four.<sup>1</sup> The KRDP experienced staff shortages in the major implementing agencies and problems with procurement and funding that delayed the project in

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1. The last two extensions of the project were to allow for fuller utilization of the IDA credit, as the substantial devaluation of the rupee during the life of the project had greatly increased the amount of available local funds.

its initial stages. The SRDP also experienced staff shortages in implementing agencies, problems with procurement, and severe budgetary constraints that resulted in shortages of counterpart funds. In addition, the security situation in Sri Lanka worsened in the project's later years, halting some of the work. The Kurunegala project was the subject of an performance audit report (PAR) in 1991. The SRDP has not been audited, but both projects received satisfactory ratings in Project Completion Reports (PCRs), published in 1989 and 1991, respectively. The impact evaluation corroborates but qualifies the PCR ratings.

### **The Impact Evaluation**

5. Given the multiplicity of components under each project, it was feasible only to select the most important, measured in terms of cost, for detailed examination. The evaluation assesses the outcome, impact, and sustainability of the major productive components, which accounted for about 80 percent of expenditure in the KRDP and 60 percent in the SRDP; irrigation rehabilitation and associated agricultural production; coconut and export agriculture crop (EAC) rehabilitation and improvement; and credit. Although rural roads, water supply, electrification, and project coordination and management are also reviewed, the field surveys for these components were less intensive than for the others.

6. The goal of the evaluation team was not only to measure statistical outcomes but also to assess the developments the projects achieved at the microeconomic level—that is, to determine the changes brought about by the projects in “real-life” situations and to learn from both the successes and failures. In keeping with this goal, the evaluation team did more than just gather statistical data. It also sought the views of principal stakeholders, direct beneficiaries, line agencies, project managers, and the government itself. The methods used to gather this information, which ranged from full-scale participatory rural appraisals (PRAs) to more conventional surveys, are outlined in annex 1.

7. The target districts have been undergoing rapid economic change in the 15 years since the projects were initiated. National economic policy has emphasized the growth of export-oriented manufacturing activities, and nonfarm employment has expanded in all three districts, parts of which lie near the industrial “estates” that have been developed close to the Colombo airport. Economic opportunities for the rural populations in the target districts have thus been expanding for reasons that lie outside the realm of the projects. To the extent possible, these considerations have also been taken into account.

### **What the Projects Achieved**

8. The projects' operations were extensive and complex, and the project objectives ambitious, sometimes overly so. Despite the poor showing of some of the productive components, beneficiaries clearly recognized the value of assets such as extension services, new tractors, and infrastructure (especially roads), faulting the projects most for their failure to include farmers in project planning and design. The two projects also provided solid lessons for later initiatives.

9. *Production.* Neither project met its productivity targets. In the case of paddy, the gains in yields and cropped areas were below appraisal targets for several reasons. First, the appraisal targets were overambitious, based as they were on inaccurate information, especially in the

KRDP. Second, the quality of the rehabilitation work was not good enough, as beneficiaries pointed out. As a result, the quality of operation and maintenance (O&M), especially in minor irrigation schemes, was poor, not only because of the inferior construction but because farmers were unwilling to maintain what they perceived as low-quality systems. Third, the appraisal disregarded countrywide trends in yields and assumed instead that all increases in paddy production could be attributed to the projects themselves. Despite these drawbacks, the evaluation concludes that there were increases in yields in the schemes improved under the projects over and above the change in average national yields.

10. Incremental production of EACs and coconuts also fell short of appraisal expectations for two reasons: the rising costs of inputs (especially hired labor and fertilizer) relative to product prices, which reduced farmers' interest in the crops; and overambitious production expectations, based on faulty assumptions.<sup>2</sup> Although the returns to EACs fall far short of appraisal targets, the component achieved excellent results at the farm level.

11. *Credit.* The two main elements of the credit programs had different outcomes. The success of medium-term credit, particularly for the purchase of two-wheel tractors, greatly exceeded expectations. The number of short-term loans for cultivation was below expectations, largely because most farmers preferred to borrow from informal sources, which were more readily accessible and did not have cumbersome procedures. The project objective of developing a financially viable credit system that would reach a significant proportion of farmers, particularly those with the smaller holdings was not achieved. While the number of farmers obtaining credit from formal institutions increased, it never exceeded 3 percent of the rural population (presumably the most affluent rural residents).

12. *Infrastructure.* Almost all of the physical targets for the construction of physical and social infrastructure were met and in many cases exceeded (table 2) partly because the implementation periods were extended and additional local currency became available. The largest single element of these components was roads. Some 174 miles of new roads were constructed under the KRDP, greatly improving access to villages, irrigation facilities, and schools. The SRDP concentrated on rehabilitating or upgrading around 400 miles of existing roads. Other infrastructure projects varied widely and included village electrification schemes, wells and tubewells to supply domestic water, equipment and residential quarters for schools and vocational training centers, and equipment for hospitals and other health facilities. Beneficiaries liked these assets, citing the increased employment opportunities the roads made possible and the improved training facilities as being especially valuable.

## **The Economic Impact**

13. The evaluation of the projects' economic impact attempted to address three questions: whether the project interventions were economically viable; how the changing system of incentives affected farmers' productivity; and whether the investments were sound in light of the economic events of the last 15 years. In answering the first question, the analysis attempts to determine what would have happened in the target districts without the projects. Separate

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2. For example, the appraisals assumed that the productivity of all coconut plantings in the districts would increase as a result of the projects, although the projects directly affected only one-third of the coconut area; that beneficiaries who did not receive all installments of the investment package would achieve the same productivity levels as those who did; and that improved management practices would be continued when the projects ended.

economic rates of return (ERRs) are calculated for the productive components and the projects overall. The ERRs show that paddy performed better than coconuts and EACs, although both rates of return (and that of the project in general) hovered just below 10 percent and far below the anticipated levels (32 percent for the KRDP overall and 17 percent for the SRDP).

14. To respond to the second question, the assessment considered the effect of domestic and exogenous factors influencing Sri Lanka's economy during the life of the projects: inflation, shifts in the terms of trade, and falling international prices. To calculate changes in the structure of production costs and the share of each cost item in the value of production, the analysis applied ratios derived from current prices to data on yields and inputs, using a three-year arithmetic average. The results show that changes in *relative* prices negatively affected producers of paddy and coconut, and that commercial producers felt the impact much more than smallholders. Small producers felt the impact through a decline in the *real* value of their returns, as paddy prices failed to keep up with inflation. Producers of cocoa, coffee, and peppers fared somewhat better, as real income per acre increased for these crops.

15. To determine the economic viability of public support for the production of paddy, the analysis uses the domestic resource cost (DRC) coefficient, or the cost of the domestic resources required to save one unit of foreign exchange earnings. Taking into account the cost of the irrigation rehabilitation works, the estimated DRC coefficient for rice production in Kurunegala in 1994 was about 1.0 for subsistence purposes and about 1.3 for urban use. That is, a net gain of one rupee's worth of foreign exchange (at the current exchange rate) required between 1.0 and 1.3 rupee's worth of domestic resources.

### **The Socioeconomic Impact**

16. The evaluation assesses project effects at both the district and household levels. While it is clear that important equity issues affected the distribution of benefits and that beneficiaries clearly were dissatisfied with some aspects of the productive components, the overall goals of reducing disparities within districts, raising the incomes of rural households, and improving the living standards of rural populations were partially met. The evaluation examined the distribution of benefits, the projects' effects on regional disparities within districts, and the impact of specific components on households. The analysis uses two methods of assessing the projects' impact on households: farm models representing the situations of typical holdings with and without project interventions, and estimates from beneficiaries of changes in sources of their incomes after the projects.

17. *Productive components.* Beneficiaries recognized that the rehabilitated irrigation schemes had made more water available and increased the number and size of irrigated areas, allowing farmers to increase yields and grow a second crop in the Yala (spring monsoon) season. But many expressed dissatisfaction with the rehabilitation work, citing most frequently the fact that farmers had not been consulted about the schemes during project implementation, so that many practical concerns were never addressed and users did not feel a sense of ownership of the assets. Farmers did feel positive about the projects' efforts to improve farming practices and introduce new crops, adopting many of the suggested improvements.

18. To estimate changes in yields, the evaluation team used data on holding size, cropped areas, technologies used, and yields to construct a series of farm models representing the pre- and postproject situations for typical holdings. These models were in turn used to estimate

incomes from cultivation with and without project interventions. For the paddy farmers in Kurunegala, for example, income from cropping was estimated at about SL Rs 17,000 (based on 1994 prices) for project participants, or about SL Rs 1,100 more than it would have been without the project. However, the estimates of without-project yields reflect the fact that most small irrigation schemes were rehabilitated with public support, so that the estimated increments represent the minimum benefits directly attributable to the project.

19. For the coconut and EAC programs, the on-farm effects were more dramatic. For the typical participant in the coconut rehabilitation program, net income from 4 acres of coconuts was estimated at about SL Rs 30,000, or about SL Rs 8,500 more than for nonparticipants. Because most EACs are perennial crops, they provide a substantial return once they reach maturity. The overall effect of the introduction of EACs was most pronounced in Matale, where wage labor as a share of household income dropped from 28 to 6 percent after the project and the share of EACs in total income rose to 22 percent.

20. A sample of beneficiaries queried about income composition said that despite the increases in yields and production in the project areas over the past two decades, the share of paddy in their overall income has fallen (largely due to price fluctuations) and the share of off-farm income increased. Combining this evidence with data from the farm models suggests that in the Kurunegala and Puttalam districts (where growth in off-farm employment has been marked), increased crop production attributable to the project has been responsible for between 20 and 30 percent of the increase in incomes in beneficiary households. In Matale, where crops other than paddy have expanded rapidly, the corresponding figure may be greater than 50 percent.

21. *Quality of life.* According to the beneficiaries, the infrastructure built and upgraded by the projects has had a positive impact on the quality of rural life in all three districts. Beneficiaries said the roads were as the most useful addition to their daily lives, especially in areas where new roads replaced footpaths. The roads allowed buses and trucks to reach villages and permitted villagers to travel to other areas, expanding opportunities for employment and greatly improving access to markets and health and educational facilities. The small electrification schemes, which fostered the expansion or development of small and medium-sized village enterprises, created an estimated 2,000 jobs in the three districts.

22. Beneficiaries also cited the wells as a distinct improvement over previous sources of water. Many said that the time needed to fetch water had been significantly reduced and that the quality of the water had improved. The cleaner water had helped to improve health, especially among children. However, because of design flaws, the original pumps rusted and have again been rehabilitated only with the help of other donors and nongovernmental organization (NGOs). Beneficiaries again cited the original projects' failure to include users (in this case, water user groups) in the planning and implementation phases as the primary reason for the problems with the wells.

23. *The distribution of benefits.* While the original projects did not have specific poverty alleviation goals (a shortcoming rectified in subsequent projects), it was expected that the majority of the beneficiaries would be smallholders with 2 acres or less and household incomes below the poverty level (as it was then defined). However, the impact evaluation finds that the majority of the beneficiaries had holdings bigger than 2 acres, particularly the coconut growers, so that the projects did not have the anticipated direct impact on the smallest farms and poorest rural residents.

## Sustainability

24. The sustainability of the assets created under the projects is uncertain. The irrigation structures have deteriorated considerably for a variety of reasons, including inadequate O&M, insufficient hydrological data, shortfalls in preliminary studies, a shortage of experienced contractors, poor quality control during implementation, and a lack of beneficiary involvement. The technical evaluation determined that the major schemes, which were supervised more closely during rehabilitation, have been maintained more regularly, and have undergone extensive postproject rehabilitation, are in better physical condition than the minor schemes. All 11 KRDP schemes and 12 of the 15 SRDP schemes have been rehabilitated again or improved by projects involving other donor agencies, while only 10–33 percent of the minor schemes have received such attention.

25. *Operation and Maintenance.* Qualitative indicators were used to gauge O&M. Mission members and farmers jointly assessed maintenance, using patterns of water distribution and a water plan as proxies for good water management. Responsibility for O&M now lies largely with user groups. While most beneficiaries interviewed recognized that the rehabilitated schemes had increased the availability of water and the size of arable areas, thus raising crop yields and allowing farmers to grow a second annual crop, standards of maintenance were noticeably poor, particularly in minor schemes. Because farmers were not involved in the original projects, they lack a sense of ownership of the assets and have been reluctant to care for the rehabilitated works. They also expressed discontent with the rehabilitation work itself, which most felt could have been improved had the farmers been invited to participate. In the focus groups, farmers agreed with the results of the technical evaluation and rated as poor the quality of fully one-half to two-thirds of the completed work. The majority of farmers also felt that the government should make further repairs before turning the schemes over to users.

26. *Water management* in major schemes was again found to be better than in minor schemes because all the major schemes visited had been involved in subsequent government projects aimed at improving O&M. In general, the poor O&M in minor schemes was the result of institutional difficulties (specifically conflicts between the ID and the DAS) and limitations in project design and implementation (primarily the lack of user involvement in the original projects). DI staff members cited severe budgetary constraints as one of the primary reasons for poor overall O&M: the amounts originally allocated for maintenance were not sufficient to keep the schemes in good repair.

27. *Water user groups.* Today, the most important factor in maintaining the projects and ensuring their sustainability, is the involvement of user groups. The original projects did not encourage the involvement of such groups, a lesson learned by subsequent IRDP initiatives. Once it recognized the problem, the government initially attempted to promote user groups, but farmers saw these groups as imposed from the outside and did not actively participate. Although later NGO- and donor-supported projects have also encouraged the formation of farmer organizations, the most successful groups have been initiated and are run by the users themselves.

## Institutional Impact

28. The KRDP and SRDP were innovative in relying on existing line agencies and departments (some 20 in the KRDP and 25 in the SRDP) to implement project activities and

operated in line with the government's objectives of decentralizing planning and budgetary matters.

29. Focus groups made up of project staff and workers from implementing agencies assessed the projects' strengths and weaknesses. Participants in these groups cited efforts to improve the implementation capacity of line agencies as the projects' greatest strength, placing the results of this component far above those of the productive and more technical elements. Yet many of the same issues that arose during the assessments of the productive components also surfaced during the evaluation of the project's effects on local institutions. Project funds remained in the hand of the responsible ministry, inhibiting decentralized decisionmaking; the projects lacked strong management systems; and the ambitious quantitative targets far over-reached the line agencies' implementation capacity. Moreover, planning and coordination of agencies was weak, largely because the responsible agencies had been excluded from the original planning process.

30. In terms of replicability, the KRDP and SRDP failed to provide a useful model, for two reasons. First, the projects made no transitional arrangements for continued funding of the assets the projects created. Second, neither the KRDP nor the SRDP included beneficiaries in project planning and design, so that beneficiaries had not developed a sense of ownership of the projects and therefore were not inclined to maintain them. These shortcomings became important lessons for later projects. On the other hand, some "blueprint" elements were almost inevitable, given that the KRDP was the first multilaterally funded integrated rural development project IRDP in Sri Lanka, and the SRDP followed soon after. Thus, there was no precedent to follow. The result, however, was a top-down approach to design and implementation and a focus on targets.

31. Today, the IRDP is viewed as highly successful. Since the KRDP and SRDP were introduced, 16 further projects have been initiated, and 4 more are planned. The process of decentralization has continued, and the projects actively involve the private sector and Non Governmental Organizations (NGOs). Two key aspects of the KRDP and SRDP that have been applied in later projects are the multisectoral, integrated approach to district-level planning and the utilization of existing institutions. Some aspects of the two early projects that created the most serious implementation problems—in particular the blueprint approach, the failure to involve beneficiaries, and the absence of a focus on poverty alleviation—have been corrected in subsequent initiatives. Current projects are poverty oriented, encourage beneficiary participation, use process rather than blueprint planning methods, and see monitoring as a management tool. In short, the lessons learned from the KRDP and SRDP have played a significant role in the design of subsequent projects.

## **Overall Assessment**

32. The findings outlined above indicate that from both a quantitative and a qualitative viewpoint, the projects' performance has been mixed. From a purely economic point of view, the ERRs for the productive components are generally below the traditional cutoff point (10 percent) for a satisfactory rating. In addition, the quality of the initial rehabilitation works was poor and the subsequent O&M insufficient, as project beneficiaries frequently pointed out. The evaluation emphasizes the primary problems behind the poor performance of the KRDP and SRDP: overoptimistic Staff Appraisal Report (SAR) targets (often based on faulty assumptions and information), over-attribution of production increases to project actions, lack of beneficiary involvement, poor supervision, and an absence of transitional planning, among other things. But despite the projects' shortcomings, some successes emerged: paddy yields in the small irrigation

schemes rehabilitated under the projects proved to be above average for the districts, and had increased more rapidly than in the country as a whole; the infrastructure projects provided significant benefits; and the line agencies involved in implementing the projects expanded their implementation capacity considerably. On balance, therefore, the impact of the projects can be considered as marginally satisfactory.

33. While the approach to rural development in Sri Lanka has evolved considerably since the KRDP and SRDP were initiated, the dynamics of the two projects have had a profound effect on the design and implementation of later initiatives. The projects were watched closely, and while they did not provide the replicable model the IRDP had been seeking, they did provide valuable lessons that have guided the program since. These relate primarily to the desirability of having greater flexibility in design and implementation, which has been an increasing hallmark of the program over the past decade.

## 1. Introduction

1.1 In the mid-1970s, the government of Sri Lanka launched the Integrated Rural Development Programme (IRDP) to expand its development efforts to relatively neglected rural areas. The two projects developed under the IRDP that are examined here include the first districtwide effort at multisectoral planning in the Kurunegala district and a similar follow-on project in the two districts bordering Kurunegala, Matale and Puttalam.<sup>1</sup> All three districts are among Sri Lanka's poorest, and approximately 90 percent of their populations are rural.

1.2 The Kurunegala Rural Development Project (KRDP) and the Second Rural Development Project (SRDP) grew out of the government's belief that the economic potential of rural areas was not being used to its fullest. By tapping into this potential, the government hoped to increase productivity, expand employment opportunities, and thus raise rural residents' incomes. The KRDP and SRDP approached the situation from two angles. Because the majority of residents in the project areas have always been smallholder farmers working plots of less than two acres, the projects concentrated on raising agricultural productivity and providing basic services such as clean water and good roads. Second, they aimed to strengthen local institutions involved in development. Ultimately, they aimed to create a sustainable replicable model of districtwide development.

1.3 This evaluation asks whether the projects succeeded in their aims and why they succeeded or failed precisely where they did.<sup>2</sup> The assessment was undertaken in light of the KRDP and SRDP's effect on later projects, as the many problems these early efforts experienced did help the IRDP improve the design of its later projects significantly, particularly in terms of beneficiary participation (chapter 6). The scope of the assessment is restricted to the major productive components (irrigation, coconuts, and export agriculture crops [EACs]), social infrastructure subprojects (rural roads, water, health, and electrification), and institution building.<sup>3</sup> It examines issues of equity in the distribution of benefits but does not focus on gender concerns except where beneficiaries specifically mentioned the positive effects for women.

1.4 The evaluation team set out not just to measure the projects' economic effects but also to interpret the dynamics of project activities—that is, changes in the development process generated by the projects. The team made particular use of participatory techniques that focused on the beneficiaries' perceptions and sought the views of other stakeholders, including line agencies, project managers, and the government (annex 2).

1.5 Ultimately, the most successful components, as judged by the beneficiaries' appreciation of them, would be not the productive components but the social infrastructure that resulted from the projects. Plagued by design flaws (including overestimates and a shortage of accurate

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1. The International Development Association (IDA) supported both projects. This report is based on a study prepared for the Operations Evaluation Department (OED) by the Food and Agriculture Organization (FAO) of the United Nations. The original report is available from OED.

2. The Integrated Rural Development Programme (IRDP) itself has been the subject of several assessments, of which the latest is Ministry of Finance, Planning, Ethnic Affairs, and National Integration. 1995. *Integrated Rural Development Programme: 15 Years Experience in Sri Lanka*.

3. The evaluation does not cover approximately 8 percent of SRDP investments in livestock, fisheries, and forestry.

information), the production generated by the agricultural components was lower than had been expected. Limited beneficiary involvement meant that farmers felt little sense of ownership of projects assets. And because farmers play the key role in the operation and maintenance (O&M) of the schemes, many project assets are in disrepair or have had to be rehabilitated by other groups (chapter 5). Some crop improvement schemes failed because of factors beyond the projects' control, including price hikes for some important inputs such as fertilizer.

1.6 But the evaluation team found that despite these failures, beneficiaries in the project areas appreciated many of the KRDP and SRDP's innovations. On the purely economic side, yields did not meet the initial estimates but did show an increase over estimated yields without project intervention (chapter 3). The incomes of many beneficiary households rose, although not always because of increases in agricultural productivity: in some cases, additional outside employment opportunities supplemented farm income (chapter 4). In other areas, farmers were able to use new crops to improve their income from farming and release household members from outside wage labor. And beneficiaries made clear their appreciation of the new roads that increased access to employment opportunities (especially for women) and the clean water that improved their children's health.

1.7 The evaluation team also found that grassroots farmer organizations initiated after the projects ended have assumed responsibility for O&M of some project assets (chapter 5). This positive development has increased the likelihood that project assets will be maintained. The most significant development in terms of sustainability, however, has been the increased institutional capacity to develop and manage rural development projects (chapter 6).

1.8 The full report of the evaluation team presents their detailed findings and analyses. The main conclusions of that report formed the basis of a workshop held in Sri Lanka in March 1996. This report draws heavily upon the Food and Agriculture Organization (FAO) report and also reflects the discussions of the workshop which are summarized in annex 4. It aims to highlight the principle findings and conclusions, and to place them in the context of the evolution of the approach to rural development in Sri Lanka.

## 2. The Projects

2.1 The KRDP and SRDP included 12 components but did not claim to cover all aspects of district development. Rather, they were seen as representing a pragmatic compromise between comprehensiveness and manageability. Reflecting the objectives of the IRDP, they emphasized directly productive investments; reductions in intraregional disparities; financial, institutional, and technical replicability; and labor-intensive, quick-yielding rehabilitation works rather than new construction.

2.2 The three districts in which the two projects were implemented lie in northwestern Sri Lanka (see map IBRD 28408). Their climate is tropical, with only slight variations in temperature but heavy, variable rainfall that ranges from less than 1,500 mm in the drier northern zones to more than 2,000 mm in the southernmost areas on the fringes of the central highlands. The three districts had a combined population of almost 2 million in 1980 (about 14 percent of the national total). Population density varies from fewer than 200 people per square mile in the drier areas to over 1,000 per square mile in the wetter south (annex 3, table 1).

2.3 The economy and society revolve around small-scale agriculture. In 1982, roughly two-thirds of the rural households had holdings of less than two acres, and less than 3 percent had more than 10 acres (annex 3, table 2). The primary staple crop has always been paddy, grown on seasonally flooded land. Coconut is the main cash crop and is planted mainly in the more humid upland areas that are not flooded. Other perennial crops such as coffee, cocoa, and pepper and other spices—usually referred to EACs—are also grown on a small scale, mainly in the wetter areas of Matale. A range of other annual crops, such as grams and onions, are grown for home consumption and sale.

### **The Kurunegala Rural Development Project (KRDP)**

2.4 The KRDP was the first project in Sri Lanka to support the integrated development of an entire district, and aimed to increase employment opportunities and thus raise the productivity, incomes, and living standards of rural populations. The main thrust was the development of agriculture, in particular the rehabilitation of the production base for paddy and coconuts and the strengthening of agricultural support services. Complementing this expenditure on directly productive activities, which at appraisal accounted for over 78 percent of the base costs, were limited investments designed to improve health care and educational services, transportation, and water and electricity supplies to rural areas.

2.5 At appraisal it was agreed that more than two-thirds of the project beneficiaries would be small farmers with operational holdings of three acres or less and annual per capita incomes of less than US\$50 equivalent. Infrastructure was to be developed in those areas of the district that most needed it in order to reduce disparities within Kurunegala itself. The appraisal noted, however, that in view of the prevailing system of land ownership, only about one-third of the project's benefits would accrue to the district's poorest residents.

## Components

2.6 The project's 12 components covered a range of activities that included (a) improving irrigation and water management, in particular the rehabilitation and upgrading of 500 small tanks and 9 medium-sized irrigation schemes to increase paddy production;<sup>4</sup> (b) expanding existing programs for replanting, intercropping, and fertilizing smallholder coconut plantations; (c) upgrading agricultural extension services; (d) improving supplies of agricultural inputs; (e) making credit more readily available by providing funds for specific types of lending; (f) upgrading and expanding rural roads and water and electricity supplies; (g) increasing the number of rural health care and educational facilities; and (h) establishing project coordination and monitoring capabilities (see table 2.1). At appraisal, the ERR for the project's productive components was estimated at 32 percent.

**Table 2.1: Kurunegala Rural Development Project—Project Costs by Category**

	<i>Appraisal Estimate</i>		<i>Actual</i>		<i>Percent of Total Costs</i>
	<i>SL Rs million</i>	<i>US\$ million<sup>a</sup></i>	<i>SL Rs million</i>	<i>US\$ million<sup>a</sup></i>	
<i>Directly Productive Components</i>					
Irrigation and water management	124.50	8.03	194.79	8.70	26
Coconut development	81.75	5.27	105.75	4.82	14
Agricultural extension	20.00	1.29	20.04	1.00	3
Agricultural inputs	20.90	1.35	21.38	1.07	3
Agricultural credit	118.05	7.62	220.25	9.93	30
Livestock	3.10	0.20	3.70	0.20	1
Groundwater exploration	9.65	0.62	31.00	1.44	4
Subtotal	377.97	24.38	596.91	27.16	81
<i>Physical and Social Infrastructure</i>					
Rural roads	17.00	1.10	26.91	1.39	4
Rural water supply	13.35	0.86	8.45	0.41	1
Rural electrification	15.60	1.01	17.36	1.06	3
Health	6.40	0.41	14.81	0.71	2
Education	14.50	0.94	17.13	0.91	3
Subtotal	66.85	4.31	84.66	4.48	13
Project coordination and investigations	20.20	1.30	45.41	2.09	6
<b>Total costs</b>	<b>465.00</b>	<b>30.00</b>	<b>726.98</b>	<b>33.73</b>	<b>100</b>

a. Figures in US\$ are derived from the corresponding figures for Sri Lanka rupees. Small discrepancies are due to rounding, and percentages are approximate.

4. In Sri Lanka, any scheme whose command area exceeds 200 acres is defined as a medium or a major scheme.

## **Implementing the Project**

2.7 The project was designed to utilize existing agencies rather than to create a new institutional setup. About 20 agencies from 12 ministries were involved in implementing the various components, but the Ministry of Finance, Planning, Ethnic Affairs and National Integration (MFPEA & NI) held overall responsibility. A project office headed by a project director was in charge of monitoring, supervising, and coordinating the work programs of agencies in the field (figure 2.1).

2.8 For the purpose of project coordination, a project steering committee was established at the national level and a project coordinating committee at the district level.<sup>5</sup>

2.9 The life of the project was originally to be five years, from mid-1979 to mid-1984. But procurement and budgetary problems and manpower shortages in the major implementing agencies delayed the start of implementation until 1980. As a result, the closing date was extended twice, each time by one year (to 1986), to enable the project to meet most of its targets (see annex 1, table 1 for details of physical targets and achievements). Reportedly, the main reasons for the slow startup were delays in procuring equipment and vehicles (the result of the implementing agencies' lack of familiarity with the World Bank's international competitive bidding procedures and a shortage of staff (especially in the Department of Irrigation). The actual disbursement was US\$17.1 million, about 86 percent of the total IDA credit of US\$20 million.

## **The Second Rural Development Project (SRDP)**

2.10 Designed to cover the districts of Puttalam and Matale, the SRDP had broadly the same objectives as the KRDP but placed more emphasis on infrastructure. The SAR assumed that two-thirds of the SRDP's beneficiaries would be farmers with holdings of up to 2 acres and annual per capita incomes below the poverty level of US\$75. As with the KRDP, the appraisal noted that in view of the prevailing tenure pattern, only about one-third of the project's direct benefits were likely to accrue to this target group. The SRDP was approved in 1981, with a total cost of US\$40 million.

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5. The steering committee comprised the heads of responsible central government agencies and departments, the government agent for the district, and the project director. It was chaired by the MFPEA & NI's secretary, with the director of the ministry's Regional Development Division (RDD) as member secretary. The committee met every three months to resolve project-related policy issues, implementation bottlenecks, and coordination problems that could not be resolved at the district level. The project coordinating committee, comprising district heads of the implementing agencies and departments and chaired by the district minister with the project director as member secretary, met once a month to discuss and resolve interdepartmental coordination problems.

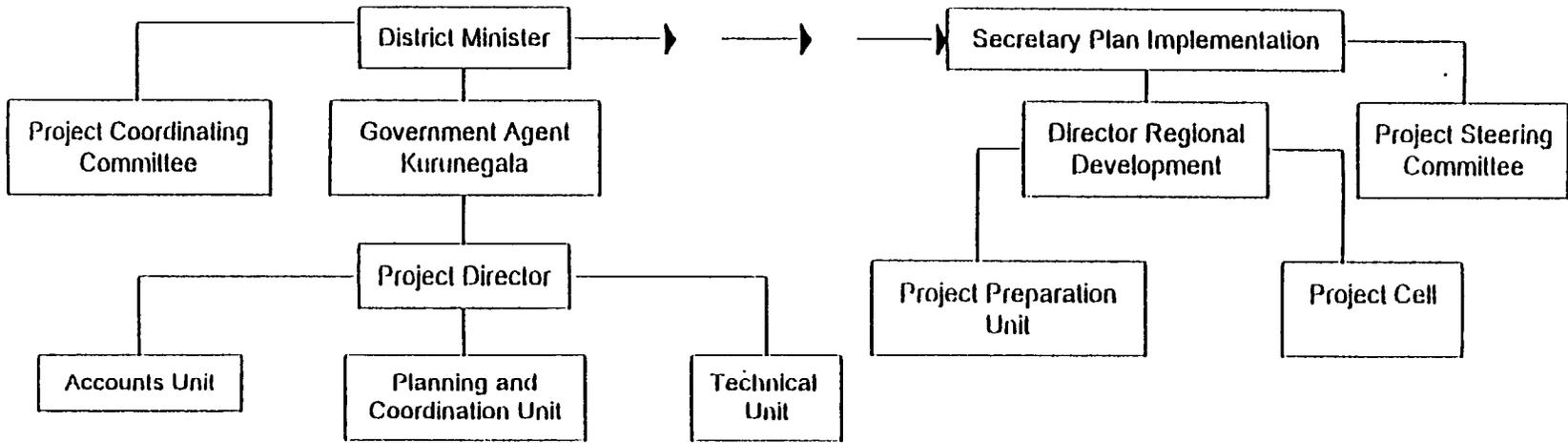


Figure 2.1: Project Coordination and Management

## Components

2.11 Like the KRDP, the SRDP focused on (a) improving irrigation and water management; (b) rehabilitating and replanting coconut; (c) increasing supplies of agricultural inputs; (d) making credit more readily available; (e) improving rural roads and water and electricity supplies; (f) upgrading rural educational and health care facilities; and (g) establishing project coordination and monitoring capabilities (table 2.2). In addition, the SRDP had three components not included in the KRDP: forestry (in both districts); fisheries landing and shore facilities in Puttalam; and, in Matale, an EAC component that replaced the coconut component. Unlike the KRDP, the SRDP did not seek to strengthen the extension service. (Details of the targets and achievements of the projects are shown in annex 1, table 2.) At appraisal, the ERR for the project's productive component was estimated at 17 percent (18 percent for Matale and 15 percent for Puttalam).

## Implementing the Project

2.12 The project was implemented by 25 agencies from 12 ministries in conjunction with 2 banks. Although the SRDP entailed a single loan agreement, in effect it consisted of two separate projects, one for each district, each with its own project director and management unit as well as its own account. Implementation was planned for five years (mid-1981 to mid-1986) but was extended for four additional years.

2.13 The physical targets set at appraisal were met some 18 months after the project's original closing date, but further extensions were granted so that the project could more fully utilize the IDA credit, the local currency equivalent of which had increased substantially because of the depreciation of the Sri Lanka rupee.<sup>6</sup> Although the actual loan disbursement amounted to SDR 22.86 million (US\$26.3 million, or about 89 percent of the total IDA credit), actual project costs in local currency were about 33 percent higher than appraisal estimates, the result of domestic inflation and the extended project implementation. In terms of the U.S. dollar, however, actual costs were lower (US\$39.3 million) compared with the appraisal estimate (US\$50 million).

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6. As a result, in several of the project's components, the actual physical achievement exceeded the appraisal target (see annex 1, table 2).

**Table 2.2: Second Rural Development Project—Project Costs by Category**

	<i>Appraisal Estimate</i>		<i>Actual</i>		<i>Percent of Total Costs</i>
	<i>SL Rs million</i>	<i>US\$ million<sup>a</sup></i>	<i>SL Rs million</i>	<i>US\$ million<sup>a</sup></i>	
<i>Directly Productive Components</i>					
Irrigation and water development	217.00	13.91	252.67	9.60	25
Coconut development	32.54	2.08	37.65	1.43	4
Minor export crops	47.73	3.06	29.90	1.13	3
Sericulture	8.09	0.52	2.60	0.10	—
Agricultural credit	154.14	9.88	183.16	6.96	18
Agricultural inputs	14.90	.95	9.23	0.35	1
Livestock development	7.24	0.46	5.21	0.20	1
Forestry	52.23	3.35	58.91	2.24	6
Fisheries	13.06	0.84	11.52	0.44	1
Groundwater development	8.96	0.57	24.52	0.93	2
Subtotal	555.89	35.63	615.37	23.37	61
<i>Physical and social infrastructure</i>					
Roads	98.31	6.30	133.84	5.08	13
Rural electrification	20.82	1.33	61.73	2.34	6
Rural water supply	11.37	0.73	12.48	0.47	1
Health	26.92	1.72	69.21	2.63	7
Education	32.26	2.07	53.92	2.05	5
Subtotal	189.68	12.16	331.18	12.58	31
Project management	34.59	2.22	87.48	3.32	8
Total costs	780.16	50.01	1,034.03	39.27	

—Not applicable.

a. Figures in US\$ are derived from the corresponding rupee figures. Small discrepancies are due to rounding, and percentages are rounded.

### 3. Agricultural Production Performance

3.1 The central objective of the two projects was to increase the incomes and welfare of rural households, particularly smallholders, by stimulating agricultural production. About two-thirds of project expenditures were earmarked for this purpose. Efforts focused on expanding production of the most widely grown crops (paddy rice and coconuts) and of potential EACs suitable for smallholder production (coffee, cocoa, and pepper). About 30 percent of the funds for agriculture in the two projects was devoted to providing credit for agricultural investment. This chapter discusses the physical outcomes and the macroeconomic implications of these efforts.

#### A. Production Impact

##### *Paddy*

3.2 To increase rice production, the projects focused on improving existing irrigation schemes, in particular minor (village) schemes—generally a small impoundment, or “tank,” that collects water in the wettest season as a supplementary source of water for the late stages of the growing period. These schemes generally provided water for an area of between 20 and 150 acres. Some medium-sized schemes covering around 700 acres each were also rehabilitated.

3.3 The results of the field evaluation show that the additional paddy production resulting from these works is significantly less than had been forecast at appraisal, because the assumptions on which the appraisal was based proved to be overoptimistic. The area of land receiving improved water supply, the intensity of cropping on that land, and the increment of yield which can be attributed to the projects, were all less than expected.

3.4 *Incremental and cropped areas in the rehabilitated schemes were below appraisal targets.* The overall expansion of both irrigable and cropped area under the KRDP was 43 percent and 49 percent below the SAR targets, respectively (table 3.1). For minor schemes, the relatively poor achievements (69 percent lower than the SAR estimates) largely account for the small overall increase in irrigable and cropped area. Several factors affected the results: a) the recurrent droughts of the late 1980s; b) inadequate downstream development work; c) the inadequacy of the water management component; and most important d) the SAR’s unrealistic targets, which were based on inaccurate information. The SAR estimated that about 500 minor schemes could be rehabilitated, with an initial irrigable area of 70,000 acres, and that this area could then be increased by 21 percent. In fact, it now appears that the 455 schemes which were rehabilitated initially only commanded about 23,100 acres of land. With rehabilitation, the total irrigable area did increase by about 24 percent, or slightly more than the SAR anticipated but in actual acreage, this amount equals only about half the anticipated incremental acreage. The same holds true for the cropped area (for details see annex 3, table 3).<sup>7</sup>

3.5 In contrast, the number of schemes rehabilitated under the SRDP exceeded appraisal targets by 50 percent because of the extended project period (para. 2.3). The irrigable area increased 41 percent more than had been anticipated at appraisal (6 percent in Matale and 59

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7. In reality, the KRDP’s project designers expected the project to have an impact on the whole district.

percent in Puttalam) and the cropped area by 9 percent more (11 percent less than anticipated in Matale, but nearly 20 percent more than expected in Puttalam).

3.6 *Cropping intensity in both projects was only slightly below SAR expectations, except in Puttalam.* There it was 25 percent lower than anticipated, because several minor schemes were sited on flat lands (some below sea level) that are often flooded during the rainy season. Only one crop is grown in these areas between the two wet seasons.

3.7 *The original estimates of paddy yields were overoptimistic.* When the incremental contribution of the projects to paddy yields (as calculated by the mission) is compared with completion estimates, two points stand out (table 3.2).<sup>8</sup> First, there is a positive incremental contribution in all cases of about 60–90 kg/acre. Second, this increase is below appraisal estimates, primarily because both these estimates of the incremental impact of the projects were overoptimistic. They assumed that yields would not increase at all without the projects.

3.8 From 1979 to 1987, paddy yields first increased in Sri Lanka and then began to stagnate and, in some areas, to decline slightly. Comparison of the evolution of yields in the project districts with those in the Sri Lanka as a whole supports the conclusion that, broadly speaking, increases in yields in the project districts were as high (if not higher) than those at the national level (table 3.3). The increase in yields was greatest in the minor schemes in the project areas, demonstrating the value of the increased availability of water resulting from the rehabilitation works carried out under the project.

3.9 On the basis of these estimates of incremental areas and yields, this evaluation has estimated yearly incremental production of paddy at about 16,600 metric tons/year under the KRDP; and at 8,331 tons under the SRDP (annex 3, table 4).<sup>9</sup> These figures are substantially lower than the SAR projections (56,000 tons and 24,000 tons respectively).

### *Coconut*

3.10 Yearly incremental coconut production resulting from the KRDP has been estimated by this study at 65.9 million coconuts, or an average incremental productivity of 507 coconuts per acre. This estimate is 57 percent lower than SAR estimates and 31 percent lower than PCR estimates. Estimates of incremental coconut production in the Puttalam District resulting from the SRDP also fall short of appraisal targets, amounting to 17.4 million—33 percent and 38 percent below SAR and PCR estimates.

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8. Table 2, annex 3 provides the details by discrete years.

9. See annex 3. Detailed incremental production attributable to the projects in each district appears in tables 3–5 and representative crop budgets in tables 6–17.

**Table 3.1: Cropped Areas and Intensity—Projected and Actual, With and Without Project Intervention**

	<i>Major schemes</i>			<i>Minor schemes</i>			<i>Total</i>		
	<i>Irrigable area (Ac)</i>	<i>Cropped area (Ac)</i>	<i>Cropping intensity</i>	<i>Irrigable area (Ac)</i>	<i>Cropped area (Ac)</i>	<i>Cropping intensity</i>	<i>Irrigable area</i>	<i>Cropped area</i>	<i>Cropping intensity yields (Kg/Ac)</i>
<b>KRDP</b>									
<i>Appraisal estimate</i>									
Without	25,000	38,000	152	70,000	89,000	127	95,000	127,000	134
With	25,000	43,000	170	85,000	124,000	145	110,000	167,000	151
Incremental area	0	5,000	—	15,000	35,000	—	15,000	20,000	—
Increase	2,083	3,202	—	5,470	9,836	—	7,534	10,038	—
<i>IER</i>									
Without	30,679	43,782	143	23,128	28,131	122	53,801	73,913	137
With	32,762	46,984	144	28,593	37,967	133	61,335	84,951	138
<b>SRDP</b>									
<i>Appraisal estimate</i>									
Without	15,520	15,900	101	9,830	11,320	115	25,400	27,220	107
With	15,700	26,050	166	12,800	19,420	152	28,500	45,470	160
Incremental area	130	10,150	—	2,970	8,100	—	3,100	18,250	—
<i>IER</i>									
Without	14,857	17,707	119	21,091	22,764	108	35,948	40,467	113
With	16,532	19,999	121	24,134	29,665	123	40,666	49,664	122
Incremental area	1,675	2,292	—	3,043	6,901	—	1,118	9,197	—

— Not applicable.

Source: Annex 3, table 3.

**Table 3.2: Average Yield Increase 1980–1994 (kg/acre)**

<i>Project/Scheme</i>	<i>SAR</i>	<i>PCR</i>	<i>Mission<sup>a</sup></i>
<b>KRDP</b>			
Major Schemes	170	200	74
Minor Schemes	120	90	90
Overall	—	—	84
<b>SRDP<sup>b</sup></b>			
<i>Matale</i>			
Major Schemes	155	—	76
Minor schemes	176	—	54
Overall	—	—	63
<i>Puttalam</i>			
Major Schemes	221	—	70
Minor Schemes	248	—	64
Overall	—	—	66

— Not applicable.

a. These figures correspond to increments in yields weighted by the areas concerned.

b. At completion the estimated overall incremental yields were estimated to be about 400 kg/acre.

Source: Mission estimates based on field samples.

**Table 3.3: Estimated Yields by District, With and Without Project Intervention (Maha Season)**

	<i>1979/80<sup>a</sup></i>	<i>1993/94<sup>a</sup></i>		<i>Increase<sup>b</sup></i>	
		<i>Without</i>	<i>With</i>	<i>Without</i>	<i>With</i>
<i>Major Schemes</i>					
Kurunegala	1,356	1,544	1,628	14	20
Matale	1,210	1,440	1,523	19	26
Puttalam	960	1,064	1,148	11	20
Sri Lanka	1,384	1,524	—	10	—
<i>Minor Schemes</i>					
Kurunegala	960	1,106	1,210	15	26
Matale	960	1,252	1,294	30	35
Puttalam	626	835	918	33	47
Sri Lanka	1,156	1,268	—	10	—

— Not applicable.

a. Kgs/acre.

b. Percent.

Source: Mission estimates.

3.11 The appraisal report identified three constraints to increased productivity of coconut groves: a high percentage of overage palms, a lack of moisture in the soils of the semiwet and dry zones, and soil erosion in the semiwet and wet zones. The projects aimed to reduce these constraints by subsidizing the replanting or underplanting of existing coconut palms and new

planting in home gardens;<sup>10</sup> rehabilitating coconut lands with drains, contour ridges (soil bunds), and husk pits to conserve soil and moisture; increasing productivity with fertilizers; and intercropping coconut palms with export crops. In addition, the projects were to train farmers, strengthen the Coconut Research Institute (CRI) and establish nurseries to raise the quality of coconut planting material.

3.12 *What the components achieved.* The Regional Offices of the Coconut Cultivation Board (CCB) for the Kurunegala and Puttalam districts implemented these components. The maximum holding size (under single private ownership) eligible for the schemes was 50 acres. In quantitative terms, the rehabilitation scheme proved the most successful, exceeding the SAR target by 33 percent in the KRDP and by 112 percent in the SRDP, largely because farmers received a subsidy that was paid in one installment and was relatively easy to obtain (table 3.4). The subsidized replanting and underplanting schemes fell just short of their targets in Kurunegala and exceeded them by 62 percent in the Puttalam. But the fertilizer scheme, which relied on credit, reached only 14 percent of the SAR targets set for the KRDP because of the high price of fertilizer relative to the fluctuating farm-gate price of coconuts, the lagged response to fertilizer use, the tedious procedures involved in obtaining credit, and the farmers' fear that they would be unable to repay the loans. The coconut intercropping scheme, which was based on intercropping with EACs, was also unsuccessful for a number of reasons: the semiwet and dry zones of both districts proved to be unsuited to the cultivation of these crops; there was a lack of coordination among the agencies concerned;<sup>11</sup> farmers with 1–2.5 acre holdings were reluctant to use busy family members for the labor-intensive cultivation EACs require; and managers for this type of cultivation in holdings of 20 acres and above were scarce.<sup>12</sup>

**Table 3.4: Coconut Programs, Targets, Achievements and Incremental Yields**

	<i>Home gardens</i>	<i>Under- planting</i>	<i>Rehabilitation</i>	<i>Enhanced fertilizer use</i>	<i>Inter- cropping</i>
<i>KRDP</i>					
Target (ac)	0	25,000	60,000	150,000	10,000
Achieved (ac)	1,422	24,000	79,000	20,700	4,415
Percent	—	96	133	14	44
<i>SRDP</i>					
Target (ac)	0	7,500	10,000	—	1,700
Achieved (ac)	560	12,193	21,271	—	281
Percent	—	162	212	—	16

— Not applicable.

10. In Puttalam this scheme was added during implementation.

11. Good examples are the absence of recommendations on the appropriate timing of coconut planting and intercropping, which were under the responsibility of the Coconut Cultivation Board (CCB) and the Department of Export Agriculture (DEA), respectively; and the overlapping jurisdiction of extension support by the CCB, DEA, and DoA.

12. Reluctance to intercrop coconut holdings with EACs is investigated in a detailed manner in Herath, A. (1993), "Coconut Inter-cropping with Coffee, Pepper, and Cocoa: An Economic Analysis of Present Constraints and Alternative Recommendations," Policy Review MADR 93, Agricultural Planning and Analysis Project, Ministry of Policy Planning and Implementation, Colombo.

3.13 *Production from project schemes.* Study estimates of incremental coconut production for each project take into account both field information and the factors just discussed. Two productivity levels were used for these calculations: one for beneficiaries who received all the subsidy installments or continued maintaining drains (*total participators*), and one for those who did not receive the total number of installments or stopped maintaining drains (*partial participators*) (table 3.5).

**Table 3.5: Estimated Incremental Yields by Type of Scheme (nuts/acre)**

<i>Type of beneficiaries</i>	<i>Home Garden</i>	<i>Under-planting</i>	<i>Rehabilitation</i>	<i>Fertilizer</i>	<i>Intercropping</i>
Total participators	1,200	970	700	660	790
Partial participators	—	643	150	—	—

— Not applicable.

Source: Mission estimates based on field sample.

3.14 Two unrealistic assumptions used in both the SAR and PCR account for the large discrepancy between the appraisal and current estimates of incremental yields. The first was that beneficiaries who did not obtain all the installments of the coconut underplanting and replanting subsidy schemes would achieve the same productivity level as those who did. The drop out rate was high (annex 3, table 5). Less than half of those who registered for the planting / underplanting schemes qualified for the second installment and only about 1 percent for the fourth. The main reason for this was the inability or reluctance of farmers to uproot senile or excessive palms, and carry out required maintenance of underplanted palms. Some beneficiaries also said that the long delay before the first installment was paid led to farmers losing interest and dropping out.

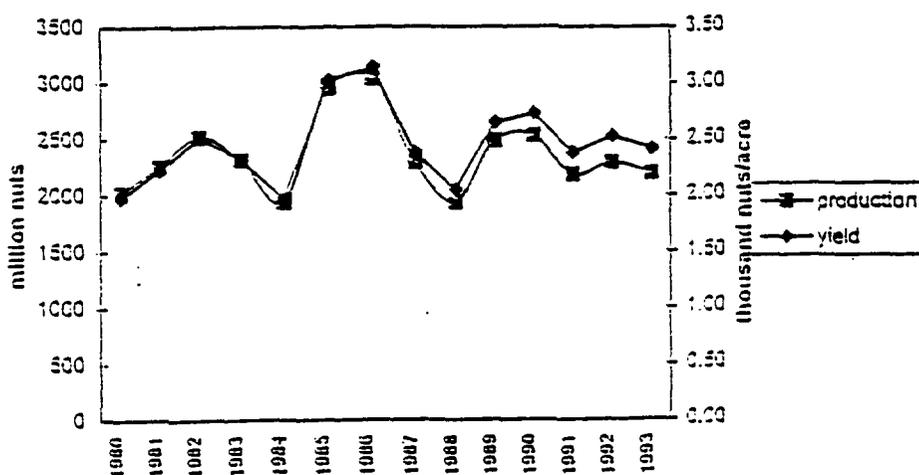
3.15 The second maintained that the majority of beneficiaries would continue to use the improved management practices (applying fertilizer, weeding, and conserving soil and moisture through drains and husk pits) recommended by the CCB after the subsidies were ended. In spite of the impressive quantitative achievements of the rehabilitation, replanting, and underplanting schemes, beneficiaries have not continued with recommended practices. For example, only 11 percent of the beneficiaries of the rehabilitation scheme have continued to maintain drains. Some 30 percent maintained drains only during the project period, and 59 percent did not maintain them at all (annex 3, table 6). According to the farmers interviewed, the major reason for not maintaining drains was the escalating cost of labor. Another reason may have been that not all the subsidized drains were needed.<sup>13</sup> Further, according to data from the CCB, only about 34 percent of the original participants in the KRDP replanting and underplanting schemes qualified for the second credit installment, about 17 percent for the third, and just one percent for the last one. Similarly, only 48 percent of the original participants in the SRDP qualified for the second installment, 15 percent for the third, and 1.1 percent for the fourth and last one (table 3, annex 4). Those who did not qualify were unable and/or reluctant to uproot senile or excessive plants and

13. The construction of contour drains was popular in that it gave the farmers additional labor wages during the off-season. In addition, if the objective of the contour drains was to intercept surface runoff and increase infiltration so as to reduce erosion, maintaining them in a clean condition was unnecessary.

to maintain underplanted palms properly.<sup>14</sup> Several beneficiaries also mentioned the serious delays in receiving the first installment as a reason for dropping out of the scheme.

3.16 Appraisal estimates also assumed that the entire coconut area in the three districts (370,000 ac) would benefit from the coconut development component. The completion report for the KRDP revised the appraisal projections of incremental area but increased the incremental production estimates, on the assumption that deteriorating husbandry practices and old unproductive palms would cause annual yields in the without-project scenario to decline considerably. However, this assumed decline in yields (which was criticized by the performance audit report) was unjustified. National figures on area and coconut production indicate that, while the cultivated area declined from 1.05 million acres to 0.93 million acres in 1980–94, production fluctuated widely (figure 3.1). A three-year moving average of yields data shows a statistically insignificant increase of 1.2 percent per annum. The figures suggest that yields countrywide have not changed and may even have increased slightly.

**Figure 3.1: Coconut Production and Yields, 1980–93 (Sri Lanka)**



#### *Export Agriculture Crops (EACs)*

3.17 The KRDP did not include any support for EACs, and the SRDP effort was confined to Matale District.<sup>15</sup> The Department of Export Agriculture (DEA) implemented the component, which planned to expand cultivated areas and improve production techniques. Specifically, the component aimed to establish the EAC Central Plant Nursery to supply quality planting material for pepper, coffee, cocoa, cloves, and cardamom; implement subsidy schemes for new plantings of cocoa, pepper, coffee, and cloves, for home gardens (less than 0.5 acre) planted with a mixture of EACs, and for holdings of more than 0.5 acres planted with a mixture of EACs; establish a cardamom research center for the study of the genetics and multiplication of cardamom; and

14. The Coconut Research Institute (CRI) has scientifically established that old, senile trees should be removed in order to obtain maximum productivity from an underplanted holding.

15. The borrower in its comments writes that under the ICRDP five nurseries were established to provide planting material to the CCB, although this had not been provided for at appraisal.

install a cocoa dryer to encourage growers to produce high-quality fermented cocoa beans.<sup>16</sup> The maximum holding size (under single private ownership) for which assistance was given was 50 acres.

3.18 *What the program achieved.* The targets for this component included planting or replanting pure stands of cocoa, cardamom, pepper, coffee, cloves, and nutmeg on 7,890 acres and planting EACs on 290 acres of existing home gardens. It was estimated the total area planted with EACs at 10,525 acres, about 38 percent higher than the appraisal target. However, secondary data from the DEA record an incremental area of only 4,205 acres, or about 55 percent of the target (table 2.7).<sup>17</sup>

3.19 The main reason for the difference in total incremental areas is that the PCR assumed that the total area for which subsidy permits had been issued was the developed area. Because this method overestimated the program's impact, two adjustments were made. First, the farmers who dropped out of the subsidy schemes after taking the first installment were deducted from the total number of farmers who received the first installment, as most of these dropouts were unlikely to have continued with EAC cultivation. Second, the area was deflated for the overall plant mortality rate.<sup>18</sup>

**Table 3.6: Targets and Achievements (Acres)**

<i>Crop</i>	<i>Targets<sup>a</sup></i>	<i>Achievements</i>
Pepper	—	2,284
Coffee	—	758
Cocoa	—	528
Clove	—	481
Cardamom	—	154
Total EAC	7,890	4,205
Home gardens <sup>b</sup>	—	567
Mixed gardens <sup>b</sup>	—	414

— Not applicable.

a. No breakdown was provided in the SAR or PCR.

b. The areas under these two items are not included in the total because they have already been apportioned to pepper (75 percent) and coffee (25 percent) and included under the figures for these two crops.

Source: Mission estimates based on DEA records.

3.20 *Productivity increases.* Data on productivity from the mission's field survey are notably lower than SAR figures and are corroborated by secondary sources. The main reasons for the discrepancy are much the same as those for the discrepancies in the coconut component. The SAR for the SRDP assumed that the component's beneficiaries would continue with the DEA's recommended management practices. However, only a small percentage of beneficiaries did so after project support ceased, largely because of escalating rural wages, increases in fertilizer prices,

16. However, the dryer has not been widely utilized (it never reached 50 percent of its capacity) because of a lack of financial incentives among growers and is now completely in disuse.

17. See table 10, annex 4 for details of the estimation.

18. For the first year, this rate was 59 percent for pepper, 55 percent for coffee, and 33 percent for cocoa. There is no evidence that plants were replaced.

and fluctuating prices for coconut and EACs (annex 3, table 7). At appraisal it was also assumed that EACs would be planted as pure stands with corresponding yield levels. But almost all the beneficiaries have interplanted to maximize the use of land, decreasing the productivity of individual EACs while increasing overall returns.<sup>19</sup>

3.21 Representative crop budgets were based on the estimated yearly incremental production shown here (table 3.7).

**Table 3.7: SRDP—Yearly Production of EACs (Matale)**

<i>Estimation</i>	<i>Coffee</i>	<i>Cardamom</i>	<i>Pepper</i>	<i>Cocoa</i>	<i>Cloves</i>	<i>Total</i>
Mission estimates						
Area (ac)	758	154	2,284	528	481	4,207
Yield/ac (kg) <sup>a</sup>	200	34	225	232	122	—
Production (mt)	151	5	513	123	59	851
Appraisal estimate						
production (mt):	500	60	1,200	230	40	2,030
Mission estimates (% of appraisal estimate)	30	9	43	53	146	42

— Not applicable.

a. Yields at full development.

Source: FAO annex 4, tables 12-14).

3.22 The mission's estimate of total EAC production (851 metric tons) is only 42 percent of SAR estimates. This discrepancy is largely the result of the SAR's overestimates of both the areas developed for EACs and of productivity levels. Except for cloves and coffee, yields recorded for all the other crops are lower than appraisal estimates.

## **B. Economic Analysis**

3.23 The evaluation of the projects' economic impact attempted to answer three questions: whether the projects interventions were economically viable, how the changing economic environment affected this, and whether the approach adopted of rice and coconut improvement production made sense. The results of the analysis showed that, from an economic point of view, paddy performed better than coconuts or EACs, although the rates of return are generally below 10 percent, the generally accepted level for satisfactory performance. Over the life of the project changes in relative prices negatively affected producers of paddy and coconuts, although EACs performed somewhat better. Estimation of the domestic research cost (DRC) of production of paddy indicated that improvement of overall irrigation schemes remains marginally attractive. But analysis of the technologies promoted by the projects for coconuts indicate that they appear unattractive to farmers given the wide price fluctuations which characterize the coconut market in Sri Lanka.

19. Many smallholders in the wet zone (Matale and Kandy districts in particular) maintain a very high crop intensity on uplands to maximize the use of this scarce resource. A typical farming model is the Kandyan Homegardens in the Kandy District and the wetter areas of Matale.

## Economic Rate of Return (ERR)

### *Paddy*

3.24 Separate ERRs have been estimated for the individual productive components studied in the two projects and for these components combined (table 3.8). Two ERRs have been calculated for the paddy component:

- (a) A rate of return based on the without-project scenario that assumes the projects' benefits are the result of the difference between the production increases recorded in the project areas and the production increases recorded in the nonproject areas of the same districts. Since these areas benefited from investments made by other donors, this ERR tends to underestimate the projects' benefits.
- (b) A rate of return based on the assumption that all production increases in the project areas since the start of the projects can be credited to the projects' interventions. This ERR overestimates project benefits.

The true ERR lies somewhere between the two estimates.

**Table 3.8: Estimated ERRs (percent)**

	<i>KRDP</i>		<i>SRDP</i>			
			<i>Matale</i>		<i>Puttalam</i>	
	<i>A<sup>a</sup></i>	<i>B<sup>b</sup></i>	<i>A</i>	<i>B</i>	<i>A</i>	<i>B</i>
Paddy	8.3	21.8	10.2	17.9	-1.9	11.7
Coconut	6.5	6.5	—	—	7.2	7.2
EACs	—	—	4.8	4.8	—	—
Productive components	6.9	10.6	8.0	13.3	3.9	9.2

— Not applicable.

a. Case A = Incremental benefits are the result of the difference between production increases in project areas and production increases in the nonproject areas of the same district.

b. Case B = All production increases over and above the level of the preproject situation are credited to the projects.

*Note:* The analysis uses three years (1980, 1987, and 1994) for which reasonably reliable data on crop yields and input use could be collected. In all the estimates, the current prices are the three-year arithmetic averages, which are used to smooth the impact of annual fluctuations in the value of inputs and outputs. Figures for the intervening years have been interpolated linearly.

3.25 For both projects, the reestimated ERRs are significantly lower than the anticipated levels of return. At appraisal the ERRs estimated for the KRDP were between 25 and 50 percent, depending on the assumptions used, while, for the SRDP, returns to the rehabilitation of minor schemes were estimated at 19 percent for Matale and 18 percent for Puttalam, and for major schemes at 35 percent and 17 percent, respectively.

### *Coconut*

3.26 The reestimated ERRs are below 10 percent for both projects, compared with appraisal estimates of above 25 percent for the KRDP and 40 percent for SRDP (Puttalam only). The ERRs are based on a without-project scenario that assumes an unchanged preproject situation. The farming practices the projects recommended have not been maintained, contributing to this crop's less-than-satisfactory performance.

### *EACs*

3.27 The reestimated ERR for EACs in the SRDP (5 percent) is similarly below the appraisal estimate for the project (21 percent). The reestimated ERR is at odds with the excellent financial results obtained at farm level, suggesting that the design of this component was not cost-effective.

### *All productive components*

3.28 The ERR for all the productive components of the KRDP and SRDP is less than 10 percent, even using the optimistic assumption that the project generated all improvements. This disappointing outcome compares unfavorably with earlier estimates of 34 percent for the KRDP and 23 percent for the SRDP.<sup>20</sup> The benefits of the social infrastructure the project created were not included in the appraisal calculations of the ERR and have not been quantified in the impact evaluation. Yet respondents rated these infrastructure investments, particularly rural electrification, among the most significant project benefits (see chapter 4).

## **The Economic Environment**

3.29 The results of the projects efforts at promoting diversification away from rice and coconuts indicate that farmers are interested and do respond when there is a clear incentive. However, actual performance of these crops was below expectations. This indicates that the problem is not with inadequate knowledge of technologies, but rather with the perception of uncertain profitability. Prices for most crops fluctuate widely and in these circumstances farmers need evidence of enough 'good' seasons to take up a new product, or of clear improvements in yield to adopt more expensive technologies for an existing one. The private sector is active in marketing, but other studies have indicated the difficulties caused by erratic policies, e.g., in importation of chilies, onions and potatoes, and by inadequate wholesale facilities, e.g., for perishable fruits and vegetables.<sup>21</sup> These problems aggravate price fluctuations at the farm level and discourage increased production.

3.30 Changes in Sri Lanka's overall economic situation, particularly escalating labor costs and the collapse of international market prices for important export crops, also diminished the success of the projects' agricultural components. In the 1980s, sizable private sector investments (encouraged by the government's 1977 liberalization policies) significantly expanded opportunities for nonfarm employment in rural areas. Simultaneously, the government adopted a

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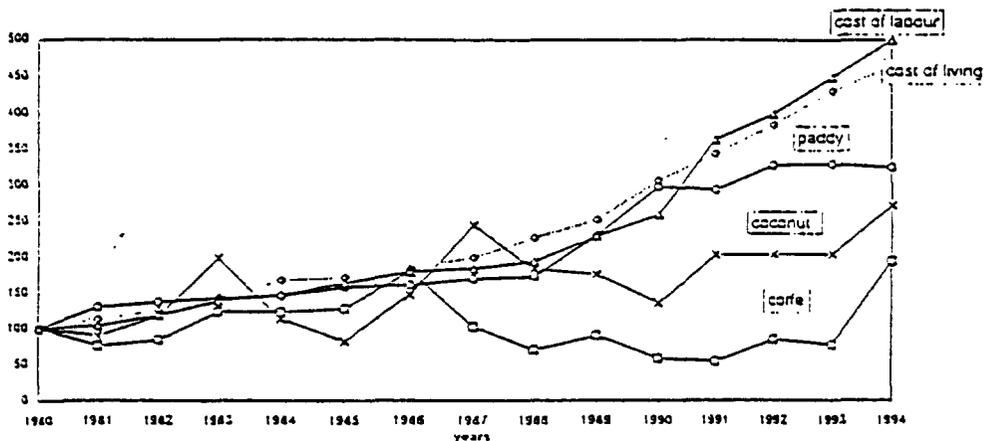
20. When the costs of social infrastructure—water supply, roads, health and educational facilities—are also included, the appraisal estimates of the ERR for the entire projects dropped, to 32 and 17 percent, respectively.

21. See: World Bank, *Sri Lanka: Nonplantation Crop Sector Policy Alternatives*, March 1996.

policy of nonintervention in labor markets to further encourage private investment and began emphasizing exports, employment creation, and infrastructural development. Rural wages jumped, but not agricultural prices, which failed to keep pace with inflation. In this environment, many small farmers were reluctant to give up lucrative wage labor to experiment with new crops and farming techniques.

3.31 The country experienced considerable price inflation between 1980 and 1994. The farm-gate prices of paddy, coconut, and coffee generally followed the same trends as living and labor costs from 1980–91 but fell considerably in 1993 and 1994 (figure 3.2).<sup>22</sup> But throughout the 1980s, the terms of trade were turning against Sri Lanka's farmers (figure 3.3). Between 1980–82 and 1990–92, international prices fell (in real terms) by about 52 percent for paddy, 24 percent for copra, 45 percent for coffee, and 46 percent for cocoa.<sup>23</sup> Paddy and coconut producers were the most seriously affected, and commercial growers with higher input requirements fared worse than small farmers.

**Figure 3.2: Crop Prices, Cost of Labor and Cost of Living Indices**

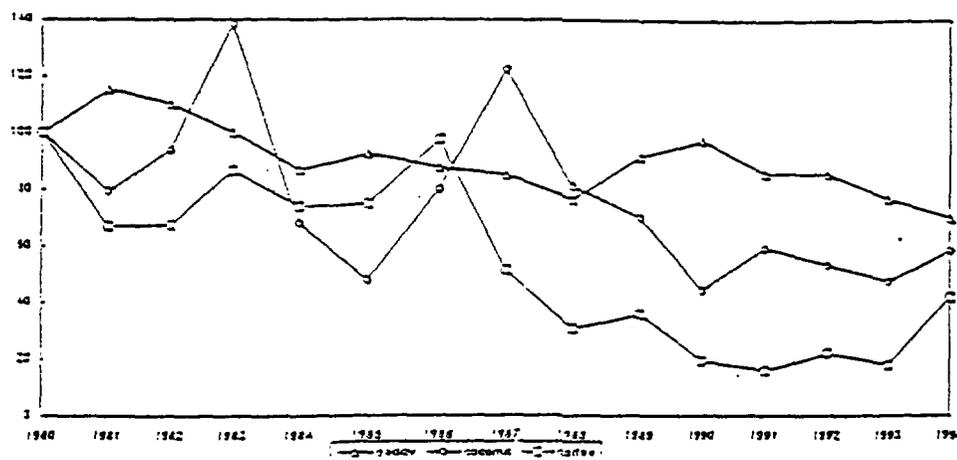


3.32 In the late 1980s, paddy yields began to stagnate, the result of low rainfall, civil unrest, and, most important, the fact that new technologies able to generate immediate increases in output had already been exploited. The financial price of inputs other than labor (particularly fertilizer) also increased considerably with the devaluation of the rupee and the abolition of subsidies. The abolition of the fertilizer subsidy, however, probably had a marginal impact on paddy production: although the share of fertilizer in the value of production doubled, it remained below 10 percent in 1994. EACs were affected less than other crops.

22. Relative to the cost of living and labor, coffee and cocoa prices have lagged considerably since 1987. Pepper prices showed an exceptional buoyancy in the mid-1980s, followed by a drastic realignment and a slight recovery in 1993–94.

23. Calculations are based on World Bank reference prices at constant US dollars, deflated by the manufacturing unit value index.

**Figure 3.3 Paddy, Coconut and Coffee: Terms of Trade**



### The Appropriateness of the Approaches Used

3.33 *Paddy*. The major focus of the project in rice production was in upgrading minor (village level) irrigation systems. The appropriateness of this approach was assessed through the estimation of the DRC coefficients.<sup>31</sup> Crop budgets for Maha season in Kurunegala were used to estimate DRCs over the life of the project.<sup>32</sup> For the minor schemes, since rice from such areas is used primarily for home consumption, the cost of transport and related items was not included. This showed that, taking into account the capital costs of rehabilitation, the DRC increased from 0.89 in 1987 to 1.0 in 1994. This indicates that the rehabilitation of minor schemes has been attractive but that this has been eroding over time.

3.34 The DRC for paddy has been tested for a range of assumptions about the adjusted value of foreign exchange and the conversion factor applied to domestic prices. These do not greatly affect the estimates. However, the DRC would increase significantly if a much higher value were assumed for the use of land, or a lower international market price were used as reference, or a much higher investment cost per unit of land had been envisaged, and/or the cost of resources used in the transport, wholesaling, and distribution of rice to major urban centers had been included.

31. The domestic resource cost coefficient is generally used in sector price analysis to measure efficiency in the use of resources. The further the coefficients drop below 1, the greater the economic benefit and comparative advantage. For details, see I. Tsakok, *Agricultural Price Policy*, Cornell University Press, 1990.

32. This analysis is straightforward with respect to current production benefits and costs, since it is carried out at current prices. In estimating the economic value of output and inputs, all crops produced and seeds, fertilizers, chemicals, and contract services (essentially mechanized farming operations) used were considered as tradables, and the appropriate share of foreign exchange component has been used to adjust for the overvaluation of the national currency. Nontradable items include the value of labor and land use, which is estimated to be the residual value at economic prices (output less production costs) of the best alternative crop that could be grown on the same land. Recovered on-farm investment costs and of project expenditures have been included. The inclusion of a capital recovery factor related to investment costs is more complex, involving the reevaluation of expenditures undertaken during a period when (with the indexes used) domestic price inflation and changes in the terms of trade caused serious distortions.

3.35 *Coconuts*. The approach to increasing coconut production was to provide financial incentives for replanting or new planing by small-scale producers and for a range of “improved” technologies. However, as noted above (paras. 3.12–3.13), farmers did not, in general, follow through with these technologies, for which the yield benefits were modest. They adopted them only in response to government subsidies, and abandoned them when the subsidies stopped. Coconut prices in Sri Lanka have traditionally been subject to wide year-to-year fluctuations. In this situation the choice for a farmer is not simple. The cost of the new technology is known, the likely benefits are highly uncertain. An analytic technique which attempts to take this into account shows that, *ex ante*, without subsidies, the traditional technologies are likely to be judged better by farmers under almost all likely conditions.<sup>26</sup> Even with subsidies, the expected net benefits from the new technologies were not unambiguous. Thus it is not surprising that farmer interest was tepid, and the proposed technologies were abandoned when subsidies ceased.<sup>27</sup>

### C. Agricultural Support Services

3.36 Some 30 percent of funds earmarked for agriculture were devoted to strengthening support services for input supply, extension, and credit. Results of these efforts were, however, mixed. Farmers were generally aware of technologies promoted by extension, but their use was only partial. The credit program led to much greater purchase of tractors (especially of the two-wheeled variety) than expected, but uptake of production loans lagged, and the impact of the project on the credit system was limited.

#### *Input Supply*

3.37 The projects constructed multipurpose cooperatives and agrarian service centers and rehabilitated fertilizer stores to facilitate the supply of inputs for paddy production. Under the KRDP, 57 such stores had been constructed by project completion, compared with the appraisal target of 80. Under the SRDP, the project provided funds to improve facilities for the sale and storage of fertilizers, pesticides, and seeds.<sup>28</sup> Yet farmers purchased a large volume of inputs from the local traders who became ubiquitous in the countryside after 1977. A paddy seed processing center with a capacity of 2 tons was built in 1983 under the KRDP, for instance, but field mission findings indicate that over two-thirds of the farmers generally obtained their seeds from private sources.<sup>29</sup> The farmers interviewed cited convenient credit arrangements and, in the

26. See J. R. Anderson and J. L. Dillon. *Risk Analysis in Dryland Farming Systems*, FAO. 1992 Chapter 3. When farmers are considering whether to adopt a new technology, they may be reasonably certain of the costs involved (e.g. for improved seeds or fertilizer, or for any additional cultivation required). However, the benefits are likely to be highly uncertain. The farmer has to compare a range of likely outcomes from his traditional technology, based on his experience, and another range based on the new technology which is enveloped in uncertainty. A recently developed analytic technique, stochastic efficiency analysis, provides an approach to estimating these distributions. Using this approach, and taking expected revenue fluctuations into account, the analysis indicates that the farmer's expected net revenue from using traditional technologies for coconut exceeds that from the proposed technologies over almost all the range of likely outcomes, if the new technologies are not subsidized. When subsidized, the proposed technologies are better over little more than half the range of expected outcomes.

27. In the last year or two, interest in coconut timber has increased greatly. If this continues, it is likely to change the economies of the crop and make the replacement of old palms more attractive.

28. Funds for a total of 105 such facilities were allocated, and 96 facilities were improved under the project.

29. The government has encouraged and trained many farmers to grow high-quality seeds and to sell them to their fellow farmers.

case of the seed processing center, the fact that seeds were not always available when needed, as the major reason for patronizing private traders.<sup>30</sup>

### *Agricultural Extension*

3.38 The KRDP planned to reorganize and strengthen extension services to complement the nationwide extension efforts of the Agricultural Extension and Adaptive Research Project (AEARP), which was also financed by the World Bank. The SRDP did not make any provision for strengthening extension services. A range of practices were promoted by extension services over the project period, with varying degrees of success (box 3.1).

3.39 The unified extension service anticipated at appraisal did not materialize. The advisory services of the CCB, the Department of Agriculture (DoA), and the Department of Animal Husbandry continued to offer technical advice independently of one another, with adverse effects on the implementation of some components. As late as 1986, only 17 DEA extension workers (out of the 50 unified extension workers envisaged at appraisal) had been posted, reportedly because of delays in approval from the Treasury and a lack of qualified personnel.<sup>31</sup>

3.40 Staff mobility and accommodations were improved under the two projects. However, over 70 percent of the quarters built under the KRDP for field staff were never occupied, reportedly because basic amenities such as educational facilities, electricity, and medical services were lacking in the designated areas.<sup>32</sup>

### *Credit*

3.41 In both projects, the credit component accounted for the second-largest share of project costs (29.4 percent in the KRDP and 19.7 percent in the SRDP). Because farmers in the project areas traditionally had difficulty obtaining credit, the component aimed to develop a financially viable credit system that would reach a significant proportion of them.<sup>33</sup> At appraisal, two primary constraints were identified: weaknesses in the agricultural credit system, and the lenient attitude of successive governments toward regular defaulters. The recovery rate for short-term production loans was around 60 percent, a situation that seriously depleted government funds. In 1979 the government temporarily discontinued default guarantees in order to give lending institutions an incentive to encourage credit discipline, leading to a credit shortfall.

3.42 Credit funds for both projects were channeled through the People's Bank and the Bank of Ceylon. The Central Bank provided 100-percent refinancing facilities for short-term crop loans at 2 percent annual interest and default guarantees of up to 75 percent. For medium-term loans, the Central Bank provided 70 percent refinancing facilities at rediscount rates ranging from 4 to 9 percent.

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30. At the time of the mission's visit, the seed center was functioning and supplying a variety of seeds as well as paddy, but not enough information was available to assess its sustainability.

31. Marga Institute, Matale RDP: Overall Evaluation, 1990, p.14.

32. Personal communication with DOA staff in Kurunegala.

33. Credit reached only 2.6 of the agricultural holdings in Kurunegala in 1977-78. Unfortunately, comparable figures for Matale and Puttalam do not exist.

### **Box 3.1: The Extension Service's "Messages": Good Farming Practices**

During the project period, the extension service promoted a number of "messages" to farmers in the three project districts in an effort to improve farming practices.

*Farmers were encouraged to switch to modern machinery.* While the overwhelming majority of paddy farmers (over 80 percent) had been using buffalo before the project, by 1995 two-wheel and four-wheel tractors had replaced animals, and only about 20 percent of farmers in Kurunegala and Puttalam continued to use buffalo. In Matale, only about half the farmers switched to tractors. The farmers interviewed in Matale cited either the fact that the tractors were not available when they were needed or a shortage of cash for renting them as the main reasons for continuing to use buffalo. For the most part, however, the two-wheel tractor credit scheme did facilitate the switch to modern farm machinery.

*Farmers were urged to adopt early-maturing varieties.* Virtually all the farmers interviewed were already growing high-yielding varieties before the projects, but in general these varieties matured rather late (after four months). In the Kurunegala and Puttalam districts, the proportion of farmers utilizing three-month varieties doubled between the preproject period and 1995, while in Matale it trebled. For most farmers, adopting these varieties was a strategy to decrease the risk of moisture loss in case of drought.

*Farmers were encouraged to establish crops on time.* This message had some effect but did not produce the expected results. The proportion of farmers establishing crops between mid-October and mid-November increased compared with the preproject period, but a large proportion of farmers continued to wait until late November or even mid-December to establish crops. Farmers cited land fragmentation, multiple ownership in several tanks of the cascade system,<sup>a</sup> and, at times, a lack of either animals or tractors as the main reasons for the delay. In addition, given the uncertainty about the onset of the full rainy season, farmers tend to wait till the season is well advanced for fear of losing seeds.

*Farmers were urged to transplant.* The DoA promoted specific extension messages concerning improved methods for raising paddy nursery. During the later part of the KRDP, a transplanting machine from the International Rice Research Institute (IRRI) was introduced in the area but was not very successful. Broadcasting sowing was found to be practically the only method of establishing stands. The scarcity and high costs of labor were the farmers' main reasons for not adopting transplanting, as similar yield levels could be achieved with proper weed control.

*Farmers were encouraged to use fertilizers.* Fertilizer use increased substantially until about 1987–88 and then stagnated or increased very little. In practically all cases, the amount of fertilizer and the mix used did not conform to recommended practices. The farmers gave as their major reasons for not adhering to recommended practices cost differentials among different types of fertilizers and the overall increase in the cost of these inputs. Meanwhile, herbicide use increased substantially: all the farmers interviewed used herbicide as a mean of curtailing labor costs.

a. In general, most minor schemes in the three project areas belong to a series of adjacent and interconnected tanks, referred to as a "tank cascade system." Although farmers have small plots in each tank, most of them own several plots in the whole system. The Agrarian Research and Training Institute's (ARTI's) ex post evaluation of the KRDP indicated that 78 percent of the farmers interviewed had plots in several adjoining schemes.

To foster credit discipline, the project also planned to strengthen efforts by the People's Bank and the Bank of Ceylon to recover or reschedule overdue loans (about SL Rs 16 millions in Kurunegala, SL Rs 9.7 in Matale, and SL Rs 15 million in Puttalam).

3.43 In terms of the number of loans granted, cultivation loans were by far the most important. In terms of value, cultivation loans remained the most important in Puttalam and Matale, but in Kurunegala the amount loaned for two-wheel tractors was slightly higher than the amount loaned for cultivation (table 3.9). Loans for the two-wheel tractor scheme considerably exceeded SAR targets in Kurunegala and Matale. The staff of the banks and the farmers interviewed believed that the two-wheel tractor scheme was the most successful because this type of tractor has several advantages: it can be used for a variety of agricultural tasks (and on very small plots), as well as for transportation and other nonagricultural activities throughout the year; it is easy to operate; and it is not too expensive.

3.44 It was unanimously recognized that cultivation loans had very poor results, including delays in repayment and high default rates. Several branch managers of participating banks mentioned that they offered these loans only because the Central Bank provided guarantees. According to an evaluation carried out in 1985–86, the majority of the loans granted for paddy in Kurunegala (64 percent) were for production under major irrigation schemes.<sup>34</sup> The same survey indicated that only 33 percent of the farmers interviewed had used institutional credit; the remaining 67 percent were either not eligible (18 percent), had defaulted before (12 percent), did not have guarantors (12 percent), were not interested (12 percent), thought there were too many delays in lending (10 percent), failed to get crop insurance (9 percent), or had other reasons for not participating (25 percent). Farmers complained about the excessive number of visits they had to make to banks in order to get a loan (as many as six visits to banks that might be as far as ten miles away).

**Table 3.9: Loans Granted by Type (thousands of SL Rs)**

<i>Type of Loan</i>	<i>KRDP</i>		<i>SRDP</i>	
	<i>No. of loans</i>	<i>Total amount</i>	<i>No. of loans</i>	<i>Total amount</i>
<i>Short term</i>				
Cultivation	27,667	71,635	5,506	36,016
Coconut fertilizer	3,972	20,800	1,571	12,000
Minor export crops	—	—	17,883	59,255
<i>Medium–long term</i>				
2-wheel tractors	2,306	73,278	145	5,083
4-wheel tractors	103	11,230	439	25,186
Pumps & sprayers	338	1,160	570	4,762
Other	26	826	625	23,168
<b>Total</b>	<b>34,412</b>	<b>178,938</b>	<b>26,045</b>	<b>165,363</b>

— Not applicable.

Source: Mission data.

3.45 In Matale, few farmers took advantage of loans to support EAC development. Farmers who did not had several reasons for not doing so: the availability of informal credit; cumbersome

34. ARTI, KRDP, Ex Post Evaluation, January 1988, pp. 122–23.

procedures for obtaining the bank loans; the long period before these perennial crops would guarantee income (which made the loans appear risky to farmers); and the loan repayments themselves, which many felt were not in line with the income the crops generated. Some farmers stated that they had not known about the scheme; others had mortgaged standing crops; and in any case EAC cultivators received subsidies from the DEA.

## 4. Socioeconomic Impact

4.1 The KRDP and SRDP aimed not only to increase agricultural productivity (see chapter 3) but also to raise the incomes and living standards of project beneficiaries. This chapter scrutinizes the impact of the major project components on income levels and living conditions in the project areas. It presents the views of project beneficiaries for each major component as important indicators of the projects' success. The analysis uses information from beneficiaries as well as economic models based on estimates of farm income.

4.2 From the beneficiaries' viewpoint, the projects provided distinct benefits but did not involve farmers enough in planning and design. While people appreciated the improved technologies and especially the social infrastructure, they objected to the "top down" approach the projects employed. The analysis of the available data also produced mixed results. While increased production from irrigable areas, improved technologies, and crop diversification raised incomes somewhat, the gains were relatively modest. Overall, the projects' weaknesses highlight the need for more participatory "process-oriented" planning and more stringent preproject analysis.

### A. The Impact at the Household Level

4.3 To assess the impact of the irrigation and major productive components on household income, the study adopted two approaches.<sup>35</sup> The first used information from beneficiaries to assess changes in the distribution of the incomes of beneficiary households. The second used data on holding size, cropped areas, technologies used, and yields to construct a series of farm models representing the situations of typical holdings with and without project intervention. The models generated estimates of crop-based incomes with and without project interventions.

### Irrigation

#### *Views of the beneficiaries*

4.4 The majority of the beneficiaries interviewed recognized that the rehabilitation of the irrigation schemes had had a positive impact in terms of the availability of water and the increases in the number and size of irrigated areas. Ultimately, the rehabilitation schemes increased crop yields and allowed farmers to grow a second crop during the Yala (spring

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35. Unfortunately, a lack of data constrained efforts to assess the impact of irrigation and the major productive components (paddy, coconuts, and EACs) on household income. Although ARTI conducted a baseline survey and a postproject evaluation of the KRDP, the information collected could not be compared, since the two surveys used different samples and methodologies and comparable secondary data do not exist. In spite of the fact that both the Department of Census and Statistics and the Central Bank regularly carried out detailed surveys of income and expenditures, data disaggregated at the district level exist only for 1990 and 1991. Earlier data were collected either at the national level and disaggregated by rural, urban, and estate households or by large regions comprising several districts.

monsoon) season. In a good season, farmers grew paddy during this period; otherwise, they grew other crops on a *bethma* system.<sup>36</sup>

4.5 In the eyes of the beneficiaries, however, several factors have diminished the impact of the rehabilitation, including the lack of beneficiary involvement in project design and implementation; inadequate attention to downstream work during rehabilitation; a drought in the late 1980s; and inadequate maintenance. The lack of beneficiary involvement is the most important factor. As concerned officials pointed out, the design of the Kurunegala project was discussed with beneficiaries only after implementation was well under way. For the SRDP, a preliminary meeting held with beneficiaries prior to project design was followed by a ratification meeting to explain the scope of the work envisaged. These meetings provided an opportunity for the farmers to express their concerns, but budget constraints meant that these important issues could not always be accommodated.

4.6 According to the majority of the farmers interviewed, when the actual implementation took place, farmers often raised practical issues and concerns that were not adequately addressed. The overwhelming majority felt that the project had missed an opportunity by not involving them more in the design, implementation, and oversight of the rehabilitation works. They also generally felt that, being physically close to the schemes, they could have exercised quality control over the rehabilitation works, something that had proved difficult for the executing agencies. Farmers had had conflicts with contractors in more than half the schemes visited, seriously diminishing the beneficiaries' sense of ownership of the projects. Since the rehabilitation works were not up to the farmers' expectations, the farmers had made their commitment conditional on additional "properly executed" rehabilitation that involved beneficiaries in all phases of the work. The mission found that when additional rehabilitation works had taken place with assistance from international donors or NGOs, and when farmers had been associated in all stages of the work, the farmers were maintaining the structures properly. In a few cases, they had even contributed group funds to the rehabilitation of the schemes.

4.7 Beneficiaries felt positive about the availability of improved seed varieties and the extension advice, which had assisted farmers in improving crop management practices. Even the beneficiaries of the SRDP, which did not include a specific extension component, shared this feeling. Beneficiaries also felt positive about the introduction of early maturing varieties and some other field crops (OFCs), which had helped to diversify farmers' sources of income.

#### *Incomes from typical paddy and other field crop (OFC) holdings*

4.8 The assessment categorized paddy farmers into six types and developed farm models for each (annex 3, table 8). Household and incremental income derived from cropping activities and returns to family labor varied according to the crop mix, the size of the farm, and the agroecological zone (table 4.1). As expected, farmers in Matale who cultivated big onions enjoyed the highest incomes and returns to labor. The cropping incomes of other farmers ranged from SL Rs 16,900 (in 1995 prices) for farmers in Kurunegala's dry and semidry zones to SL Rs 5,300 for farmers in Puttalam's major irrigation schemes.

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36. The irrigable area changes from yearly owing to variations in the amount of available water. Under the *bethma* system, a portion of the irrigable area closest to the embankment is shared among the farms that cultivate plots in the tank's command area.

**Table 4.1: Incomes Generated by Paddy-Related Farm Models (SL Rs)**

	<i>Estimated Income</i>		<i>Increment</i>	<i>Return/day</i>
	<i>Without Project</i>	<i>With Project</i>		<i>With Project</i>
<i>Kurunegala</i>				
Model 1	15,791	16,918	1,127	150
Model 2	7,928	9,508	1,580	65
<i>Matale</i>				
Model 1	21,196	36,321	15,125	300
Model 2	24,159	43,425	19,266	275
<i>Puttalam</i>				
Model 1	8,340	11,361	3,021	99
Model 2	3,069	5,332	2,263	56

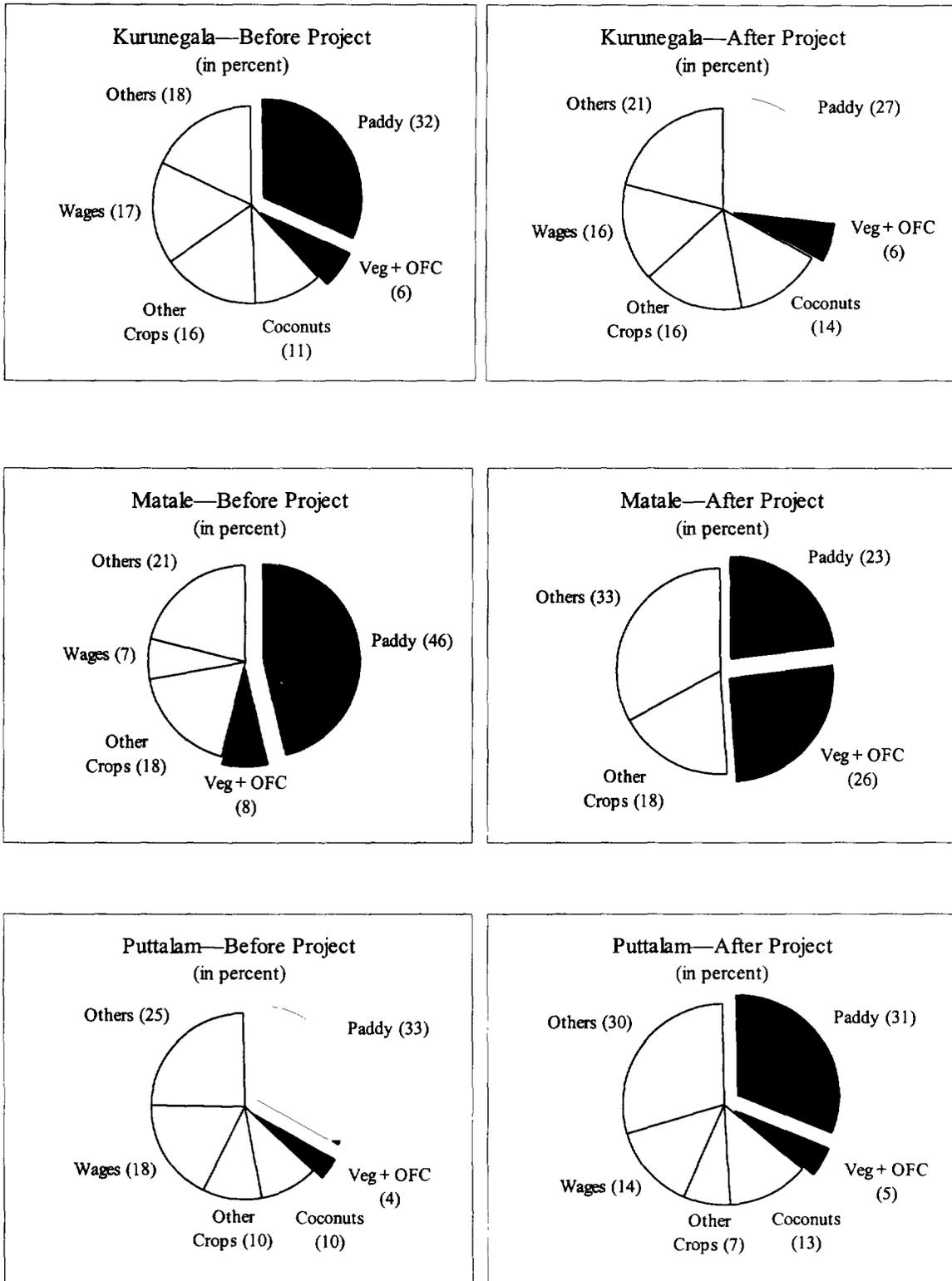
4.9 Calculations of the projects' incremental benefits do not take into account the incremental production of other lowland farm crops except in Matale, because the field investigation found that the amounts were not significant. Estimates of financial returns at the household level in all three project areas do include other field crop (OFC) production.

#### *Changes in income sources*

4.10 Before the KRDP, agriculture constituted the main source of paddy beneficiaries' income in Kurunegala (about 65 percent). Paddy accounted for about one-third of total income, while wage labor and other jobs provided the rest (figure 4.1). In Matale, beneficiaries of the paddy component relied more heavily on agriculture as their main source of income before the SRDP was implemented, and in particular on paddy, which accounted for nearly half of their income. Agriculture also played a prominent role in Puttalam, providing over half of beneficiaries' preproject income, but other jobs and wage labor were already providing a large share (43 percent).

4.11 As a result of increased prices for inputs and labor and decreases in the real farm-gate price of paddy, the share of income from paddy in the overall composition of household income had decreased in all three districts at project completion—in Kurunegala by 5 percent, in Matale by 23 percent, and in Puttalam by 2 percent (figure 4.1). Vegetables and OFCs compensated for the decrease in Matale, where the share of these crops increased by 16 percent. In Puttalam, the decrease was partly offset by coconut and vegetables, income from which increased by 3 percent and 1 percent, respectively. In spite of the decrease in paddy, however, it remains the most important source of income for small farmers in all three districts.

**Figure 4.1: Distribution of Income Sources of Paddy Farmers (before and after projects)**



**Table 4.2: Share of Paddy and Related Crops in Income for Selected Farm Types**

<i> Holding Type</i>	<i> Paddy Income (SL Rs)</i>		<i> Total Income (SL Rs)</i>		<i> Share of Paddy in Increased Income (%)</i>
	<i> Before</i>	<i> After</i>	<i> Before</i>	<i> After</i>	
Kurunegala (wet zone)	2,088	9,500	6,525	35,185	21
Kurunegala (dry zone)	4,524	16,918	11,906	51,267	22
Puttalam (major irrigation)	3,352	11,361	9,059	31,558	30

## Coconuts and EACs

### *Views of the beneficiaries*

4.12 In general, the beneficiaries looked positively on the coconut and EAC subsidy schemes. Farmers particularly appreciated the availability of good planting material, especially after the first few years of project implementation. Like paddy farmers, these beneficiaries acknowledged the positive role of extension services in their improved management practices. But this positive outlook has been tarnished somewhat by decreases in farm-gate prices (especially for coconuts) in recent years, and by the general feeling that farmers with medium-sized and large holdings benefited the most from these schemes. In addition, most of the beneficiaries of the underplanting and replanting schemes were convinced that making payments conditional on the cutting down of old trees was unrealistic, since yields from older trees also increased, because of the fertilizer being applied to new replacement palms.

4.13 Beneficiaries also felt that the high costs of inputs and labor were preventing them from continuing with improved management practices. Because of the wide fluctuations in farm-gate prices, the majority of farmers who had planted EACs felt that the incremental income these crops provided sometimes did not compensate for the cost of the labor required to harvest them. The prices of cardamom and cloves had fallen so far that farmers were no longer harvesting these crops. Most of the beneficiaries, especially those in the home-garden scheme, indicated that they were participating only because of the subsidy. Had they been given a choice, they would have preferred different crops. The most frequently heard comment was “why did they not ask us what we wanted to plant?” These findings point to the need for a more flexible approach in project design and implementation and for diagnostic studies during project design and implementation.<sup>37</sup>

### *Incomes from typical holdings*

4.14 The mission classified coconut holdings in Kurunegala and Puttalam into four groups based on types of inputs and management styles (table 4.3). The highest incremental income was realized in households having the largest holdings (the semicommercial and estate

37. The borrower in its comments writes that participation was voluntary, so that there was effectively a choice, and that the package was based on farmers' preferences as expressed at the time, even if the individual beneficiary thereby had a limited choice.

models). The incremental income for the smallholders' model, which accounted for nearly 60 percent of the beneficiaries, was also significant.

**Table 4.3: Coconut Farm Models: Operator Incomes**

<i>Model Criteria</i>	<i>Home garden</i>	<i>Smallholder</i>	<i>Family model</i>	<i>Estate</i>
Model size (acre)	1	2–9	10–19	20+
Nuts/acre/year at maturity	1,200	1,550	1,800	1,950
Model incremental income (SL Rs/ac)	5,000 <sup>a</sup>	1,391	2,137	2,080
Net Income (Rs/ac)	5,196	6,512	7,280	7,684
Net Income (Rs/md)	764	2,325	3,640	n.a.

a. Due to the complexity and variety of the home garden system, it was impossible to estimate the crop mix grown prior to coconuts, and incremental income due to the project was thus overestimated.

Source: FAO, annex 4, tables 4–7.

4.15 Farm models were derived from three categories of EACs holdings: smallholder pepper, smallholder coffee, and semicommercial cocoa, which prevailed in Matale (table 4.4).<sup>38</sup> The coffee model has the highest returns to family labor and the cocoa semicommercial model the lowest (owing to the sharp decline in the farm-gate price of cocoa in the last few years).

**Table 4.4: EAC Farm Models: Operator Incomes**

<i>Model Criteria</i>	<i>Smallholder Pepper</i>	<i>Smallholder coffee</i>	<i>Cocoa Semi-Commercial</i>
Model size (ac)	1	1	2.5
Kg/year at maturity (Kg)	155	200	232
Total r return to farm labor (Rs/ac)	16,330	16,304	7,344
Return to family labor (Rs/md)	1,050	922	700

Source: FAO, annex 4, tables 12–14.

#### *Changes in income sources*

4.16 In Puttalam, agriculture accounted for nearly two-thirds of coconut farmers' preproject income, while wages and other jobs accounted for the rest (figure 4.2). In spite of the escalating prices of inputs and labor in the district, the share of income from coconuts, on average, increased by 10 percent during the project period.<sup>39</sup> On the whole, the project had a positive impact on beneficiaries, contributing to the establishment of more stable and diversified farming systems. While the farmer groups interviewed indicated that before the project period they had obtained more than 10 percent of their income from shifting cultivation, that practice had essentially died out because of increasing pressure on land.

38. Given the complexity of the farming systems in which EACs are established, it was not possible to estimate the net incremental income.

39. Comparable data are not available for Kurunegala.

4.17 The impact of EACs on family incomes in Matale is evident in the changed share of crops in household income after the projects (figure 4.3). Prior to the introduction of EACs, the interviewed beneficiaries of this scheme were deriving nearly 60 percent of their income from wage labor. Broadly speaking, pepper, coffee, and cocoa—crops that generated no income before the project—now account for 22 percent of these beneficiaries' income. This is a positive development since wage labor, which contributed 28 percent to family income before the projects, diminished to 6 percent afterward. Wage labor is an unstable income source and has an unfavorable impact on the farming system because farms tend to be neglected when family members take other jobs. Essentially, the survival strategy of coconut and EAC growers is quite rational. In view of the escalating costs of inputs and of labor, they use very few inputs, keeping production costs to the barest minimum even at the risk of decreased yields.

## **B. Social Infrastructure**

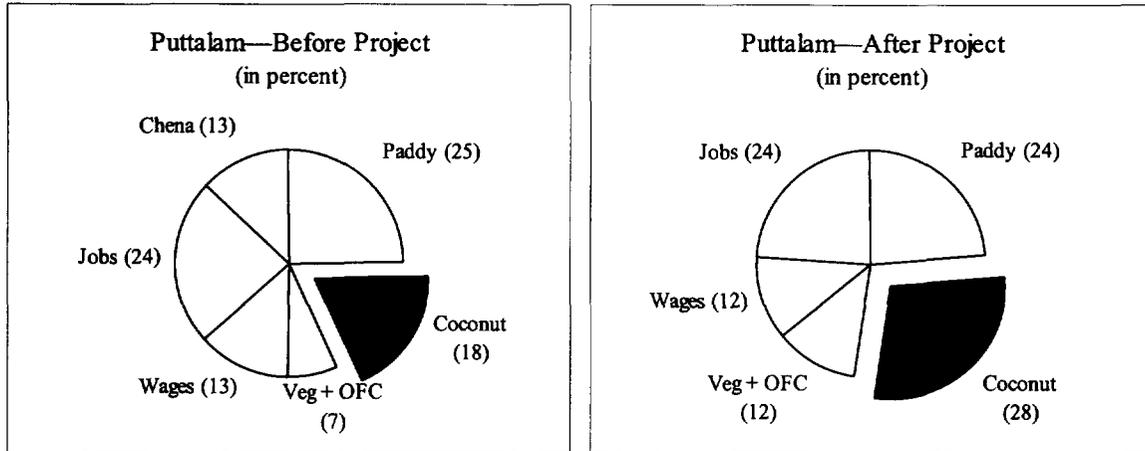
4.18 The objective of the social infrastructure component was to improve the living standards of the rural population in the three districts. Although these components accounted for a relatively small percentage of total costs (less than a quarter), they provided needed structures that have raised the quality of life for rural residents. The KRDP, for example, developed 174 miles of roads (120 miles of rural roads, 8 miles of school feeder roads, and 46 miles of tank feeder roads), compared with the appraisal estimate of 130; constructed 400 shallow wells (200 tubewells dug for groundwater exploration were converted into drinking water wells); provided educational facilities and equipment; built staff quarters and offices; provided electricity for 4 existing health facilities; and implemented 13 rural electrification schemes.

4.19 Roads were the third-largest component in the SRDP, accounting for 13 percent of total project costs, with targets of 144 miles of feeder roads, 175 miles of rural roads, and 7 miles of new roads. Achievements exceeded targets: 147 miles of feeder roads were upgraded (122 in Matale and 25 in Puttalam), 229 miles of access roads improved (85 in Matale and 144 in Puttalam), and 28 miles of fishery roads built or upgraded (in Puttalam). In addition, the project provided funds to Matale's Road Development Authority and local government to maintain 325 miles of feeder roads.<sup>40</sup> In Matale, 100 tubewells were constructed and fitted with hand pumps. In Puttalam, 150 dug wells fitted with hand pumps were constructed, three water supply schemes implemented, and 92 of the test wells converted into tubewells.

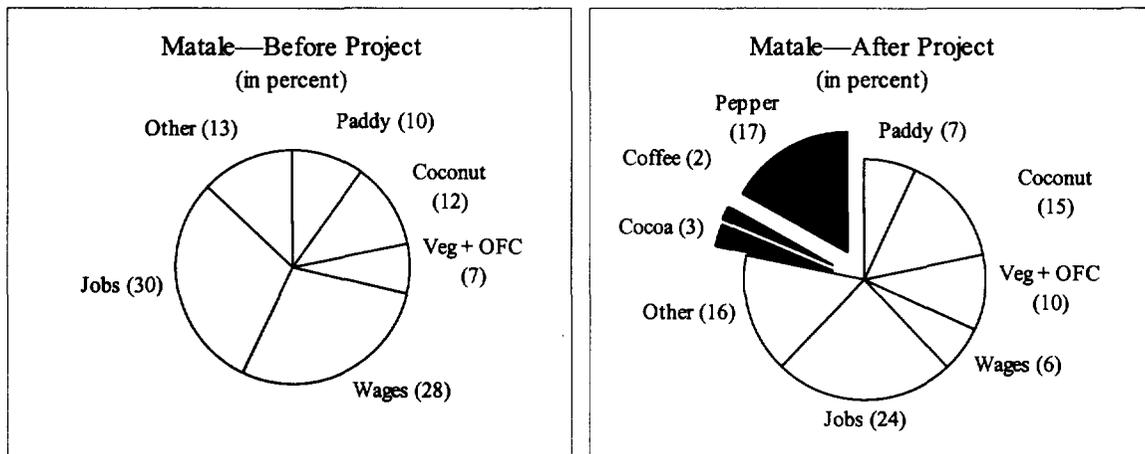
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40. MPP, Project Office, Matale RDP, Performance Report, 1980–91; Puttalam RDP, Annual Report, 1987.

**Figure 4.2: Distribution of Income of Participants in Coconut Subsidy Schemes by Source (before and after projects)**



**Figure 4.3: Distribution of Income of Participants in EAC Scheme by Source (before and after projects)**



*Roads have provided rural residents with new opportunities*

4.20 The beneficiaries had a positive perception of the rehabilitation and construction of roads, which they said raised their standard of living in two important ways:

- First, the new and repaired roads improved the flow of supplies and services by allowing buses and trucks more and easier freedom of movement. As agricultural inputs and consumer goods reached remote villages, small shops opened (an average of two per village), providing new sources of employment. The buses and trucks provided farmers with easy access to markets for agricultural produce, a particularly important

development in Matale and Puttalam, where some areas roads had been without roads altogether.<sup>41</sup>

- Second, buses and other vehicles began using the newly improved roads, facilitating access to towns and increasing employment opportunities. The villagers interviewed (especially women) said that the new access roads, especially in remote areas, allowed prospective employers to reach villages with offers of employment elsewhere, even in other parts of the world, such as the Middle East. The roads also facilitated access to educational and health services, especially in areas where access roads replaced footpaths.

4.21 Despite these positive achievements, however, this component suffered from several constraints, especially under the SRDP: shoddy construction and rehabilitation (the result of inadequate supervision), shortages of construction material, and procurement delays. The deterioration of the security situation in the later years of the SRDP's implementation contributed to the problems with supervision by preventing contractors and supervisors from accessing project sites. In all three districts, insufficient attention to surface drainage, including lead and tail channels of cross-drainage structures, has resulted in silted side drains and runnels in road platforms that cause serious overflows during the rainy seasons. Funding shortages have severely restricted routine maintenance, contributing to the ongoing degradation.<sup>42</sup> The problem is worst in Matale, where about half of the roads inspected have been poorly maintained and inadequate investigations of subgrade soils and design deficiencies have made some roads unusable.<sup>43</sup> At impact evaluation, roughly 40 percent of the carriageway and 30 percent of the platforms of the roads inspected in Matale were in poor condition.<sup>44</sup>

#### *Improved water supply means healthier children*

4.22 Most beneficiaries interviewed had a very positive view of the improved access to clean water. Prior to the projects, most villages were two to three miles from the nearest water source; the intervention generally reduced that distance to one mile or less, reducing the time spent fetching the water and allowing people to use more. The quality of water also improved, especially in the first few years after the new wells and pipes were installed. Villagers emphasized that the number of children affected by diarrhea had decreased considerably since the implementation of the water supply schemes. In addition to providing wells, the SRDP in Puttalam constructed three rural water supply schemes that also improved the quantity and quality of available water and improved overall health.

4.23 Despite these benefits, many of the wells constructed under the project deteriorated after project completion and required extensive renovation. Although caretakers had been appointed,

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41. Beneficiaries particularly noted the construction of the bridge across the Lunu Oya on the Thoduwawa-Iranwila road, and of the Kahalpityia road, both in Puttalam; both considerably improved the marketing of fish, which had been severely constrained. The latter road had a secondary impact not foreseen at appraisal: by allowing the free flow of inputs and outputs, it facilitated the cultivation of red onions, which the DOA had introduced to the area independently of the project.

42. The Road Development Authority and the Provincial Engineering Department maintain all feeder roads, and the Department of Local Government has responsibility for local roads.

43. Y.K. Murthy, *Achievements and Major Problems in SRDP*, April 1991.

44. Altogether 22 roads were inspected at impact evaluation: 6 in Kurunegala, 8 in Matale, and 8 in Puttalam.

funds for maintenance were not available. The high concentration of iron and CO<sub>2</sub> in the water, plus the low pH, caused corrosion in the galvanized iron casings and iron parts of the hand pumps that in turn contaminated water in wells built under the two projects. Reportedly, some villagers abandoned the tubewells altogether and removed the concrete covers of the shallow wells.<sup>45</sup> In all three districts, the situation has been remedied through projects funded by other sources. In Kurunegala, wells were rehabilitated with UNICEF and the German donor agency GTZ funding, and 255 water user groups were promoted. In Matale, most of the wells were handed over to DANIDA (Denmark) for remedial measures. In Puttalam, GTZ financed the replacement of pipes in 133 wells, promoted water user groups, and trained committee members. The quality of the water on balance was average, although it was still reportedly poor in roughly 20 percent of the wells visited.

### *Educational facilities*

4.24 Under the KRDP, this component aimed to improve the quality of education, strengthen facilities for vocational and technical education, improve the utilization of smaller outlying schools, and reduce intradistrict disparities in educational opportunities. The project would provide science and craft training equipment, construct living quarters for teachers and science laboratories, and expand seven secondary schools. The SRDP's component was designed to improve science, agriculture, and technical training in the public school system; to attract more qualified teachers to remote areas; and to upgrade selected senior secondary schools. The actual achievements included facilities and improvements not envisaged at appraisal (a woodworking training center and the renovation of existing weaving centers, for instance).<sup>46</sup>

4.25 Since the projects provided equipment and labs to existing schools, it was difficult, after so many years, to elicit the views of beneficiaries. Students who may have benefited from this intervention were difficult to trace and their parents no longer remembered it.<sup>47</sup> Selected indicators point to a general improvement in the overall educational situation in the three districts. For example, dropout rates decreased in Puttalam, and to a lesser degree in Kurunegala, much faster than in the country as a whole (annex 3, table 9).

4.26 Many of the educational facilities improved under the projects were secondary schools (annex 3, table 10). Between 1987 and 1991, the number of secondary school pupils increased proportionately more in the three project districts, especially in Puttalam, than it did nationwide, despite the dramatic increases across the country.<sup>48</sup> These positive changes cannot be attributed to the projects alone, but the projects almost certainly had some influence.

4.27 In areas where new facilities had been established, the mission team was better able to elicit beneficiaries' perceptions. Trainees of the vocational carpentry center in Matale, for example, felt that the skills they were acquiring would improve their employment opportunities, even though they were aware that only 50 percent of former trainees had found better jobs.<sup>49</sup>

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45. Supervision Mission Report, April 30, 1986.

46. Details of achievements are provided in annex 1, tables 1 and 2.

47. In the last ten years, interventions by the government and other funding agencies have renovated some facilities.

48. Such data were first disaggregated by district in 1987.

49. Personal communication with the director of the center.

They felt that, given the general youth unemployment situation prevailing in the country, such facilities are essential and that the needs of unemployed youths should be addressed through skills training and accompanying measures to help them find work in the small enterprise sector. In addition, they felt that vocational training was benefiting the poor, most of whom cannot afford secondary education.

4.28 Although the component exceeded physical targets, standards were not very high. While the supplies (mostly equipment for the science laboratories) were a useful contribution to several schools, survey reports point out that some educational facilities, especially in remote areas, were not used during the project period because of a shortage of science teachers.<sup>50</sup> The results under the SRDP were similar to those under the KRDP: construction standards were not very high, some teachers' quarters (especially those in remote areas) were not utilized, and some schools did not have science teachers to teach in the labs and workshops the project provided. According to the Educational Census, as late as 1986 Puttalam had only 19 science teachers—both qualified and unqualified—and Matale 72. Several of the quarters and many labs have not been properly maintained owing to lack of funds. But after initial difficulties owing to the shortage of qualified teachers, the much-needed vocational training centers built in Matale appear to be functioning well.

#### *Health Facilities*

4.29 Both projects upgraded existing facilities, created new maternity wards and health centers in rural areas, and provided residential quarters to house doctors and nurse-midwives, who had not been available before. The rural health centers in general and the maternity wards in particular contributed to the overall increase in beneficiaries' health.

4.30 Indeed, secondary health data indicate an overall improvement in the general health of the population at large (see annex 3, tables 11–12). But nutritional surveys of children carried out in 1980–82 and 1988–89 over 22 districts indicate that the incidence of wasting (low weight for height) in the intervening years had remained stationary in Puttalam, increased slightly in Kurunegala against a 4.5 percent increase countrywide, and increased a disturbing 15 percent in Matale (annex 3, table 13). Further, the incidence of stunting (low height for age) remained unchanged for the three districts as well as for the country as a whole.

#### *Rural electrification has helped create new enterprises*

4.31 Under the project, 17 rural electrification schemes were established (4 involving hospitals) in Kurunegala. The number of customers served in 1994 exceeded targets (1,530 domestic and 393 commercial connections), reaching 4,400 and 742, respectively, because of high demand and expanded capacity (table 4.8). Although only 10 rural electrification schemes were initially planned under the SRDP, 80 were built, 10 in Matale and 70 in Puttalam. The number of domestic consumers in Matale also exceeded the targets set (1,280 domestic and 195 commercial consumers); in 1994, the component made some 1,850 domestic and 330

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50. KRDP, "A Survey of the Facilities Supplied Under the Education Component of the Project," Project Office, pp. 6–7 (undated).

commercial connections. Also in Puttalam, domestic private connections climbed above the target of 2,240, while commercial connections reached 641 (the target was 226).<sup>51</sup>

4.32 Because private connections are expensive in Sri Lanka, most domestic connections are limited to residents of dwellings contiguous to commercial buildings served by the schemes.<sup>52</sup> Electricity schemes have contributed to the emergence of many small-scale industries, such as paddy mills and welding shops, and a few medium-sized enterprises, including timber sawing and coir mills, that have created employment in rural areas. Some existing enterprises have improved their performance by obtaining electricity, but more new ones have emerged with the introduction of electricity.

**Table 4.5: Electricity: Targets and Achievements**

<i>District</i>	<i>No. of schemes</i>	<i>Consumers (targets)</i>		<i>Consumers in 1994</i>		<i>Kva capacity</i>	
		<i>Dom.<sup>a</sup></i>	<i>Com.</i>	<i>Dom.</i>	<i>Com.</i>	<i>At start-up</i>	<i>In 1994</i>
Kurunegala	17	1,530	393	4,401	742	1,950	3,490
Matale	10	1,281	195	1,849	332	603	1,324
Puttalam	70	2,240	226	5,451	641	3,653	6,443 <sup>b</sup>

a. Dom. = Domestic; Com. = Commercial.

b. Comparable data available for 53 schemes only.

Source: Ceylon Electricity Board.

### C. Employment Generation

4.33 This study was able to give only limited consideration to the issue of how many jobs the projects generated. In general, the types of jobs can be categorized as follows: (a) wage labor generated by the construction and rehabilitation of all physical infrastructure under the project; (b) incremental labor due to improvements and changes in farming practices; and (c) direct and indirect employment generated by project activities such as rural electrification and by increased economic activity from multiplier effects.

4.34 The mission estimated the amounts of wage labor generated by irrigation rehabilitation work, which constituted the largest item in both projects. These were as follows: roughly 1.1 million person-days of wage labor in Kurunegala, 445,000 in Matale, and 957,000 in Puttalam (annex 2, table 6). Incremental labor was calculated on the basis of the incremental areas for each crop, but such calculations assumed that beneficiaries were unemployed before the project. Data from changes in income sources show that farmers were in fact engaged in a host of off-farm activities; in some instances, they may have switched activities as a result of the projects, while in others there could be genuine incremental employment.

4.35 The mission's field investigations indicated that each rural electrification scheme generated about 20 additional jobs; on that basis, about 280 new jobs were generated in Kurunegala, 200 in Matale, and 1,400 in Puttalam as a result of the rural electrification components. Existing enterprises also increased their business volume and revenues from 10

51. Ceylon Electricity Board.

52. It has been estimated that a private connection would cost about SL Rs. 10–15,000.

percent to 15 percent as a result of rural electrification. The indirect employment generated by the multiplier effect could not be estimated.

#### **D. Equity Issues**

4.36 At anticipated it was anticipated that the KRDP would benefit primarily small farmers working no more than 3 acres and living on incomes of less than US\$50. Social infrastructure projects would be implemented in those areas of the districts most in need, reducing intradistrict disparities. The SRDP was expected to serve the same proportion of small farmers (two-thirds of beneficiaries), but these would be working up to only 2 acres and would have incomes below US\$75 per annum. Both appraisals noted that in view of the prevailing tenure pattern, only about one-third of the projects' direct benefits were expected to accrue to the target group.

#### **Profile of Beneficiaries**

4.37 Information on the holdings of beneficiaries of the irrigation component is inconsistent. According to the project offices, more than 60 percent of the beneficiaries had holdings of 1 acre or less, and the Agrarian Research and Training Institute (ARTI) suggests that about 70 percent of the beneficiaries of this component in Kurunegala had holdings of less than 0.5 acres. However, these figures apply only to ownership in one rehabilitated tank. Most respondents operated plots in several schemes in the cascade system, and, according to the mission sample, when these additional plots are taken into account, the size of beneficiaries' holdings changes considerably.<sup>53</sup> The proportion of beneficiaries in Kurunegala with holdings of 3 acres or more rises from 20 percent when ownership in only one rehabilitated tank is considered to 42 percent when ownership is calculated for holdings in the whole system. Corresponding figures for Matale are 19 percent and 39 percent, respectively; for Puttalam, 25 percent and 40 percent. Although most of the beneficiaries of the irrigation component were smallholders, the proportion of relatively better-off beneficiaries was larger than anticipated at appraisal.

4.38 According to field data, 44 percent of the beneficiaries of the coconut subsidy schemes in the KRDP had holdings of 3 acres or more.<sup>54</sup> Similarly, in Puttalam, although the average size of beneficiaries' holdings was 2.9 acres, the average holding size of those who benefited from the rehabilitation scheme (49 percent of all beneficiaries) was 4.2 acres.<sup>55</sup> Detailed secondary data obtained by the mission for one division in this district corroborated this information: 48 percent of the 90 beneficiaries in that division had holdings of 5 acres or more.

4.39 Most of the subsidy schemes for EACs seem to have benefited smallholders, since the average size of the holdings under most of these schemes was between 1 and 2 acres. Only the cocoa subsidy scheme seems to have benefited semicommercial farmers with holdings of more than 3 acres.

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53. Farmers reported operating plots in up to five different tank systems.

54. ARTI's postproject evaluation indicates that 50 percent of the beneficiaries of the replanting/underplanting scheme were operating holdings of more 3 acres. ARTI, p.75.

55. Average holding size for the district in 1982 was 2.4 acres.

4.40 The socioeconomic profile of loan beneficiaries under the credit schemes was similar in the two projects. Beneficiaries of loans for the cultivation of paddy and OFCs were generally smallholders with holdings of between 1 and 3 acres (40–50 percent), and most loans for inputs for coconut development went to beneficiaries with holdings of 5 acres or more (nearly 80 percent). Loans for two-wheel tractors benefited primarily middle-income farmers with more than 5 acres of cultivated land. Loans for four-wheel tractors were generally given to farmers engaged in activities other than farming, such as commerce or transport, who were considered wealthy by local standards. The majority of poor smallholders did not benefit from the credit schemes, although some of them may have benefited indirectly from the increased availability of tractors in the area.

### **E. The Projects' Effect on Regional Disparities**

4.41 *Irrigation.* In selecting minor schemes to be rehabilitated, both projects emphasized serving the dry and semidry zones, which were widely recognized as being the poorest. Matale had the largest proportion of tanks rehabilitated in these zones (68 percent), Puttalam the next largest (61 percent), and Kurunegala the smallest (58 percent). In Kurunegala, the same number of major schemes was rehabilitated of the dry and semidry zones, but slightly more total area was rehabilitated in the semidry zone (55 percent). All the major schemes rehabilitated in Matale under the SRDP were in the dry and semidry zones; in Puttalam, 79 percent of the schemes rehabilitated (accounting for 74 percent of total rehabilitated area) were in the dry and semidry zones.

4.42 *Infrastructure.* Most of the roads rehabilitated under the KRDP were also located in the dry and semidry zones and may therefore have contributed to a decrease in intraregional disparities. Rural electrification schemes provided a counterbalance, since all but two of them were sited in the wet and semiwet zones. In Matale, the majority of the rural roads rehabilitated were in the wet and semiwet areas, but the rehabilitated feeder roads were spread almost equally across all zones. Similarly, the rural electrification schemes were roughly proportionally sited in all zones. In Puttalam, however, the majority of the rehabilitated roads and rural electrification schemes were in the comparatively better-off southern part of the district. In view of these facts, the projects' contribution to decreasing regional disparities may have been larger in Matale than in the other two districts.

## 5. Sustainability

5.1 This chapter presents the evaluation team's findings on the sustainability of the agricultural components of the projects, particularly the rehabilitated irrigation systems. Because the sustainability of these systems depends largely on the quality of the O&M, the analysis examines the issues surrounding O&M during and after the projects. Key to this discussion are local water user groups and farmer organizations (FOs), which, although not actively supported during the project cycle, have since become effective on the grassroots level in some schemes. Finally, the chapter briefly discusses the sustainability of other project activities related to agriculture.

### A. Current Status of the Project Irrigation Schemes

5.2 In general, the evaluation found that the rehabilitated headworks and downstream works had deteriorated significantly. The mission evaluated 34 schemes—14 in Kurunegala, 8 in Matale, and 12 in Puttalam—using technical evaluations and interviews with beneficiaries (table 5.1).

**Table 5.1. Current Status of Physical Facilities**

	<i>Headworks</i>				<i>Downstream Works</i>		
	<i>Bunds</i>	<i>Spills</i>	<i>Sluices</i>	<i>Average</i>	<i>Canal Bund</i>	<i>Farm Turnouts</i>	<i>Average</i>
<b>KRDP</b>							
Minor schemes	0.5	0.2	0.2	0.3	0.6	0.2	0.4
Major schemes	2.0	0.75	1.7	1.5	1.25	0.75	1.0
<b>SRDP</b>							
<i>Matale</i>							
Minor schemes	0.75	0.3	0.7	0.6	0.5	0.33	0.4
Major schemes	1.25	1.75	1.5	1.5	1.0	1.0	1.0
<i>Puttalam</i>							
Minor schemes	0.6	0.6	0.5	0.6	0.7	0.7	0.7
Major schemes	0.5	1.0	0.5	0.7	1.0	1.5	1.25

*Note:* The following scores were used: good = 2; average = 1; poor = 0.

*Source:* Mission field data.

5.3 Several factors account for the physical deterioration of the structures:

- inadequate maintenance;
- insufficient hydrological data for estimating flood discharge, especially for minor schemes;
- shortfalls in the studies, especially for minor schemes, with respect to both headworks (tank capacity, spill, approaches and tail canals, and foundations in

diversion schemes) and downstream works (improvements and placement of canals and farm turn-outs);

- a dearth of experienced contractors;<sup>56</sup>
- inadequate quality control by the implementing agency during construction, in part because of the KRDP's extremely ambitious targets and in part because the minor schemes in both projects were remote and widely scattered;<sup>57</sup>
- the absence of an institutional mechanism during design and implementation to express farmers' needs; and
- for the KRDP, price inflation that made the sum allocated per acre insufficient to carry out the rehabilitation work according to specifications.<sup>58</sup>

5.4 The findings of the technical evaluation showed that, with the exception of Puttalam, the overall physical status of major schemes was better than that of minor schemes; that the structures in the minor schemes had deteriorated quickly; and that, in the minor schemes, the downstream works were in far worse condition than the headworks. Three factors in particular may account for the better physical status of major schemes: the comparatively higher standards of the rehabilitation work, which was more closely supervised; regular (albeit limited) maintenance; and the fact that additional rehabilitation and/or improvement works were carried out after the projects were closed.

5.5 Many of the minor schemes are part of a cascade system comprising three to six small tanks. Sometimes the water distributed from a rehabilitated tank in the system reaches the command area of an adjoining one, adversely affecting the water balance in some plots and often causing occasional or semipermanent flooding that has caused landowners to take negative remedial actions, such as attempting to close off channels.

5.6 During field visits, mission staff elicited the beneficiaries' assessment of the quality of the rehabilitation work, using focused group discussions that included drawing visuals such as maps. In all cases, the mission team recorded the group's assessment of each item only after the group had reached agreement. Findings from these focus groups were also synthesized at the district level (table 5.2). In general, farmers in the groups agreed with the results of the technical evaluation concerning the quality of the rehabilitation work, except that the farmers were concerned primarily with the schemes closest to their own fields. In minor schemes, downstream work received the poorest rating, especially the siting and number of farm turnouts (a problem that could have been reduced if more farmers had been involved in the design process). Of the headwork in minor schemes, the rehabilitation of bunds was judged to be the poorest. In major schemes, the rehabilitation of headworks received a better rating (all but the schemes in Puttalam received average to good ratings). The rehabilitation of secondary canals, however, did not fare as well: half of the rehabilitated schemes in all three districts were rated as poor.

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56. For details, see supervision mission reports and Y.K. Murthy, *SRDP: Achievements and Major Problems of Engineering Works*, World Bank, 1991, p. 10.

57. Murphy, 1991, and farmers interviewed by the impact evaluation team.

58. Although this sum was revised upward in the course of project implementation, the increase was insufficient to cover the higher costs. Price contingency provisions made at appraisal proved inadequate to cover the increases in prices.

**Table 5.2. Farmers' Assessment of Rehabilitation Works in Minor Schemes (percent)**

<i>District</i>	<i>Headwork</i>			<i>Downstream Channel</i>	
	<i>Bund</i>	<i>Spill</i>	<i>Sluice</i>	<i>Bund</i>	<i>Turnout</i>
<i>Kurunegala</i>					
Good	—	—	20	—	—
Average	30	50	60	30	20
Poor	70	50	20	70	80
<i>Matale</i>					
Good	—	—	—	—	—
Average	33	67	66	20	28
Poor	67	33	34	80	72
<i>Puttalam</i>					
Good	—	—	10	—	—
Average	40	60	30	30	20
Poor	60	40	60	70	80

— Not applicable.

5.7 All 11 major schemes rehabilitated under the KRDP and 12 of the 15 schemes rehabilitated under the SRDP in Puttalam have been the object of further rehabilitation or improvement under the Asian Development Bank-financed Water Resources Development Project (WRDP) or the IDA-financed National Irrigation Rehabilitation Project (NIRP).<sup>59</sup> Of the minor schemes, some 10 percent of those visited in Kurunegala, 33 percent of those in Matale, and 10 percent of those in Puttalam had been rehabilitated again in the years after the project ended, with the assistance of other donors (such as the World Food Program) or NGOs. As of the end of 1995, 66 (or 16 percent) of the all the minor schemes rehabilitated under the KRDP and 10 percent of those rehabilitated under the SRDP (including those the evaluation team did not visit) had been or were slated to be rehabilitated again. The Irrigation Department (ID) staff cited two reasons further rehabilitation had been required. First, the initial ceiling on rehabilitation costs per acre had been too low, and therefore additional funding sources had to be found to complete the rehabilitation to satisfactory standards. Second, maintenance funds have simply been inadequate. The minimum cost of maintaining major irrigation systems is currently estimated at SL Rs 600/acre per year; in 1995, the average per-acre provision for O&M was SL Rs 174.<sup>60</sup>

5.8 This finding is by no means unique to the KRDP and SRDP. Of 200 projects evaluated for a World Bank review of experience with irrigation, 50 percent were wholly or partially concerned with financing rehabilitation made necessary largely by inadequate maintenance.<sup>61</sup> In areas where the state takes a role in irrigation and the users are not solely responsible for maintaining a system, there is usually resistance to paying for services, especially if users can

59. While the number of schemes rehabilitated by ongoing projects such as the WRDP and the NIRP is documented, no reliable information is available on the number of schemes re-rehabilitated with the support of nongovernmental organizations (NGOs), even though both international and local nongovernmental organizations are actively involved in this work in the project areas.

60. O&M provisions obtained for 1995 from Matale and Galgamuwa.

61. OED, 1994, *A Review of World Bank Experience in Irrigation*. Washington, D.C.: World Bank.

claim that the system performs poorly. If funding (especially external concessional funding) is available, the incentive is to limit maintenance and then rehabilitate.

## Operation and Maintenance

5.9 The appraisal reports for both projects identified poor management practices, insufficient control of water allocation, improper operation of head and downstream structures, and the large amount of water wasted as major constraints to irrigation improvement. Although the reports stressed the need for better water management practices, they did not give any details of how the improvements were to be made, offered no strategy for allocating water in seasons of low rainfall, and failed to provide an institutional mechanism for involving beneficiaries in O&M, a shortcoming that was of particular significance for the minor schemes.

5.10 For major schemes, considerable improvements in seasonal water availability had been anticipated. The records of the ID on discharge measurement are scanty but suggest that improvements did occur in all three districts. (No records were kept for minor schemes.) For evaluative purposes, qualitative indicators were used to gauge O&M. Patterns of water distribution and the adoption or existence of a water plan were used as proxies for good water management. Maintenance was jointly assessed by technically competent mission members and farmers, who judged its quality during transect walks (table 5.3).<sup>62</sup>

**Table 5.3: Current Quality of Operation and Maintenance**

<i>Project District</i>	<i>Quality of Maintenance<sup>a</sup></i>	<i>Distribution Pattern<sup>b</sup></i>	<i>Water Plan<sup>c</sup></i>
<b>KRDP</b>			
Minor schemes	0.6	1.3	0.4
Major schemes	1.5	2.0	2.0
<b>SRDP</b>			
<i>Matale</i>			
Minor schemes	0.5	1.8	0.3
Major schemes	0.5	2.0	2.0
<i>Puttalam</i>			
Minor schemes	0.1	1.2	0.6
Major schemes	1.5	2.0	2.0

a. Good = 2; Average = 1; Poor = 0.

b. Head to tail/tail to head = 2; Continuous = 1; Ad hoc distribution = 0.

c. Existence of a water plan = 2; No plan = 0.

Source: Mission field data.

5.11 Water management in major schemes was found to be considerably better than it was in minor schemes, quite possibly because all the major schemes visited were involved in the ID's Integrated Management of Major Agricultural Schemes (INMAS) or Management of Irrigation System (MANIS) programs (box 5.1). These government-sponsored programs provided additional inputs aimed at improving O&M. In the minor schemes, the quality of maintenance was poor. In the years after the projects were implemented, beneficiaries had been given

62. Frequency of maintenance was not found a good indicator as, in nearly all schemes visited, maintenance was performed annually.

responsibility for maintenance, but several factors proved difficult to overcome: discontent with the rehabilitation work itself, the lack of a sense of ownership stemming from the original projects' failure to include beneficiaries in planning and implementation, and the absence of motivated grassroots institutions. Although several of the schemes had adopted rotational water allocation (as opposed to traditional continuous flow) during or after the project, very few had a water plan. Most farmers felt that it was government's responsibility to repair deteriorated schemes, since, in their view, the initial rehabilitation work had been substandard.

5.12 In general, the poor maintenance of these schemes can be attributed to two factors: *institutional difficulties* and *limitations in project design and implementation*.

5.13 *Institutional difficulties*. The ID and the Department of Agrarian Services (DAS) share responsibility for irrigation in Sri Lanka. Construction and rehabilitation of all but the smallest tanks, water management, and O&M of the major schemes are the responsibility of the ID. Because water management and O&M of minor schemes were the responsibility of DAS until 1989, all minor schemes were to be handed over to DAS for O&M after rehabilitation had been completed.<sup>63</sup> But the DAS lacked the technical expertise as well as the implementation capacity

**Box 5.1: A Farmers' Organization Promoted under INMAS (Hakwatuna Oya Major Irrigation Scheme)**

*Before INMAS*. In this major scheme in Kurunegala, the Water Management Division of the ID made a first attempt at involving users in water management. The department aimed to improve the conveyance system, as well as to introduce a rotational water distribution system. The ID employed institutional organizers to help farmers form water users' groups at the level of field and distributary channels.

*During INMAS*. The division made a second attempt to involve farmers in 1989–90. In principle, farmers were organized into water committees under a part-time project manager from the ID.

*After INMAS*. The division made a third (and more concerted) effort to systematize farmer participation through management committees that were given responsibility for distributing water through INMAS (see annex 1). Headed by a part-time project manager, the management committees consisted of field officers of line departments—technical officers from the ID, agricultural officers from the DOA, and divisional officers from the DAS. The initial goal of collecting water taxes was abandoned.

INMAS has promoted FOs at the primary (turnout), secondary (distributary channel or subproject committee) and tertiary (project committee) levels to oversee water distribution and maintain the system. These groups elect representatives to the management committees. Presently, 6 farmer representatives sit on 13 distribution channel committees. They are involved in the decisionmaking process for water distribution and canal maintenance and in programming production. Gates at the tertiary and secondary levels are opened by a caretaker paid by the ID, and a rotational water distribution system exists. The FOs seem enthusiastic about the concept of shared management but feel they need further training in O&M.

63. Since 1990, maintenance of minor schemes has been the responsibility of the Provincial Engineering Department; however, DAS has retained responsibility for water management and some maintenance.

to carry out O&M in the early years of project implementation and often required repairs or supplementary works prior to the transfer.<sup>64</sup> The DAS was also reluctant to assume responsibility for tanks that were not in good condition, a problem that proved especially severe in Kurunegala. Moreover, the original implementation program for the KRDP did not include provisions for downstream development, an omission that was eventually rectified in 1983 but that caused additional delays in handing over the rehabilitated schemes to DAS. By 1983, only 28 percent of the rehabilitated tanks under the KRDP had been handed over, although the situation improved considerably later on with the start-up of downstream works and the strengthening of DAS technical cadres. But at the end of the disbursement period, only 58 percent of the rehabilitated tanks had been transferred to the DAS.<sup>65</sup> Similar delays in transferring the minor schemes occurred in both Matale and Puttalam but were eased by several factors, primarily a longer implementation period and pragmatic responses to the lessons learned from the KRDP.

5.14 *Limitations in project design and implementation.* The unrealistic model of water management envisaged at appraisal for the KRDP and the lack of beneficiary involvement in the planning and implementation of rehabilitation work were the major problems. These design limitations could have been overcome during project implementation had there been enough flexibility in the project or interest in the issue.<sup>66</sup>

5.15 The model for water management to be applied under the KRDP was based on information for only one tank (Walagambahuwa) located in the relatively humid part of the dry zone. This model called for early dry sowing in the Maha (fall monsoon) season of early maturing varieties of paddy, with minimum water from the tank issued on a rotational basis as supplementary irrigation. The water saved in Maha would allow for a second crop of paddy or other field crops in Yala. Although the information was relatively complete, the model was in reality inappropriate and was not adopted for a number of reasons: a) the risk of crop failure associated with dry seeding in areas of erratic rainfall (in such conditions, farmers delay sowing until tanks have sufficient water stored);<sup>67</sup> b) the rather favorable characteristics of the Walagambahuwa tank (a large catchment, a small command area, and room to store water at about 10 acre ft./acre of cultivated area) were not representative of most of the tanks to be rehabilitated; and c) the lack of awareness of farmers and implementors of the requirements of the model.<sup>68</sup>

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64. DAS was entrusted with O&M only in 1978. The problem of repairs and additional works plagued most rehabilitation projects for minor schemes until recently.

65. DAS: *Taking Over the Tanks from the Irrigation Department*, Kurunegala, 1985, p.1.

66. The Matara Rural Development Project, patterned after the KRDP, changed its design features in the course of project implementation to allow for beneficiary participation.

67. Field observations confirmed that although the majority of the farmers had adopted early maturing crop varieties, the cropping calendar was not advanced to any significant extent and dry seeding was not practiced, findings that confirm those of an earlier evaluation carried out by ARTI (ARTI, *Evaluation of the Irrigation and Water Management Component*, Research Study No. 74, 1986).

68. A study undertaken by the International Irrigation Management Institute (IIMI) notes that improving irrigation management requires not only an organizational structure but also an operational plan and a clearly identified rotation schedule that gives farmer groups a clear role and responds to farmers' needs. See Ekanayake and Groenfeldt, 1990, *Organizational Aspects of Improved Water Management: an Experiment in Dewahuwa Tank*, IIMI, Working Paper No. 17, Colombo.

5.16 In keeping with development thinking at the time of their conception, the KRDP and SRDP did not seek to strengthen grassroots farmers' organizations (FOs). As has been noted, the projects did not involve beneficiaries in design and implementation and made no provision for introducing much-needed improvements in O&M practices. The lack of effective encouragement for grassroots organizations, particularly in the areas of irrigation and water supply, is now seen as posing a key risk to the sustainability of project assets, especially in combination with the poor condition of many schemes and the absence of water charges for both major and minor schemes. Without the funds such charges would bring in, O&M must be financed entirely from scarce and fluctuating budgetary allocations for repairs and maintenance.

### **The Role of Farmers' Organizations**

5.17 Today, the scarcity of government funds means that user groups need to play the leading role in O&M. Yet the mission found that only one-fourth of the major and one-fifth of the minor irrigation schemes visited were benefiting from the involvement of effective FOs. Since the thinking on this issue has changed significantly since the projects' inception, a brief review of overall irrigation policy and the enabling legislation is provided here.<sup>69</sup>

5.18 Traditionally, water management and O&M for irrigation schemes in Sri Lanka have been the responsibility of farmers, who select an overseer (*Vel Vidane*, generally an owner-cultivator and often a respected traditional leader) to supervise water management, assign routine maintenance and minor repair tasks, and resolve conflicts. He was generally paid in kind for services rendered. Government support was confined largely to arranging precultivation meetings that revolved around the resolution of water disputes and undertaking major repairs.

5.19 Since the 1960s, however, increased government intervention and changes in agency responsibility have eroded the traditional system without replacing it with an effective alternative. Greater administrative intervention has not been associated with any significant increase in funding. By and large, physical facilities have deteriorated. In major irrigation schemes, the government recognized that the schemes were deteriorating and, in 1984, introduced water charges to pay for O&M.<sup>70</sup> Fees were collected (with some difficulty) until 1987, when civil strife and political unrest forced the government to eliminate the charges. Meanwhile, the INMAS program, which sought to foster joint management by the government and local farmers, was introduced on a pilot basis in 25 major schemes. INMAS promoted FOs, whose members assumed responsibility for the O&M of distributary and field channels, while staff paid by the newly created Irrigation Management Division took care of the rest of the system. Programs similar to INMAS have since been introduced in other major irrigation schemes with various degrees of success.<sup>71</sup>

5.20 For minor schemes, tank committees were set up by the DAS. Headed by a DAS cultivation officer, these committees comprised an agricultural instructor from the DOA, a technical assistant from the ID, a divisional officer, and a few farmers selected by DAS. But because farmers viewed these committees as imposed from the outside, few became functional and most were short-lived. The traditional system continued to erode in the absence of an

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69. For details, see appendix 1.

70. Payment of water charges was introduced in the World Bank-funded Major Irrigation Rehabilitation Project.

71. Such as Irrigation System Management Project (ISMP) and the MANIS program.

effective alternative. Thus, there was no effective institutional mechanism for channeling farmers' views during the KRDP and SRDP. Early in the SRDP (see chapter 4) and at a later stage in the KRDP, farmers were invited to comment on project design, but the evaluation mission's field work brought out very clearly the fact that these meetings were insufficient to foster a sense of ownership of the rehabilitation work among the beneficiaries.

5.21 The need for a more participatory approach to irrigation management was officially addressed in the 1991 amendment to the Agrarian Service Act, which granted FOs legal recognition. Although this initiative was extremely important, it provided neither a strategy nor guidelines for the DAS to follow in promoting FOs. The challenge now is to facilitate and institutionalize a process through which farmers can create responsive local organizations. But as one analyst has noted, "More often than not, this is hardly found in state-sponsored organizing processes. In general, FOs are formed by field officials, not to fulfill farmer needs, but merely to follow orders or guidelines from above. The learning process of institutional building needs to be institutionalized."<sup>72</sup>

5.22 *FOs in major schemes today.* Among major schemes in the KRDP, 25 percent of the FOs were rated as fully effective, 50 percent as average, and 25 percent as poor. All of the FOs in major SRDP schemes were rated as average. The evaluation team attributes this somewhat improved situation largely to the nationwide programs started during the 1980s to promote FOs rather than to the KRDP and SRDP. Concerted and sustained efforts are needed to make FOs viable and functional, especially when such initiatives come from outside local areas (box 5.1).

5.23 *FOs in minor schemes today.* In Kurunegala, the evaluation mission found that among the minor irrigation schemes rehabilitated, only 20 percent had fully effective FOs. Some 20 percent had what were described as "average" FOs, and the rest had poor organizations or none at all.<sup>73</sup> In Matale, 17 percent of the FOs were rated as fully effective, 19 percent as average, and the rest as poor. In Puttalam, 10 percent were rated as fully effective, 20 percent as average, and the rest as poor (box 5.2).

5.24 The overall irrigation policy and enabling legislation prevailing during project implementation clearly did not encourage the promotion of strong FOs in minor schemes. More careful project design and/or bold steps during the implementation of the KRDP and SRDP might have offset these inadequacies, but the lack of beneficiary involvement precluded this possibility. The top-down approach of both projects and their overambitious physical targets contributed to the farmers' lack of commitment to maintenance.

5.25 All the strong FOs the evaluation team encountered had evolved as a result of the farmers' own initiatives (box 5.3).

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72. C.M. Wijayaratna, "Sustainability of Farmers' Organizations," in *Economic Review, Special Issue, From Bureaucracy to People*, Vol. 20, No. 6, Colombo, September 1994, pp. 25-28.

73. Indicators used to evaluate the status of the FOs were the frequency of and attendance at meetings, the existence and utilization of a group fund for O&M as a proxy for commitment by the FO, and an assessment of the FO by its own members.

**Box 5.2: Farmer Organizations for Irrigation Management: The Most Common Situation (Mahagalkadawala Tank)**

*Before the project.* Prior to the KRDP, a traditional *Vel Vidane* attended to O&M matters in this minor scheme in Kurunegala.

*During the project.* Rehabilitation started in 1979, and in 1980 the DAS initiated a cultivation committee comprising a cultivation officer from the DAS, an agricultural instructor from the DOA, a technical assistant from the ID, a divisional officer, and selected farmer representatives who appointed a water manager. The manager was paid an in-kind salary for opening the gates and attending to water management. Farmers regarded this committee as a government creation.

*After the project.* In 1991, the post of cultivation officer was abolished, and since the cultivation committee had depended on this officer, it lapsed soon afterwards. In 1992 the water manager left his post, reportedly because farmers were no longer paying his salary. Currently, water is issued by a farmer selected just to open and close the gates. There is no water management system, water flows continuously, and farmers take as much water as they need when they wish.

## **Water Supply**

5.26 Water supply was the component in both the KRDP and SRDP that could have benefited most from the involvement of FOs in planning and implementation. In practice, caretakers were selected and given limited training in maintaining water pumps, but the project made no attempt to nurture a sense of community responsibility. This approach did not prove effective, especially in view of the corrosion of the casings and tubes because of lack of maintenance.

5.27 Subsequent projects (funded by GTZ and UNICEF in Kurunegala and Puttalam and by DANIDA in Matale) have promoted and trained water users' associations (in addition to replacing the corroded parts of the pumps). The local and central authorities' recognition of the need for farmer participation and the steps that have been taken to involve other funding agencies are evidence of the government's concern for maintaining and improving the investments made under the projects.

## **B. Crop Production**

5.28 The sustainability of the improvements in productivity resulting from the two projects depends on the continued use of improved crop management practices. The practices of paddy farmers are, broadly speaking, sustainable within the limits of existing technology, even though farmers have increased the use of herbicides to overcome peak labor shortages.

**Box 5.3: An Effective, Self-Initiated Farmers' Organization (Bayawa Farmer Organization)**

*Before the project.* Before 1970, water management and maintenance decisions in this minor scheme in Kurunegala had been made by the *Vel Vidane* and implemented by farmers. In the 1970s, the DAS set up a cultivation committee comprising a cultivation officer from the DAS, an agricultural instructor from the DOA, a technical assistant from the ID, a divisional officer, and farmers selected by the DAS. The committee held cultivation (*kanna*) meetings and made decisions on water distribution and maintenance. Farmers regarded this committee as a government creation, and while field-to-field water distribution was reported, farmers paid little attention to maintenance.

*During the project.* The cultivation committee changed composition under the project. Farmer representatives were elected, but the cultivation officer played the key role in initiating *kanna* meetings and making decisions. Contractors who did not interact with farmers did most of the project rehabilitation work, and although the farmers complained about faulty construction, the contractors paid no attention. Farm turnouts were inadequate and so narrow that a mammoth could not be used to clean them. Water was insufficient, so that the tail end of the channels did not receive adequate water. The farmers were unhappy with the water distribution system, since the cultivation committee decided how the water should be allocated and the DAS-selected farmer representatives implemented the committee's decision. The restructured committee was again perceived as emanating from outside.

*After the project.* In 1990, the DAS promoted a new farmers' organization. Monthly meetings were held, but they were not effective because the FO was once again initiated from the outside. The farmer representatives implemented the FO's water management decisions, and farmers performed O&M.

In 1994, farmers revitalized the FO on their own initiative. Membership fees of SL Rs 5 per person were collected; a group fund was established and a bank account opened. The group fund is used to maintain and make minor repairs to structures and to pay the water manager (SL Rs 1,000 per harvesting season). Reportedly, SL Rs 3,700 from the group fund was used to repair sluice gates. The FO prepared plans for water distribution, and therefore no conflicts have arisen. Monthly and *kanna* meetings are well attended. Farmer representatives, namely the chairman of the FO and the *Vel Vidane*, participated in a DAS-sponsored one-day training program on fertilizer use, new paddy varieties, water management, and field crops other than paddy.

This arrangement appears to be an effective way of ensuring that water is distributed fairly. Channels are maintained and water is regulated head to tail, although the tail ends do not yet have adequate water. Currently, water is issued at ten-day intervals for three days at a stretch.

5.29 On the other hand, the majority of coconut and EAC farmers discontinued soil conservation practices, weeding, and fertilizer application after the projects. According to the beneficiaries, escalating rural wage rates, increases in fertilizer prices, and fluctuating prices for coconuts and EACs were responsible for this shift. In particular, price changes have had an unfavorable impact on the sustainability of crop management practices and consequently on the productivity levels of coconut and EACs. As a result, it will be difficult for beneficiaries to maintain the yield levels on which the assessment of project benefits had been predicated. The recent reintroduction of the fertilizer subsidy could reverse this trend, but it is still too early to tell. One unfortunate consequence of the current situation is that paddy farmers' increased use of herbicides could have adverse long-term environmental effects.

5.30 For coconuts, crop establishment has been fairly satisfactory, with the density of palms often above the recommended level. EAC stands, however, generally have less than the recommended plant density; if additional plant mortality were to occur (for instance, because of drought or disease), the sustainability of these plantings could be jeopardized. The erratic prices of pepper, coffee, and cocoa during the postproject period were cited as the main reason for not maintaining crop densities and following other recommended practices.

### **C. Support Services**

5.31 The main support service provided under the projects was extension. As a result of changes in the agricultural extension service and the abolition of field workers, farmers now receive far less extension advice than they did during the projects. With respect to paddy cultivation, however, they have learned some of the most important extension messages, such as the importance of adopting early maturing varieties, and there is no reason to expect a reversion to previous practices (box 3.1). Although the success of some OFCs (such as big onions in Matala and red onions in Puttalam) is directly related to their profitability, the introduction of improved technologies by project extension staff undoubtedly helped.

5.32 The beneficiaries of subsidy schemes for coconuts and EACs mentioned that the number of visits made by the Coconut Cultivation Board (CCB) and EAC extension officers had dropped drastically since the project closed. The reaction of extension personnel to this claim has been that budget limitations on travel and subsistence and the need to participate in other nonextension activities preclude maintaining the same level of supervision. As the subsidy schemes have ended, it is no longer mandatory for the service to visit the beneficiaries, except to deliver extension messages.

5.33 The fundamental questions here are whether farmers can sustain the improved practices promoted by the extension service without subsidies, and whether the government has the resources to support the extension system at the level maintained during project implementation. In view of the decreases in farm-gate prices for agricultural output, the answer to the first question is probably not; the answer to the second question is definitely not. In the mid-1980s, after the government realized that agricultural extension accounted for nearly 1 percent of agricultural GDP (staff salaries alone were about 85 percent of operating costs), expenditures for the extension service were cut drastically.

5.34 The KRDP and SRDP provided another important support service: they supplied agricultural inputs, namely planting materials and seeds. The nurseries established to supply coconut seedlings and other planting material are still functioning and appear to be sustainable, but only on a reduced scale. As expected, the demand for planting materials is not as high as it was during the project period. Since responsible institutions are in charge of the nurseries, the quality of the material has been maintained. The seed center built under the KRDP seems to suffer from constraints on production scheduling and marketing. Privatizing the center would not only remove these constraints but could ensure the facility's sustainability.

### **D. Credit**

5.35 *Central Bank refinancing.* The Central Bank of Sri Lanka has traditionally subsidized agricultural loans. Funds from the projects were provided to institutions for on-lending at low

nominal interest rates (around 6 percent; the Central Bank assumed unpaid loans). This system has resulted in a significant transfer of resources to the Bank of Ceylon and the People's Bank, which have used this mechanism to recover from losses caused by bad debts.<sup>74</sup> In view of the strategic role of paddy in the country, the Central Bank normally refinanced only paddy cultivation loans. The projects provided resources for refinancing for all types of loans. Although the new refinancing system has both strategic and political significance, it is not sustainable, and the projects did not introduce any substantial innovative feature in the credit system (for example, linking savings to credit). Such innovations, if successful, could have been replicated elsewhere, contributing to the sustainability of the agricultural credit system.

5.36 *Interest rates.* The interest rates charged to farmers by participating banks were between 9 percent (for short-term loans) and 14 percent (for medium-term loans). But because inflation in the 1980s averaged 13 percent (17.1 percent in 1980–84 and 8.5 percent in 1985–89), the system was operating with very low (and often) negative real interest rates, a factor that militates against sustainability.

5.37 The sustainability of the main assets created under the project is uncertain. The irrigation structures have deteriorated considerably for a variety of reasons, including shortfalls in preliminary studies, a shortage of experienced contractors, a lack of beneficiary involvement, poor quality control during implementation and inadequate O&M. Because of limited farmer involvement in the rehabilitation work, they lack a sense of ownership of the assets and have been reluctant to care for the rehabilitated works, and the majority interviewed felt that further repairs should be made before the schemes are turned over to the users. The sustainability of other agricultural elements of the project is related to the public finance situation. Extension visits have been cut back because of budget cutbacks, and reduction of subsidies has led to a cut-back in fertilizer usage for some crops. The credit system was also heavily dependent upon a sharing of risk which is not sustainable in the long term.

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74. The Central Bank recognized the need for adjustments in the refinancing and loan interest rates only in 1989. In 1990 it raised the rates for cultivation loans from 9 to 12 percent, and similar increases were imposed for medium- and long-term loans under the various schemes. At the same time, the refinancing rate was adjusted upwards, from 1.5 percent to 4.5 percent for short-term agricultural loans (Central Bank of Sri Lanka, 1990).

## 6. Institutional Impact

6.1 KRDP and SRDP were innovative in their reliance on existing line agencies and departments to implement project activities. Their arrangements for implementation were in keeping with the government's efforts to empower district administrations, decentralize the capital budget, and promote village-level development initiatives. The projects were expected to strengthen the implementation and planning capacity of line agencies and departments, ensure coordination among them, and assist the process of decentralized decisionmaking.

6.2 This chapter discusses the projects' successes and failures in promoting institutional development. Section A traces the effects of the KRDP and SRDP on government agencies and the management of rural development. Section B highlights some design flaws and the ways in which these flaws affected project implementation. Section C views the experiences of the two projects in the context of today's IRDP and describes how the lessons learned from the projects have helped shape the program's goals and the means of achieving them.

### A. The Impact on Line Agencies and the Management of Rural Development

6.3 *The effect on implementation capacity.* The impact evaluation found that the implementation capacity of the line agencies in all three districts was indeed strengthened. Some 20 agencies were involved in implementing the KRDP and 25 in coordinating the SRDP. The projects provided the agencies with vehicles, equipment, physical infrastructure, and some staff training, improving staff mobility and overall performance. Agency staff and project offices stated that strengthening the implementation capacity of line agencies was the projects' most important contribution to institutional development.<sup>75</sup> They cited financial assistance, increased staff numbers, and physical assets as particularly valuable. As the projects' second most important achievement in institutional development, staff pointed to the projects' success in motivating officers through incentives, mobility, and training (table 6.1).

6.4 *The effect on planning capacity.* Improvements in planning capacity, by contrast, were limited. The role of the responsible agencies was confined to executing targets set by the SAR and reinforced by World Bank supervision missions. In interviews, staff of the Regional Development Division (RDD) explained that the projects' centrally controlled "blueprint" approach had left no space for review and adaptive planning and noted that the lesson—which was taken up in subsequent projects—was to leave more scope for adaptive decisionmaking during implementation.

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75. A one-day workshop was held in each of the three districts for the implementing agencies, including the banks involved in the projects' credit components and the project officers, to assess the projects' strengths and weaknesses. Each workshop brought together about 30 people. The results are summarized in table 6.1. For details on the methodology used, see annex 2.

**Table 6.1: Assessment of Project Strengths and Weaknesses by Implementing Agencies and Project Staff (in percent)**

	<i>Kurunegala</i>	<i>Matale</i>	<i>Puttalam</i>
<i>Strengths</i>			
Strengthened implementation capacity and improved coordination among line agencies (financial assistance, increase in staff, and physical assets)	51	47	27
Motivated officers through training, mobility, and incentives	17	25	20
Introduced new technologies (development/research/link with extension) and equipment	7	14	15
Increased productive base, infrastructures in districts; created enabling environment (other funding agencies and private sector development)	11	7	23
Facilitated opportunities to train farmers; increased incomes and/or improved their living standards	14	7	15
<i>Weaknesses</i>			
Lack of beneficiary participation; farmers' constraints and needs not taken into account; no target group approach—too much growth oriented	21	20	24
Lack of flexibility (“blueprint” approach); targets too ambitious	16	16	12
Little or no emphasis on sustainability; low replicability potential; no provisions for maintenance of assets; no follow-up actions; inadequate attention to O&M in irrigation component	34	34	37
Lack of effective monitoring	10	12	6
Progress measured only in quantitative terms	5	6	6
Political interference in selection of sites of interventions	8	6	6
Inadequate coordination at field level	5	6	6

*Note:* Percentages show the number of times a specific item was cited by workshop participants. The number of strengths and weaknesses each participant could indicate was not restricted. Most gave two to four responses.

6.5 *The effect on coordination.* Vertical coordination was successful, as each implementing agency coordinated its work with a project office, but horizontal coordination was never really adequate (see table 6.1). Those project components that most required effective coordination among several agencies and departments registered conspicuously lower levels of achievement than other components. In light of this outcome, the initial assumption that effective coordination could be achieved through committees appears somewhat naive. Effective coordination implies that the staff of the agencies in question jointly plan their work program at the field level, feel a sense of ownership of their program, and fully commit themselves to implementing it, something that does not appear to have occurred in either the KRDP or the SRDP.<sup>76</sup> Although the SARs

76. The oft-decried lack of coordination between the Irrigation Department (ID) and the Department of Agrarian Services (DAS) is perhaps the best example. Had the DAS been involved in planning the rehabilitation of irrigation facilities, many of the coordination problems that complicated the implementation of these components might not have arisen.

rightly identified the risk to the projects of assuming that this level of coordination was in fact feasible, they made no provisions to minimize the risk.

## B. Some Design Flaws and Their Effects

6.6 In both projects, *the control of funds by the MFPEA & NI inhibited genuinely decentralized decisionmaking.*<sup>77</sup> What was needed was a decentralized system that gave districts primary responsibility for project implementation, combined with an appropriate financial control mechanism at both the district and the central levels. Such an arrangement not only would have made implementation easier but would have supported the development of decisionmaking capabilities at the district level.

6.7 The projects also *lacked a strong management system.* Hindsight suggests that flaws in the projects' organizational design hampered both smooth implementation and timely project execution. The projects' management system did not clearly define the roles, responsibilities, and coordination arrangements for all major players. Those responsible for today's regional development projects acknowledge that establishing an efficient management system for projects that involve a number of agencies is still a challenge.

6.8 Another weakness in the projects' design, which came to be reflected in delays in project implementation, was *the mismatch between the ambitious quantitative targets and the implementation capacity of the line agencies.* Given their blueprint approach, which left little flexibility in implementation, the projects could have benefited from a sound scheduling exercise. Such an exercise, including an analysis of the administrative and financial actions needed before project start-up, might have revealed rather quickly the borrower's unfamiliarity with (for example) the World Bank's international competitive bidding procedures and pointed to the need for remedial actions (para. 1.19). In practice, such difficulties were not revealed until at least a year into project implementation.

6.9 *Project planners did not consider how benefits would be sustained after the projects closed, limiting the potential for replication.* Many of the line agency and project staff felt either that the government should have provided funds to maintain the assets created under the projects or that the projects should have provided for follow-up activities (table 6.1). But as RDD staff pointed out in interviews, the projects themselves provided more than half the funds spent in the three districts during the project period, and it was unrealistic to think that the agencies concerned could make this kind of financial commitment. Indeed, inadequate budgetary allocations subsequently exacerbated O&M problems. Line agency and project staff also noted that because farmers' needs and constraints were not taken into account in planning the project interventions, farmers were not prepared to maintain the assets created, particularly in the minor irrigation schemes (see chapter 5). Interviews with staff of the RDD reinforced this point.

6.10 The experience of the two projects underscores the importance of thoroughly planning transitional arrangements. Today it is recognized that both public sector agencies and local user

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77. Procedures for flow of funds were as follows: the MFPEA & NI would release funds to the implementing agencies through the project office, reimbursing the agencies for expenses such as staff salaries, allowances, and contract payments. The project director would settle all other payments after receiving certified documentation from the implementing agencies.

groups have important roles to play in O&M.<sup>78</sup> For services that only the public sector can provide, permanent institutional mechanisms and funding for operational phases need to be decided well in advance. In addition, project planning and design need to provide for the involvement of beneficiaries in the form of user groups in order to develop a sense of community ownership of project assets. Assets created under the KRDP and SRDP have suffered because of the lack of effective community-based organizations willing to assume responsibility for O&M. As chapter 5 describes, the government and NGOs have made repeated efforts to build up user groups willing to perform ongoing O&M on project assets. But the most effective groups are those formed by the users themselves.

### C. Rural Development in Sri Lanka Today

6.11 Since the KRDP and SRDP were introduced, 16 further projects have been initiated under the IRDP in Sri Lanka, all with international assistance, and 4 more are planned. Today, the IRDP has initiatives in 15 of the country's 24 districts, and the program is viewed in Sri Lanka as highly successful overall.

6.12 The process of decentralization has continued throughout the 1980s and 1990s. Provincial and divisional authorities have been given more responsibility, and elected local government bodies have been incorporated into a multitiered structure for rural development planning.<sup>79</sup> Meanwhile, economic liberalization has reduced the roles that government and public sector investment are expected to play in development. Today's rural development projects put more emphasis than their predecessors on involving the private sector and NGOs in rural development, with the government facilitating the provision of services rather than seeking to provide them all itself.

6.13 A key lesson from the two World Bank-supported rural development projects that has been applied in all Sri Lanka's subsequent initiatives is the usefulness of using a multisectoral, integrated approach to address the problems of a rural district. According to the director of the RDD, this lesson has been one of the most significant to emerge from these two projects. Another has been the importance of relying on the existing institutional structure rather than on specially established project implementing agencies. In the subsequent projects, the project offices have remained primarily technical and financial resource centers that coordinate and facilitate rather than implement project initiatives; they maintain informal authority over the work of implementing agencies through their control of project funds.

6.14 Some important aspects of the approach used in the KRDP and SRDP were recognized as disadvantages early on. In particular, the lack of explicit concern for poverty alleviation, the absence of any provisions for including farmers in project design and implementation, and the "blueprint" approach have all been shed in subsequent projects. The initial basis for these changes in program orientation came from projects funded by bilateral agencies in Hambantota (NORAD—Norwegian Agency for International Development) and Matara (SIDA—Swedish International Development Authority) that were started soon after KRDP. These projects had at

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78. The borrower in its comments writes that, in minor irrigation schemes, the government's only role is to provide guidance.

79. For details see *Integrated Rural Development Programme: Fifteen Years Experience in Sri Lanka*. Colombo: Regional Development Division, MFPEA & NI, September 1995.

first modeled their interventions on the KRDP's, but the projects were later divided into phases, permitting a more flexible approach to planning. Thus, when experience began to show the need for explicit concern with poverty alleviation and for encouraging beneficiary participation in decisionmaking, project managers were able to change the composition of their activities accordingly.

6.15 Building on the experience of these and subsequent bilaterally funded projects, today's rural development projects increasingly center on the needs of beneficiaries. They use more participatory, "bottom-up" methods for identifying needs and ways to meet them and incorporate a "process approach" to implementation. Because of the success of such approaches, which are still evolving within today's projects, they have been integrated into Sri Lanka's mainstream development programs, including national poverty alleviation programs such as the Janasaviya Trust Fund now being assisted by the World Bank.

6.16 In a retrospective look at the IRDP as a whole, the RDD itself notes, "The main factors in the success of the IRDP have been its simple approach, flexible program objectives, popular participation, political recognition, use of local resources, improved project management, effective coordination and monitoring, regular follow up, and a flexible approach to planning and implementation" (Amarasekera 1995).<sup>80</sup> Important factors in the program's success are discussed below.

### **Current Projects Are Poverty Oriented**

6.17 The KRDP and SRDP analyzed the needs of each district from a sectoral perspective. In effect, they treated the whole rural population of the region as the target group, making no specific attempts to identify and focus development efforts on the poor. By the mid-1980s, however, it had become increasingly clear that the benefits of the IRDP were unevenly distributed. The emphasis on smallholder production meant that only households with adequate land benefited directly from the projects. Households with few productive assets—the landless, those with very small holdings, and the unemployed—benefited only marginally, if at all.<sup>81</sup> Project activities needed to be selectively targeted if the most disadvantaged groups were to benefit. Thus, when the second phase of the Matara project began in 1984 after a 1982 evaluation by SIDA, it included activities with a clear focus on women, plantation workers, food stamp recipients, and the handicapped. Other bilaterally funded projects have moved in the same direction.

6.18 Today, efforts to raise agricultural productivity and to protect the welfare of the most vulnerable groups are accompanied by initiatives to diversify the rural economy and promote nonfarm rural employment. Building on past experience in promoting both agricultural and nonagricultural microenterprises at the community level, the IRDP now stresses broad-based enterprise development. This objective is generally pursued in conjunction with measures aimed at strengthening planning capacity at the local, divisional, and regional levels, with a view to

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80. See S. Amarasekera, Preface to *Integrated Rural Development Programme: Fifteen Years of Experience in Sri Lanka*.

81. See MFPEA & NI, RDD, *From Rural Development to Regional Development*, 1994, and *RDP Concept and its Evolution*, 1993.

encouraging associated investments in complementary sectors in order to maximize the overall impact of each program.<sup>82</sup>

### **Current Projects Encourage Participation**

6.19 Working through the progressively decentralized administrative structure, participatory planning has been introduced for rural development, and today beneficiary participation in development activities is a key objective of Sri Lanka's rural development policy. Instead of designing interventions from the top-down, as in the KRDP and SRDP, today's projects incorporate bottom-up initiatives conceived and requested by beneficiaries. Participation is seen to have clear advantages: people get what they want (within the limits of available resources), and they are committed to maintaining assets created under the projects.

6.20 Starting with the Moneragala project (supported by NORAD) in the mid-1980s, bilaterally funded IRDPs began adopting participatory approaches, and by 1990 the entire IRDP had incorporated participatory elements into project design. Most projects undertake the following activities to promote community mobilization and participatory village planning:

- they identify target communities or settlement clusters and potential "social mobilizers" within them;
- they create awareness through social mobilization;
- they organize people for mutual support and community development through, for example, interest groups, producer groups, and village forums;
- they establish group savings funds and build up financial management capacity and creditworthiness;
- they identify potentials and constraints through participatory rural appraisal and group discussion and develop available farm and nonfarm resources through individual and group initiatives such as labor exchanges;
- they provide training and other support for resource development;
- they organize community development activities and programs; and
- they incorporate village development plans into subregional or divisional development plans.

### **Current Projects Use Process Planning**

6.21 The KRDP and SRDP left very little room for design changes once implementation was under way. Today, the blueprint approach characteristic of these projects has been replaced by a more flexible, process-oriented approach. The initial rejection of the blueprint approach in the bilaterally funded projects in the mid-1980s caused a sharp swing towards process-based

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82. For instance, a business information and services system is being set up on a pilot basis in the southern region.

planning. But the result was found to provide too little perspective and direction, and the approach was modified. Today, the IRDP uses process planning in a defined framework. Thus, within the structure provided by medium-term perspective planning, projects follow one- to two-year rolling plans with targets, using a flexible, learning-by-doing approach that relies heavily on popular participation. This system is flexible enough for projects to modify the choice and design of activities, depending on the needs of beneficiaries, and it leaves the project open-ended in terms of inputs, outputs, and implementation schedule. At annual and midterm review meetings, the RDD's project office managers and representatives from bilateral agency headquarters assess progress and adjust plans within the medium-term perspective. And every two months, progress is reviewed by all project directors and the director of RDD. These meetings encourage regular self-appraisal and provide opportunities for learning, adaptive planning, and cross-fertilization.

6.22 Sri Lanka is a microcosm of the debate about how to reconcile bottom-up and top-down approaches to project management. In particular, IRDP managers point out the tension that arises between the need for popular participation and the need to make sizable transfers through the rural development program, whose performance is judged by the ministry that manages it (the MFPEA & NI) and the international agencies that support it.<sup>83</sup>

6.23 Process-oriented approaches call for longer implementation periods and a more gradual buildup of activities than characterized the Bank-supported projects. Experience shows that the process-oriented, bottom-up modes of development in use in today's IRDP initiatives require a good deal of time for pilot testing, for training villages in participatory methods, and for building up community organizations. Project managers stress that villages need considerable assistance in community development before they can develop the absorptive capacity to utilize available outside resources effectively. In the view of many of the project managers, a key task of rural development projects—one that cannot be hurried—is to lay the foundation for such efforts.

6.24 The new approaches have implications not only for the time span of projects but also for the character of the relationship between projects and international assistance agencies. Projects that rely heavily on process planning need to be able to interact with these agencies on a flexible, ongoing basis. Often an iterative process is needed that uses targets but also allows room to adjust program design when constructive feedback is received. The norm in today's programs is for bilateral agencies to place one to three RDD-approved advisors (for example, planning and "green sector" advisors) in each project to offer technical guidance throughout the project's lifespan. This method contrasts sharply with the twice-yearly supervision missions of the KRDP and SRDP—missions that invariably focused only on assessing progress toward physical targets.

### **Current Projects Use Monitoring as a Management Tool**

6.25 The KRDP and SRDP monitored only inputs, financial flows, and progress toward physical targets. In process-oriented approaches, monitoring needs to play a central role and to be concerned with project performance and effects. Project managers note that if monitoring is to fulfill its potential as a management tool, monitoring systems and indicators need to be developed by project management cells in collaboration with intended beneficiaries. This collaborative approach helps to ensure that the really significant variables are chosen for

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83. See also, for example, Mick Moore, Yoga Rasanayagam, and K.W. Tikakaratne, *Moneragala District Integrated Rural Development Programme: Mid-term Programme Review*, Report to the Norwegian Agency for Development Cooperation and the MFPEA & NI, government of Sri Lanka, February 1995.

monitoring and that staff and beneficiaries have a strong enough sense of ownership of the monitoring effort to carry out monitoring effectively. The concern at the national level with generating comparable data across projects is valid, but in practice it can detract from the value of monitoring as a management tool.

## Targets and Achievements of Projects

**Table 1: Kurunegala Rural Development Project**

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>1. Irrigation and water management</b>				
Major Schemes	no.	9	11	
Minor Schemes	no.	500	451	
Pumps	no.	22	2	Discontinued due to lack of demand
<b>2. Coconut development</b>				
Rehabilitation	acres	60,000	79,800	Digging of contour drains
Replanting/ underplanting	acres	25,000	24,000	
Intercropping	acres	10,000	4,415	
Intercrop. demonstration plots	no.	50	30	Discontinued due to failure, partly due to varietal selection problems
Home garden program	no.	—	1,422	Started in 1983 to compensate for low achievement of intercropping program
Coconut nurseries	no.	10	10	
Office building for CCB	no.	1	1	
Staff CCB	no.	98	98	Consisting of 20 officers and 78 support staff and laborers
Staff EAC	no.	149	67	Consisting of 33 officers and 116 support staff and laborers at appraisal, and 6 officers and 67 support staff and laborers at completion
<b>3. Agriculture extension</b>				
ACs	no.	3	2	
SMSs	no.	9	4	
AIs	no.	4	6	
KVSs	no.	140	147	
Staff quarters	no.	53	48	
Office extension	no.	2	2	
Horticultural program	acres	—	1,433	In support of dry zone activities
Horticultural nurseries	no.	—	2	
<b>4. Agriculture input supply</b>				
Seed processing center	no.	1	1	Two ton capacity
Fertilizer stores	no.	80	57	
Mammothies (imported)	no.	50,000	—	No imports, due to local availability
<b>5. Agricultural credit</b>				
Short-term: paddy production	Rs (000)	135,020	92,435	
Medium-term: coconut fertilizer	acres	50,000	20,780	
4-wheel tractors	no.	200	103	Discontinued due to overlapping with other agency program

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
2-wheel tractors	no.	500	2,383	Upward revisions including reallocation of funds for 4-wheel tractor
Sprayers	no.	1,000	1989	
Lorries	no.	20	2	Targets not achieved due to low demand
Water pumps	no.	—	140	Discontinued in 1981 due to lack of demand by MPCS
Open dug wells	no.	—	24	
<b>6. Livestock development</b>				
Veterinary ranges	no.	5	5	
Clinics	no.	3	3	
<b>7. Groundwater exploration</b>				
Test wells	no.	180	88	Downward revision due to sufficient data and 54 converted in production wells
Tube wells	no.	—	200	
<b>8. Rural roads</b>				
Village access roads	miles	120	120	
School access roads	miles	8	8	
Tank access roads	miles	—	46	Revision approved in 1983 to provide access to major irrigation schemes
<b>9. Rural water supply</b>				
Dug wells	no.	400	400	
<b>10. Rural electrification</b>				
Areas	no.	16	17	Additional scheme at Wilgoda/Buela approved end 1983
<b>11. Health</b>				
Staff quarters	no.	6	6	
Officers	no.	5	5	
Electrification	no.	4	4	(Included under 10 above) Including standby generator for Kurunegala Hospital
Hospital expansion	no.	—	10	Utilization of savings due to currency devaluation against dollar
<b>12. Education</b>				
Science equipment for secondary schools	no.	203	203	
Crafts training equipment for school lever program	no.	—	61	
Technical education equipment for institutes	no.	45	2	
Teachers quarters	no.	2	41	
Construction of science rooms	no.	40	137	
Upgrading of secondary schools	no.	140	20	Upward revision agreed in 1982
School roofing	no.	—	26	The provision of permanent roofing was included in 1982

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>13. Project coordination</b>				
Project office	no.	1	1	Not funded under project
Senior staff quarters	no.	2	2	

— Not applicable.

Source: OED, internal audit report

**Table 2: Second Rural Development Project**

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>1. Irrigation and water management</b>				
Rehabilitation of major irrigation schemes	no.	15	22	The significantly higher number of schemes completed were agreed with IDA during the course of project implementation
Rehabilitation of minor irrigation schemes	no.	240	363	
Transport vehicles	no.	53	40	Included in consultants for Project Coordination and Management
Consultant services	no.	53	40	
<b>2. Coconut development</b>				
Improvements	acres	10,000	21,271	Increased farmer demand due to effective extension work of the Coconut Cultivation Board (CCB)
Underplanting/ replanting	acres	7,500	12,193	
Intercropping	acres	1,700	281	Shortfall due to lack of familiarity of crops to be introduced
Home garden	acres	—	560	Introduced to compensate for low achievement of intercropping scheme
5-acre CRI substation	no.	1	1	Substation carrying out applied research
Office building for CCB	no.	1	1	
Staff quarters for CCB	no.	5	5	
Vehicles for CCB	no.	24	17	
Fruit tree nursery	no.	1	1	Nursery provides plants to project farmers.
<b>3. Export agricultural crops</b>				
Replanting/new planting	acres	7,890	4,205	Lower due to plant mortality rate and farmers' drop out. Increased farmer demand due to profitability of crops
20-acre nursery	no.	1	1	Smaller size nursery established
Training center	no.	1	1	Training being provided at center for project officers and farmers
Office building	no.	1	1	
Staff quarters	no.	11	11	
Cardamon experiment station	no.	1	1	Station carrying out germ plasm collection, yield trials, and hybridization
Cocoa processing plant	no.	1	1	
Transport vehicles	no.	7	7	
<b>4. Sericulture</b>				
Settlement scheme for 125 settlers	no.	1	—	Scheme for sericulture not feasible
Office building	no.	1	1	
Staff quarters	no.	2	2	
Vehicles	no.	1	1	

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>5. Agricultural credit</b>				
Short-term/seasonal	million Rs	25.2	107.25	Seasonal crop production inputs, mainly for paddy
Medium/long-term	million Rs	64.92	74.8	Mainly for tractors, irrigation equipment, private nurseries, storage facilities, transport vehicles, and dairy animals
<b>6. Agriculture input supply</b>				
Expansion/ improvement of fertilizer stores	no.	8	8	
Dunnage of fertilizer stores	no.	40	36	
Improvement of seed stores	no.	17	17	
Pesticide store conversion	no.	40	35	
Office building	no.	2	2	
Staff quarters	no.	5	5	
Transport vehicles	no.	13	13	
<b>7. Livestock development</b>				
New veterinary clinics	no.	4	4	
Upgrading veterinary clinics	no.	4	4	
Staff quarters	no.	4	4	
Cattle handling facilities	no.	50	24	
Transport vehicles	no.	10	8	
<b>8. Forestry</b>				
Plantings	ac	16,500	13,038	Shortfall due to lack of planting material
Office building	no.	2	2	
Staff quarters	no.	24	21	
Nurseries	no.	3	4	
Tractors	no.	3	3	
Transport vehicles	no.	11	6	
<b>9. Fisheries</b>				
Fishery service center	no.	1	1	
Jetties	no.	3	2	
Office building	no.	2	2	
Staff quarters	no.	3	3	
Beacon lights	no.	12	8	
Transport vehicles	no.	7	8	
Patrol boat	no.	1	1	
Ice storage room	no.	1	1	
Boat lifting crane	no.	1	1	
Platform scale	no.	1	1	

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>10. Roads</b>				
Rehabilitation of roads	miles	144	147	
Upgrading of smaller roads	miles	175	250	
New roads	miles	7	7	
Bridge	no.	—	1	
Causeway	no.	—	1	
Transport vehicles	no.	9	9	
<b>11. Rural electrification</b>				
Electrification schemes	no.	10	80	
<b>12. Groundwater development</b>				
Investigation core drill holes	no.	60	5	Found not useful and also uneconomic to have such wells
Test wells	no.	60	115	
Office building	no.	1	1	More of these wells were constructed in place of the drill holes
Transport vehicles	no.	2	2	
<b>13. Rural water supply</b>				
Wells for drinking water	no.	250	250	
Rural water supply schemes	no.	—	3	
Tubewells	no.	3	235	Ninety-one converted from test wells
Transport vehicles	no.	6	6	
<b>14. Health</b>				
Outpatient units	no.	2	3	
Operating theater	no.	1	1	
Clinic (operating)	no.	1	1	
Surgical wards: 48-bed	no.	1	1	
Surgical wards: 24-bed	no.	—	2	
Surgical laboratory	no.	1	1	
Maternity wards	no.	—	5	
Improved hospitals	no.	—	5	
Gramodaya health centers	no.	—	9	
Electric supply schemes for rural hospitals	no.	5	5	
Lavatories	no.	—	3	
Renovation of lavatories	no.	—	30	
Water tanks	no.	—	2	
Ambulance	no.	6	6	
Other transport vehicles	no.	3	3	
Staff quarters	no.	27	27	

<i>Component</i>	<i>Unit</i>	<i>SAR Target</i>	<i>Project Achievement</i>	<i>Remarks</i>
<b>15. Education and vocational training</b>				
Science rooms	no.	49	78	
Workshops	no.	5	5	
Teachers' quarters	no.	80	104	
Upgrading schools	no.	6	6	
Water supply wells	no.	60	18	This was supplemented by the project's rural water supply program
Transport vehicles	no.	6	7	
Agric./home science units	no.	21	21	
Tractor driving training center	no.	1	1	
Carpenter training center	no.	1	1	
Sewing centers	no.	5	5	
Other staff quarters	no.	—	4	
Woodwork training center	no.	—	1	
Renovation weaving centers	no.	—	1	
Office building	no.	—	2	
Classroom building	no.	—	7	
<b>16. Project coordination and management</b>				
New project office	no.	1	1	
Improved project office	no.	1	1	
Supervisory consultants	man/ mt h.	500	695	
Other consultants	man/ mt h.	762	700	
Staff quarters	no.	6	8	
Transport vehicles	no.	—	12	
Other building	no.	—	7	
			5	

*Note:* The physical targets set during appraisal have been essentially met and exceeded for some project components. This was made possible by the substantially increased availability of the local currency equivalent of the IDA Credit resulting from significant depreciation of the Sri Lanka Rupee.

— Not applicable.

*Source:* Mission findings.

## **Methodologies Used In Field Investigation**

1. The field work related to the study was carried out in two stages. An initial reconnaissance mission was undertaken in March 1995, and the main mission in June/July of that year. Following the first mission project-related data and secondary data were gathered by the respective project officers and staff from executing agencies in the three districts. In addition, project staff carried out a 10 percent sample survey of the rehabilitated minor irrigation schemes, in order to check the secondary data on this topic.

2. The following were the main sources of secondary data:

- General census and statistics from the Department of Census and Statistics, Ministry of Finance and Planning, and Ethnic Affairs and National Integration (former Ministry of Policy Planning and Implementation);
- Census data and related information from the Department of Agriculture and statistical information from the Department of Irrigation concerning changes in command areas, cropped areas, and costs of the rehabilitated schemes;
- Data reports from other line Ministries such as Department of Export Agriculture, Department of Agrarian Services, Coconut Research Institute, Ministry of Health, Ministry of Education, and Department of Highways;
- Regional Department Centres of the Department of Census and Statistics at Kurunegala, Puttalam and Matale;
- Regional Centres of line agencies such as Coconut Cultivation Board, Road Development Authority, Electricity Board, People's Bank and Bank of Ceylon;
- Documentation and Progress Reports of the respective Project Offices—Kurunegala, Puttalam and Matale;
- IFAD, "Sri Lanka: Kurunegala Smallholder Conservation Farming Project, Household Case Studies," 1991;
- Resource Development Consultants, "Report on the Socio-Economic and Baseline Survey," Sri Lanka, North Western Province, 1991; and
- Chief Ministry NWP, "Resource Profile Survey in North Western Province," 1990.

### *Field investigations*

3. During the main mission, field investigation was principally undertaken using participatory methods/tools/techniques involving project beneficiaries, particularly farmers. The adoption of a participatory approach provided an opportunity for the beneficiaries and other

**stakeholders to interact freely with mission members within a semi-structured setting. The methods used to collect information in different areas of interest is shown in table 1.**

**Table 1: Examples of Participatory Tools/Techniques Used For Generation of Information from the Field**

<i>Information Needs/Requirements</i>	<i>Participatory Tools/Techniques Used</i>
1. Project Intervention Status of construction works Evaluation of farmer organizations	Historical timeline of rehabilitation of irrigation works. Status of construction following the sequence. Historical trend of evolutionary status of farmer organizations.
2. Incremental acreage Yala/maha crop grown Yields: paddy/coconut EACs	Situation before and after completion of rehabilitation work—data for yala and maha using a tabular form on sheets of brown paper by the group.
3. Encroached land for paddy or highland cultivation on tank catchments/channel reservations	Maps drawn by farmers, indicating rough acreage with locations. Use of these maps to elicit discussions on implications for water distribution, land ownership, and production patterns.
4. Water distribution and management Problem locations with regard to water distribution	Farmer drawn maps as a means for interviewing and allowing them to plot water distribution pattern, adequacy of water, and problems encountered. Group discussion on past and current O&M practices.
5. Quality of design and implementation of rehabilitation work	Semi-structured interviewing technique based on the maps. Weak points in design and problem spots (tanks, bunds, and channels) marked on the maps by farmers. Group scoring of different items rehabilitated.
6. Use of inputs Fertilizer/chemicals/seeds	Use of tables and use of cards filled by individual farmers and discussed in the group.
7. Income sources and proportion of crops vis-à-vis other sources of income before project and now	Individual responses on different color cards. Use of pie diagrams by individual farmers on cards and/or collective consensus of general situation of the village expressed as a pie diagram.
8. The status before and after project in relation to various aspects of rehabilitation, introduction of OFCs, subsidy schemes, loan facilities, etc.	The information generated as applicable to the situation before/after projects with the use of individual responses on color cards or group results on brown paper sheets in combination with historical timelines and semi-structured interviewing.
9. Impact of different project components, such as roads, rural electrification etc.	Pairwise ranking and matrix scoring: use of brown paper sheets to generate multiple responses.

4. Complementary to the above-mentioned tools and techniques of participatory information generation, the following methods were also used:

- **Physical checks/ observations.** Particularly with regard to physical infrastructure in connection with rehabilitated irrigation structures/social infrastructure, spot checks by technically competent mission members along with farmers or officers concerned were utilized.
- **Key informants** in the form of village leaders or field officers helped to establish the nature of the project interventions. Such informants were either met on pre-arrangements or randomly selected from among those met in the field, who were found to be knowledgeable.
- **Transect-walks** were also used for informal observations of rehabilitated irrigation structures, farming systems in relation to lowland cultivation and to coconut, agricultural export crops or any other issue as indicated by the farmers in the field. Mission members with technical competence could make use of such informal visits for direct observations/assessments.
- **Focus group interviews** was a commonly used technique with the random samples of farmers/villagers during the field visits. The interviews were based on a thematic outline but yet adequately open-ended for ensuring participation and free expression.

#### *Selection of Field Samples*

5. Field samples, as far as possible, were selected on the basis of agro-ecological zone and the scale or type of program. In the cases of coconut and AECs, the type of subsidy scheme and the size of the land holding was taken into consideration.

6. *Paddy.* In selecting the field samples in the three projects, while taking into consideration minor and major/medium schemes, the different agro-ecological zones—wet, semi-wet, semi-dry, and dry—provided the sample framework. The sample of schemes visited by district and type of scheme is shown in table 2.

7. *Coconut.* Samples were selected in such a way to ensure representation of both smallholders and larger operations benefiting from the subsidy schemes. Samples from dry, intermediate and wet zone were included for field investigation in order to observe the differential impact of the subsidy schemes.

8. *Social infrastructure.* No systematic sampling method was used, except for rural electrification, where schemes were randomly selected. Infrastructure constructed under the projects was visited in connection with visits to locations selected for representativeness in production components, such as irrigation rehabilitation, export agriculture schemes/coconut subsidy schemes.

#### *Survey of Agricultural Practices*

9. During the PRA exercise a more formal survey of crop management practices in the lowlands prior, during, and after project, was also carried out by the mission agronomist in the irrigation schemes visited by the evaluation team.

**Table 2: Field Sample**

	<i>Kurunegala</i>	<i>Puttalam</i>	<i>Matale</i>
<b>Major/Medium Irrigation Schemes</b>			
Wet zone			
Project intervention	0	0	0
Schemes visited	0	0	0
Semi-wet zone			
Project intervention	2	2	0
Schemes visited	0	1	0
Semi-dry zone			
Project intervention	2	4	1
Schemes visited	2	1	1
Dry zone			
Project intervention	5	9	6
Schemes visited	2	0	1
<i>Total</i>			
Project intervention	9	15	7
Schemes visited	4	2	2
<b>Minor Irrigation Schemes</b>			
Wet zone			
Project intervention	32	36	13
Schemes visited	1	1	2
	<i>Kurunegala</i>	<i>Puttalam</i>	<i>Matale</i>
Semi-wet zone			
Project intervention	159	49	18
Schemes visited	4	2	1
Semi-dry zone			
Project intervention	173	113	11
Schemes visited	1	4	2
Dry zone			
Project intervention	91	23	50
Schemes visited	4	3	1
<i>Total</i>			
Project intervention	455	271	92
Schemes visited	10	10	6

*Stakeholder Perceptions*

10. Stakeholder perceptions were obtained for two distinct areas, namely successes/strength and failures/weaknesses of the project. The responses were collected and categorized into clusters of ideas which were finally combined in tabular form. The free and open discussions allowed for an unbiased analysis of the perceptions. This self-evaluation process was appreciated by the participants in all three districts. They considered it a learning experience providing insights for future development work of the same nature.

## Tables

**Table 1: Salient Features of Project Areas**

	<i>Kurunegala</i>	<i>Matale</i>	<i>Puttalam</i>
Location	Western part of country	Northern end of highland	West central coast
Land area (square miles)	1850	770.4	1172
Population estimated			
1980	1,150,000	352,000	440,000
1990	1,340,000	419,510	537,604
Percentage rural	96	89	87
Population density (p/km <sup>2</sup> )			
1980	252	179	164
1990	304	215	205
Variation	300 (dry zone) to 1000 (south wet/semi-wet zone)	200 (dry east) to 900 (wet southern highlands)	200 (dry zone) to 1000 (southern zone)
Agro-ecological zone (percent)			
Dry	20	30	79
Intermediate	70	65	21
Wet	10	5	—

— Not applicable.

Source: Department of Census and Statistics.

**Table 2: Farm Size Distribution, 1982 (in percent)**

<i> Holding (acres)</i>	<i>Kurunegala</i>	<i>Matale</i>	<i>Puttalam</i>
Less than 1	28.0	32.0	41.0
1-2	43.0	29.0	17.0
2-5	14.0	25.0	23.0
5-10	13.0	11.0	13.0
10 or more	0.6	3.0	6.0
Total	100.0	100.0	100.0

Source: Department of Census and Statistics.

**Table 3: Summary of Irrigable Areas, Cropped Areas and Cropping Intensities (in acres)**

<i>Type of Schemes</i>	<i>KRDP</i>		<i>Matale</i>		<i>Puttalam</i>		<i>SRDP</i>	
	<i>Target</i>	<i>Achievements</i>	<i>Target</i>	<i>Achievements</i>	<i>Target</i>	<i>Achievements</i>	<i>Target</i>	<i>Achievements</i>
<b>Major Schemes</b>								
Number	9	11	5	7	10	15	15	22
Irrigable area								
Without project	25,000	30,679	7,770	3,938	7,800	10,919	15,570	14,857
With project	25,000	32,762	7,800	4,559	7,900	11,973	15,700	16,532
Incremental area	0	2,083	30	621	100	1,054	130	1,675
Cropped area								
Maha season								
Without project	23,000	25,654	5,000	3,625	7,400	9,063	12,400	12,688
With project	24,000	27,214	7,400	3,877	7,600	9,746	15,000	13,623
Incremental area	1,000	1,560	2,400	252	200	683	2,600	935
Yala season								
Without project	15,000	18,128	800	1,222	2,700	3,803	3,500	5,025
With project	19,000	19,770	5,500	1,980	5,550	4,396	11,050	6,276
Incremental area	4,000	1,642	4,700	758	2,850	593	7,550	1,351
Total cropped area	43,000	46,984	12,900	5,857	13,150	14,142	26,050	19,999
Crop intensity	170	143	—	128	—	118	—	121
<b>Minor Schemes</b>								
Number	500	453	42	92	200	271	242	363
Irrigable area								
Without project	70,000	23,122	430	4,749	9,400	16,342	9,830	21,091
With project	85,000	28,593	1,800	6,084	11,000	18,050	12,800	24,134
Incremental area	15,000	5,471	1,370	1,335	1,600	1,708	2,970	3,043
Cropped area								
Maha season								
Without project	61,000	18,882	300	4,491	7,050	13,434	7,350	17,925
With project	81,000	25,097	1,820	4,972	9,900	16,559	11,720	21,531
Incremental area	20,000	6,215	1,520	481	2,850	3,125	4,370	3,606
Yala season								
Without project	28,000	9,249	170	1,020	3,800	3,819	3,970	4,839
With project	43,000	12,870	1,100	3,275	6,600	4,859	7,700	8,134
Incremental area	15,000	3,621	930	2,255	2,800	1,040	3,730	3,295
Total cropped area	124,000	37,967	2,920	8,247	16,500	21,418	19,420	29,665
Crop intensity	145	133	—	136	—	119	—	123
<b>Total Project</b>								
Number	509	464	47	99	210	286	257	385
Irrigable area								
Without project	95,000	53,801	8,200	8,687	17,200	27,261	25,400	35,948
With project	110,000	61,355	9,600	10,643	18,900	30,023	28,500	40,666
Incremental area	15,000	7,554	1,400	1,956	1,700	2,762	3,100	4,718
Cropped area								
Maha season								
Without project	84,000	44,536	5,300	8,116	14,450	22,497	19,750	30,613
With project	105,000	52,311	9,220	8,849	17,500	26,305	26,720	35,154
Incremental area	21,000	7,775	3,920	733	3,050	3,808	6,970	4,541
Yala season								
Without project	43,000	27,377	970	2,242	6,500	7,622	7,470	9,864
With project	62,000	32,640	6,600	5,255	12,150	9,255	18,750	14,510
Incremental area	19,000	5,263	5,630	3,013	5,650	1,633	11,280	4,646
Total cropped area	167,000	84,951	15,820	14,104	29,650	35,560	45,470	49,664
Tot. crop. incl area	40,000	13,038	9,550	3,746	8,700	5,441	18,250	9,187
Crop intensity	151	138	160	133	157	118	—	122

— Not Applicable.

Source: Mission findings.

**Table 4: Yearly Incremental Paddy Production (mt)—Targets and Achievements**

<i>Project/District</i>	<i>SAR</i>	<i>PCR</i>	<i>Mission</i>	<i>Percent of SAR</i>	<i>Percent of PCR</i>
<b>KRDP</b>	56,000	59,845	21,195	38	35
Matale	11,165	—	2,650	24	—
Puttalam	12,740	—	5,681	44	—
<b>Total SRDP</b>	23,905	37,200	8,331	35	22

— Not applicable.

**Table 5: SRDP Number of Beneficiaries Who Received Different Installments of the Coconut Subsidy Schemes**

<i>Subsidy Scheme</i>	<i>Number</i>	<i>Acres</i>	<i>Average Size</i>
<b>Holdings which received 1st installment</b>			
Under Planting	12,362	26,398	2.14
Intercropping			
Coffee	1,733	1,498	0.86
Pepper	466	507	1.09
Cocoa	20	81	4.00
Rehabilitation	19,815	82,955	4.19
Homegardens	2,644	1,400	0.53
New Planting	3,624	5,480	1.51
Total	40,664	118,319	2.90
<b>Holdings which received 2nd installment</b>			
Under Planting	6,026	10,912	1.81
Intercropping			
Coffee	201	279	1.39
Pepper	81	92	1.14
Cocoa	9	79	8.78
Rehabilitation	0	0	0.00
Homegardens	1,064	562	0.53
New Planting	941	225	2.40
Total	8,321	14,182	1.70
<b>Holdings which received 3rd installment</b>			
Under Planting	1,807	5,427	3.00
Intercropping			
Coffee	98	116	1.18
Pepper	22	40	1.82
Cocoa	2	2	1.00
Rehabilitation	0	0	0.00
Homegardens	593	310	0.52
New Planting	652	1,173	1.80
Total	3,174	7,068	2.20
<b>Holdings which received 4th installment</b>			
Under Planting	147	432	2.94
Intercropping			
Coffee	6	14	2.33
Pepper	0	0	0.00
Cocoa	0	0	0.00
Rehabilitation	0	0	0.00
Homegardens	413	220	0.53
New Planting	369	780	2.11
Total	935	1,446	1.50

**Table 6: Beneficiaries of Coconut Subsidy Schemes Who Adopted Cultural Practices in Coconut Lands (in percent)**

	<i>Coconut Holding Size Class (acres)</i>					<i>Total</i>
	<i>0-1</i>	<i>1-3</i>	<i>3-5</i>	<i>5-15</i>	<i>over 15</i>	
<b>Drains</b>						
Did not maintain drains	33	72	82	45	25	59
Maintained drains only during project	67	24	0	27	50	30
Maintained drains continuously	0	4	18	27	25	11
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Weeding</b>						
Did not practice weeding	8	52	18	27	0	30
Weeded only during project	42	24	45	27	25	32
Weeded continuously	50	24	36	45	75	38
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Fertilizer application</b>						
Did not practice fertilizing	75	12	9	0	0	21
Applied fertilizer only under the project	25	80	73	36	25	57
Applied fertilizer continuously	0	0	0	18	0	3
<b>Total</b>	<b>0</b>	<b>8</b>	<b>18</b>	<b>45</b>	<b>75</b>	<b>19</b>

Source: Mission Sample Information.

**Table 7: Beneficiaries Who Continued Improved Management Practice in AECs (in percent)**

<i>Holding size (acs)</i>	<i>Those who weed</i>		<i>Those who apply fertilizer</i>		<i>Those who conserve soil</i>		<i>Those who lope glyriccidia support</i>	
	<i>During SRDP</i>	<i>After SRDP</i>	<i>During SRDP</i>	<i>After SRDP</i>	<i>During SRDP</i>	<i>After SRDP</i>	<i>During SRDP</i>	<i>After SRDP</i>
less than 1	90	80	70	20	10	20	90	90
1 to 2	100	65	87	62	38	38	80	75
2 to 4	100	55	90	40	60	50	95	90
more than 4	100	60	50	50	100	60	100	100
<b>Overall</b>	<b>90</b>	<b>55</b>	<b>78</b>	<b>25</b>	<b>55</b>	<b>25</b>	<b>86</b>	<b>85</b>

Source: Mission Sample Information.

**Table 8: Simulated Farm Models**

<i>Kurunegala</i>					
<b>Model 1: Dry/semidry</b>	<b>Without Project</b>	<b>With Project</b>	<b>Model 2: Wet/semiwet</b>	<b>Without Project</b>	<b>With Project</b>
Total farm size	2.5	2.5	Total farm size	3.0	3.0
Total cropped area	3.0	3.28	Total cropped area	3.05	4.08
<i>Cropping Pattern</i>			<i>Cropping Pattern</i>		
Paddy Maha (minor)	0.4	0.55	Paddy Maha (minor)	0.4	0.5
Paddy Yala (minor)	0.2	0.3	Paddy Yala (minor)	0.3	0.4
Paddy Maha (major)	0.9	0.93	Paddy rainfed Maha	0.9	0.9
Paddy Yala (major)	0.5	0.4	Paddy rainfed Yala	0.6	0.6
Chili rainfed	0.7	0.7	Green gram rainfed	0.5	0.5
Maize rainfed	0.3	0.3	Chili rainfed	0.9	0.9
Green gram Yala	0.0	0.1	Green gram Yala	0.0	0.08
			Cowpea rainfed	0.0	0.2
<i>Matale</i>					
<b>Model 3: Minor Irrigation Schemes</b>	<b>Without Project</b>	<b>With Project</b>	<b>Model 4: Major Irrigation Schemes</b>	<b>Without Project</b>	<b>With Project</b>
Total farm size	1.9	1.9	Total farm size	1.9	1.9
Total cropped area	2.19	2.6	Total cropped area	1.7	1.87
<i>Cropping Pattern</i>			<i>Cropping Patterns</i>		
Paddy Maha (minor)	0.98	1.2	Paddy Maha (major)	0.91	0.97
Paddy Yala (minor)	0.56	0.5	Paddy Yala (minor)	0.14	0.2
Onion Yala	0.2	0.35	Onion Yala	0.15	0.2
Tomato rainfed	0.25	0.25	Tomato rainfed	0.3	0.3
Pole beans rainfed	0.2	0.2	Pole beans rainfed	0.1	0.1
Chili irrigated	0.0	0.1	Green gram rainfed	0.1	0.0
			Chili irrigated	0.0	0.1
<i>Puttalam</i>					
<b>Model 5: Minor Irrigation Schemes</b>	<b>Without Project</b>	<b>With Project</b>	<b>Model 6: Major Irrigation Schemes</b>	<b>Without Project</b>	<b>With Project</b>
Total farm size	2.7	2.7	Total farm size	2.7	2.7
Total cropped area	2.98	3.65	Total cropped area	3.31	3.8
<i>Cropping Pattern</i>			<i>Cropping Pattern</i>		
Paddy Maha (minor)	1.65	2.1	Paddy Maha (major)	2.09	2.1
Paddy Yala (minor)	0.88	1.0	Paddy Yala (major)	0.77	1.25
Groundnut rainfed	0.25	0.25	Groundnut rainfed	0.2	0.2
Green gram rainfed	0.2	0.2	Cowpea rainfed	0.25	0.25
Green gram Yala	0.0	0.1			

**Table 9: School Dropout Rates (in percent)**

<i>District</i>	<i>1986-87</i>	<i>1991-92</i>
Sri Lanka	4.7	3.9
Matale	3.9	4.0
Kurunegala	4.0	3.0
Puttalam	10.0	6.1

*Source:* Ministry of Education and Higher Education.

**Table 10: Advanced Level Pupil Population—Government Schools by Subject Stream and District**

	<i>Sri Lanka</i>	<i>Matale</i>	<i>Kurunegala</i>	<i>Puttalam</i>
<i>1987</i>				
Science	55,094	1,068	2,923	178
Arts	67,441	1,739	3,849	504
Commerce	42,227	832	1,587	148
Total	164,762	3,639	8,359	830
<i>1991</i>				
Science	49,723	827	3,538	1,110
Arts	82,306	2,567	10,954	2,326
Commerce	54,538	816	3,116	1,471
Total	186,567	4,210	17,608	4,907
% Change	13.23	15.69	110.65	491.20

*Source:* Ministry of Education and Higher Education.

**Table 11: Infant Mortality Rate, 1980, 1986, and 1990 (per 1,000 live births)**

<i>District</i>	<i>1980</i>	<i>1986</i>	<i>1990</i>
Sri Lanka	24.0	23.2	17.2
Matale	25.0	15.8	10.6
Kurunegala	30.0	23.8	18.5
Puttalam	21.0	19.7	19.8

*Source:* Department of Birth and Death Registration.

**Table 12: Maternal Mortality Rate, 1980, 1986, and 1990 (per 1,000 live births)**

<i>District</i>	<i>1980</i>	<i>1986</i>	<i>1990</i>
Sri Lanka	0.8	0.5	0.3
Matale	1.3	0.6	0.6
Kurunegala	1.7	0.4	0.4
Puttalam	0.9	0.5	0.5

*Source:* Department of Birth and Death Registration.

**Table 13: Incidents of Wasting and Stunting of Children, 1980–1982 and 1988–1989 (in percent of cases)**

<i>District</i>	<i>Wasting</i>		<i>Stunting</i>	
	<i>1980–1982</i>	<i>1988–1989</i>	<i>1980–1982</i>	<i>1988–1989</i>
Matale	10.5	26.3	42.5	41.0
Kurunegala	15.7	17.5	34.0	27.0
Puttalam	16.9	16.2	32.7	32.1

*Source:* 1980–82 data, Statistics on Child Nutrition—Food and Nutrition Policy Planning Division, Ministry of Plan Implementation, 1983; 1988–89 data, Nutritional Status, Survey Report 1988/89, Nutrition and Janasaviya Division, Ministry of Policy Planning and Implementation.

## Dissemination Workshop on Results of Impact Evaluation: Summary of Discussions

1. Group discussions at the workshop focused on how approaches to rural development had changed since KRDP and SRDP were designed, and on the implications of experience with these projects for future rural development efforts.

### Project Design

2. *Goals.* Participants contrasted the early projects' production oriented goals (with more than four fifths of expenditures devoted to productive components) with today's concern for balancing output growth with equity in rural development. Current integrated rural development projects (IRDPs) have replaced the focus on specific commodities with a more holistic approach, in which the farm is seen as a totality and in which investments in social infrastructure and human development play important roles. Interventions are more demand-driven and more sensitive to local resources and constraints, and they increasingly center on the needs of poverty groups. For the future, participants noted that small enterprise development—particularly in agribusiness—and efforts to keep rural savings available for investment in rural areas, rather than having them flow to cities, need more attention than they have received so far.

3. *Definition of goals.* Participants noted that the rural population is not wholly made up of farmers, and that even among farmers, needs can vary widely. They emphasized the need for a baseline analysis of the needs, resources, diversity, and limitations of the population before beginning to plan a project.

4. From today's vantage point, participants saw the lack of popular participation in the early projects as a design flaw. The IRDPs have evolved since KRDP and SRDP were implemented; instead of designing interventions "top down," today's projects incorporate "bottom up" initiatives conceived and requested by beneficiaries. There is more emphasis than in the early projects on involving the private sector and nongovernmental organizations, with government facilitating the provision of services, where possible, rather than seeking to provide all of them itself.

5. Participants also explained that the blueprint approach of the early projects has been replaced by a more flexible, process oriented approach. Within an agreed structure given by medium-term perspective planning, projects follow one to two year rolling plans, with targets, using a flexible, learning-by-doing approach that relies heavily on people's participation. (Participants noted that the rural development approach had first swung sharply away from "blueprinting" to a heavily process-oriented approach. This had been found to give too little perspective and direction and thus had been replaced by today's combination of blueprint and process.)

6. The discussants also emphasized that process-oriented approaches are not readily compatible with the World Bank's typical project cycle and procedures. These approaches call for much longer implementation periods, more gradual build up of activities, and closer involvement of the assistance agency during implementation than has been customary in projects supported by the Bank.

7. *Designing for sustainability.* In the early projects, participants noted, the sustainability of benefits had not been accorded the priority now seen as vital. In the farming components of projects, participants pointed out that the *management practices* introduced had not been sustained, and hence that the targeted achievements were not being realized. Reasons included fluctuating and declining output prices, and a reduced push by extension services.

8. Participants also pointed to the *lack of an institutional mechanism* to sustain initiatives after project closure. Funds, staff, and management had all been withdrawn and not replaced, while for *operation and maintenance*, beneficiaries and implementing agencies expected funding to continue coming from external sources.

9. Experience had shown that institutional arrangements to ensure sustainable maintenance arrangements need to be planned at the design stage. Participants emphasized that both public sector agencies and village level organizations need to play roles here. An arrangement that holds promise is to strengthen community based organizations. In today's projects and in future, empowered groups of villagers (such as tank committees, farmer organizations, water user groups) will be expected to assume responsibility for operating and maintaining physical facilities at the village level. But for services that can only be provided by the public sector, phasing-out arrangements, including institutional mechanisms and funding, need to be made.

### **Implementation Strategy**

10. *Management system.* Lack of a well functioning management system with clear roles, responsibilities, and coordination arrangements, had hampered the implementation of the earlier projects. KRDP and SRDP were coordinated by a national Steering Committee and District Coordination Committee, and each was managed by a Project Office. Participants pointed out that achieving an efficient management system, where so many different agencies are involved, is still a challenge for the IRDP program today. They contrasted the experience of the Mahaweli Authority; this specially created "higher level" agency did not share the coordination problems of the regular line agencies.

11. *Relations with assistance agencies.* Participants drew attention to the *continuous interaction* with bilateral agencies that has been typical in the IRDPs funded by these agencies. They contrasted this with the more superficial supervision work, focusing mainly on progress toward physical targets, that was done by the World Bank in the early projects. They also stressed the value of the *mid-term reviews* that have been typical in bilaterally funded IRDPs. They noted that future projects, with their expected large element of process planning, would require a continuous and flexible interaction with assistance agencies that has not been the norm for the multilateral banks.

12. *Monitoring.* Though the KRDP and SRDP monitored only inputs and financial flows, and the progress being made toward physical targets, participants recognized that in process oriented approaches, monitoring needs to play a central role and to be concerned with project *performance and effects*. Discussing the *design of monitoring*, they stressed the need for monitoring systems and indicators to be developed by project management cells, in collaboration with projects' intended beneficiaries. Their experience showed that this helps to ensure that the really significant variables are chosen for monitoring, and also that staff and beneficiaries have enough "ownership" of the monitoring effort to carry it out effectively. They noted that the

concern, at the national level, with generating data comparable across projects, is a valid one but can in practice detract from the value of monitoring as a management tool.

### **Support Measures: Human Resource Development**

13. *Capacity building.* The early projects did not emphasize capacity building at the local level. Participants felt that future rural development strategy should carry forward today's emphasis on capacity building and empowerment of local people, with the public sector seeing village-level institutions as *partners* in development. Their experience showed that this approach called for efforts to help develop the capacity of intended beneficiaries, for example through farmer training, teacher upgrading, and development of skills in rural mobilization. To work to their best advantage, they noted, these efforts need to permeate the entire project approach, rather than being organized as separate components. For the future, there also needs to be more recognition of the need to strengthen the skills—both in technical disciplines and in working cooperatively with rural communities—of project and line agency staff.

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கிட்டிச் செயற்பாடுகளுக்க. இன உறவு அலுவலகம்  
 தேசிய கருவியம்பாட்டு அமைச்சு  
 Ministry of Plan Implementation, Ethnic  
 Affairs & National Integration  
 இரட்டை ம-வරம்ப அ-க  
 ரு.ப.ப. அபிவிருத்திப் பிரிவு  
 Regional Development Division

මගේ අංකය  
 என் எண்  
 My No. 200/100 P/E

ඔබේ අංකය  
 உமது எண்  
 Your No.

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දිනය  
 திகதி  
 Date

20.12.1996

Mr. Roger Slade  
 Chief  
 Agriculture & Human Development Division  
 Operations Evaluation Department  
 The World Bank  
 Washington DC  
 U. S. A.

Dear Sir Impact Evaluation

Re: Kurunegala Rural Development Project (Credit 891-CE)  
And Second Rural Development Project (Credit 1079-CE)

I acknowledge with thanks the receipt of your letter addressed to Mr. S. Rahubadda, Director of this Division on 20th November 1996 forwarding the above report.

I wish to submit herewith comments of the Ministry of Plan Implementation, Ethnic Affairs and National Integration over the contents of the report, along with the comments sent by the Dept. of Irrigation and Export Agriculture Crops.

I wish you a very happy new year.

Yours Sincerely

S. Amarasekara  
 Director General  
 Regional Development division.

Observations by M/Plan Implementation Ethnic Affairs  
& National Integration

Kurunegala Rural Development Project (Credit 891-CE)  
& Second Rural Development Project( Credit 1079-CE)  
Impact Evaluation Report

The contents of the evaluation report is generally acceptable to this Ministry. We, however, wish to bring to your notice the following observations.

**Overall comments**

- \* The report, in certain instances, has over emphasized the quality of construction works in relation to roads irrigation and buildings etc. rather than evaluating the socio economic impact of project activities (P.71-para 4.22, 4.24- P.85 para 5.2 and table 5.1)
- \* The achievements gained by activities carried out in the livestock and fisheries sectors are not given due consideration.
- \* It is not correct to state that horizontal coordination was never really attained (P.106 Para 6.5) a satisfactory level of coordination was attained between agencies involved at district and divisional level.
- \* Certain inferences have been drawn over the information given by the people. They usually do not remember 10- 15 years back very well. They always tend to express concern on what has not been done, rather than what has been done. The participatory approach in evaluation is not bad, but must be used with caution. There is greater possibility for personal, and individual interest concern, prejudices and subjective estimations to creep in to the process.

**Irrigation Component**

1. Despite all the achievement in the paddy production, (increase in acreage, increase in yields, better water management etc.) it is contradictory to state that the farmers are reluctant to undertake maintenance of rehabilitation schemes due to quality of rehabilitation and not consulting farmers during planning and implementation stage.

Before rehabilitation of a tank planning meetings and ratification meetings were held with respective farmers with the representatives of ID and DAS.

The most significant reason for this plight is socio-political changes and eroding of traditional values in all spheres of life over the last several decades as stated in p.2 of the memorandum to the executive Directors and President.

Contribution of paddy for Household income (67.4.11)

Decrease of Household income from paddy cannot be attributed to project, but to other external factors such as increased prices of agricultural inputs and decreased paddy prices etc.

**IRDP Puttalam**

- \* Due to project interventions remarkable improvement in the socio economic profile of puttalam district was achieved. This is highly visible in the following areas.

- Increase student population
- Decrease drop outs
- Improvement of quality of education
- Improvement of health conditions
- Development of rural social infrastructure
- Development of agriculture, including livestock and fisheries
- Emergence of new settlements in remote areas

- \* Socio economic impact over the rural population attributed to IRDP Puttalam was not adequately stressed.
- \* Purely because of project intervention, Kalpitiya peninsula itself which was a barren land before the project became a fully agriculturally developed land segment. On the whole, living conditions and quality of lives have improved in the district. This factor should be emphasized.
- \* In addition, out of the savings of project funds (Puttalam) following activities which were not in the SAR were carried out

1. Toduwawa Bridge
2. 72 Rural Electrification Schemes
3. 75 Gravel Roads
4. Constructions of additional number of tube wells

The above activities were completed within the project period and the project budget and generated valuable socio economic results over the rural population.

Individual Departmental comments, (without editing) are also attached.

We have no objection to publish the report subject to the above observations.



Director General  
Regional Development Division.



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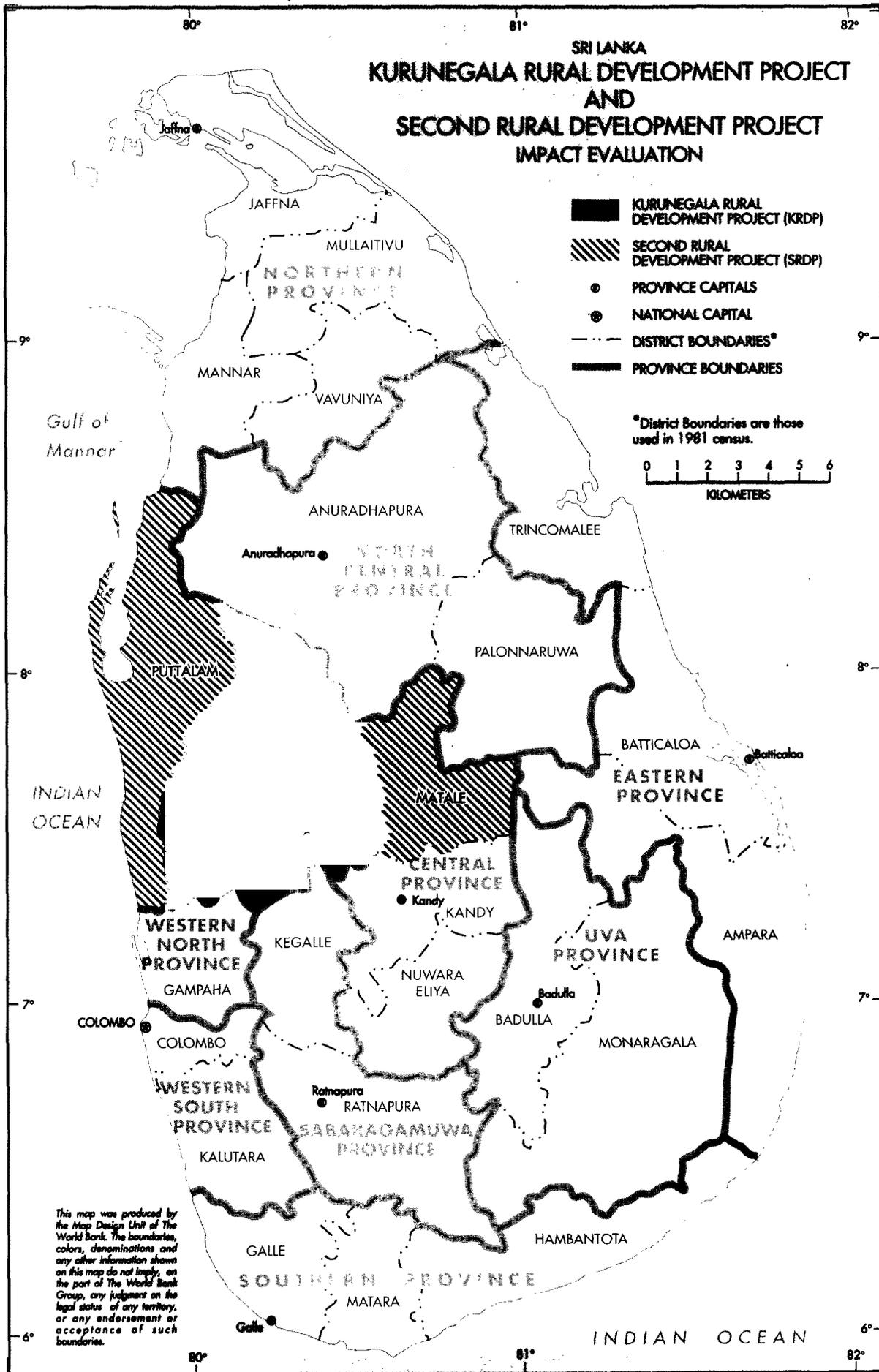
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**MAP SECTION**



# SRI LANKA KURUNEGALA RURAL DEVELOPMENT PROJECT AND SECOND RURAL DEVELOPMENT PROJECT IMPACT EVALUATION



- KURUNEGALA RURAL DEVELOPMENT PROJECT (KRDP)
- SECOND RURAL DEVELOPMENT PROJECT (SRDP)
- PROVINCE CAPITALS
- NATIONAL CAPITAL
- DISTRICT BOUNDARIES\*
- PROVINCE BOUNDARIES

\*District Boundaries are those used in 1981 census.



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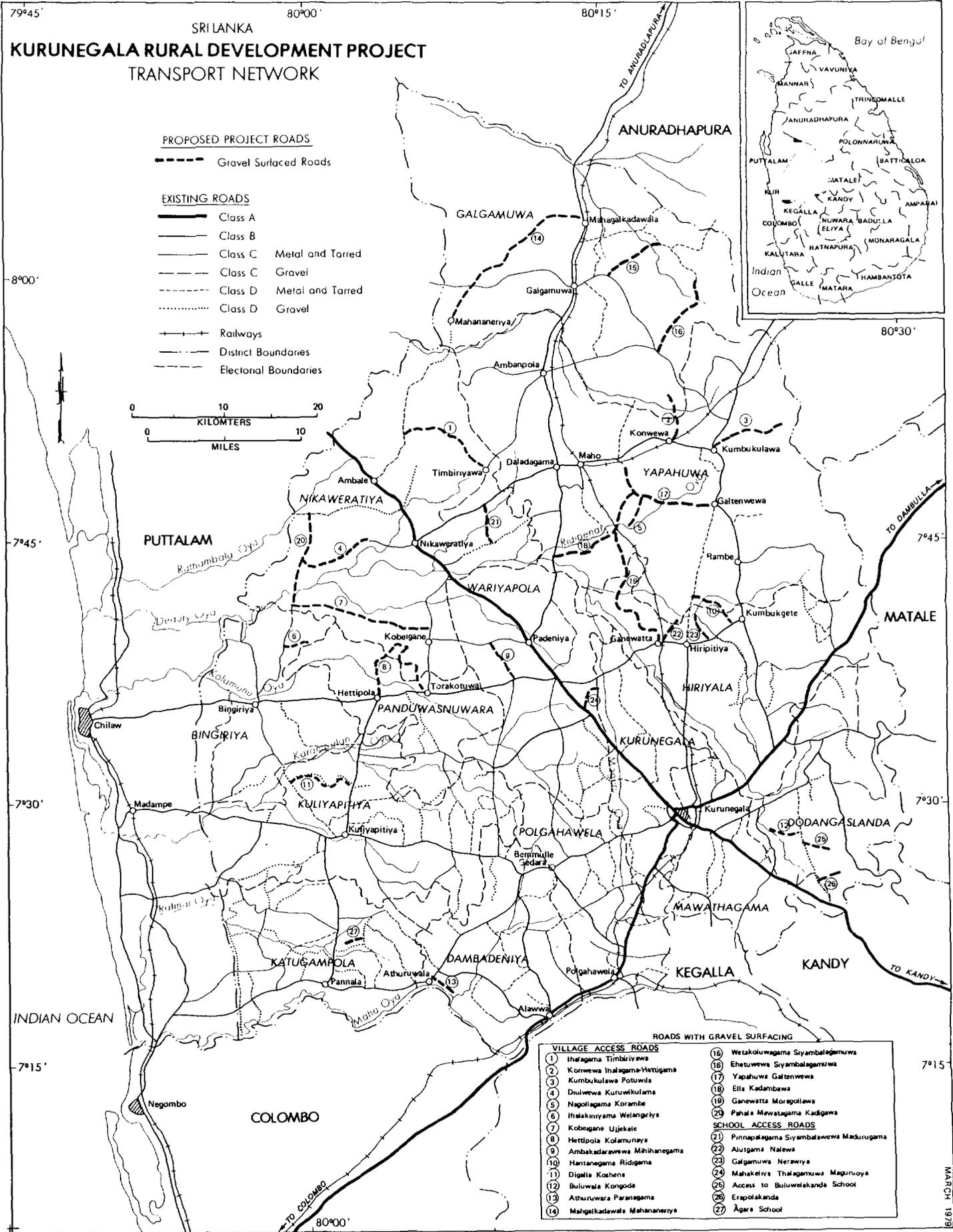
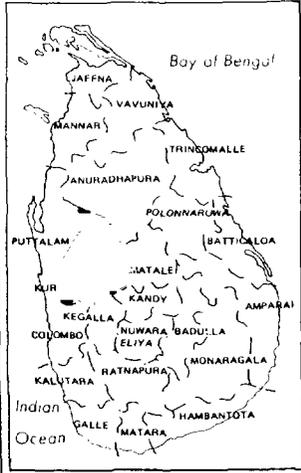
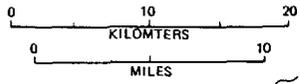
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SRI LANKA

# KURUNEGALA RURAL DEVELOPMENT PROJECT

## TRANSPORT NETWORK

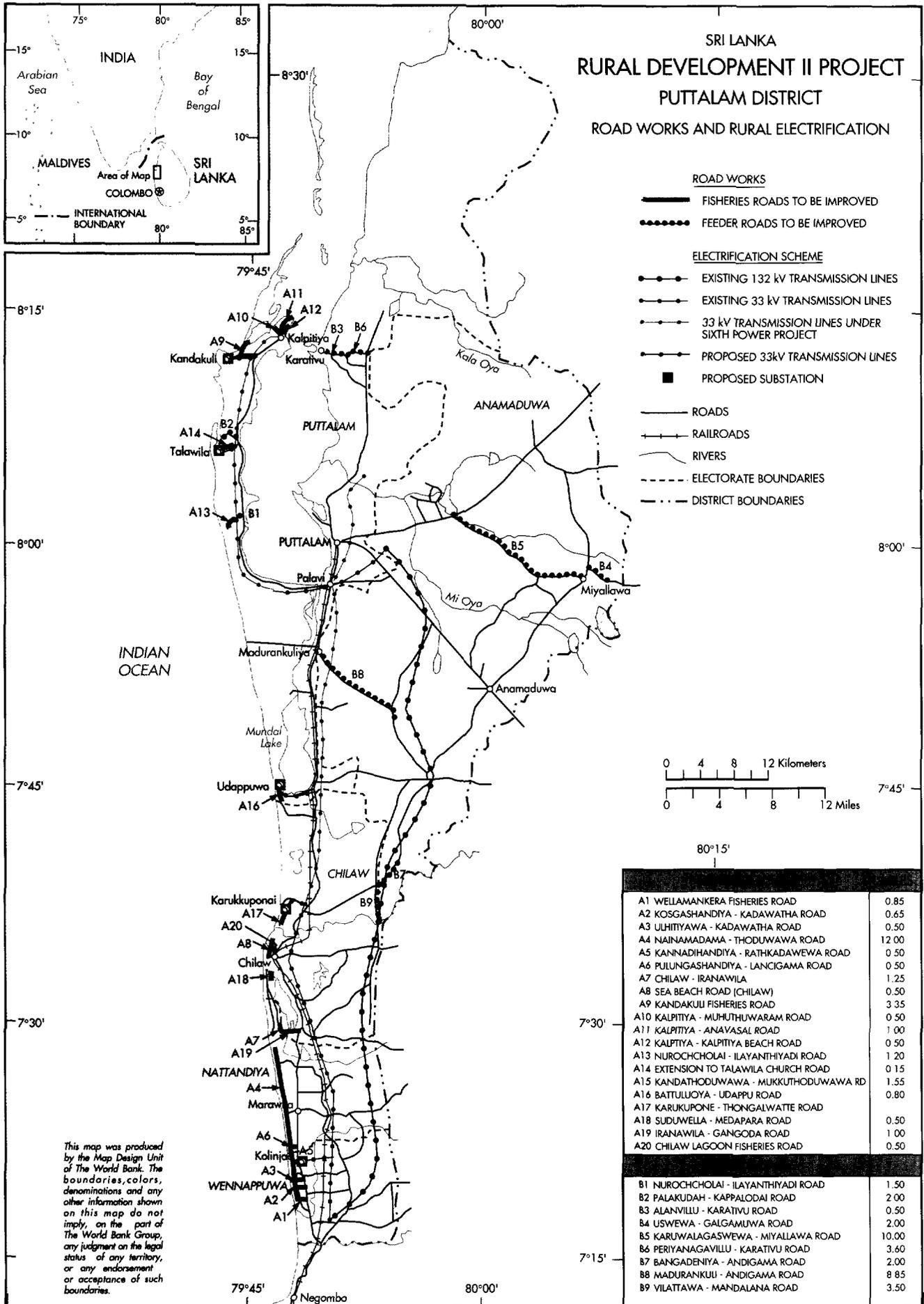
- PROPOSED PROJECT ROADS**
- Gravel Surfaced Roads
- EXISTING ROADS**
- Class A
  - Class B
  - Class C Metal and Tarred
  - Class C Gravel
  - Class D Metal and Tarred
  - Class D Gravel
  - +++++ Railways
  - District Boundaries
  - Electoral Boundaries



**ROADS WITH GRAVEL SURFACING**

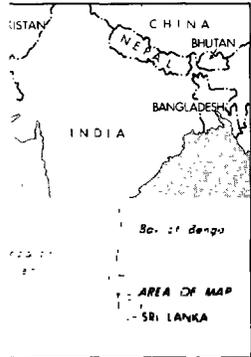
VILLAGE ACCESS ROADS	
1	Italgama Timbiriya
2	Korwewa Italgama-Hettigama
3	Kumbukulawa Potuwila
4	Dulwewa Kuruwikulama
5	Nagolagama Koramba
6	Itakaniyama Welangriya
7	Kobegane Ujjekele
8	Hettipola Kolumuniya
9	Ambakadarawwa Mahianegama
10	Hantaneagama Ridigama
11	Digella Koshe
12	Buluwala Kongoda
13	Athuruwara Paranagama
14	Mahalkadawala Mahaneriya
16	Wetakoluwegama Siyambalagamuwa
18	Ehetuwewa Siyambalagamuwa
17	Yapahuwa Galtenwewa
18	Ella Kadambawa
19	Ganewatta Moragollawa
20	Pahala Mawathagama Kadigawa
SCHOOL ACCESS ROADS	
21	Pinnapalagama Siyambalawewa Madurugama
22	Alutgama Nalawa
23	Galgamuwa Nerawaya
24	Mahakeliya Italgamuwa Maguruoya
25	Access to Buluwelakande School
26	Erapotakanda
27	Agara School





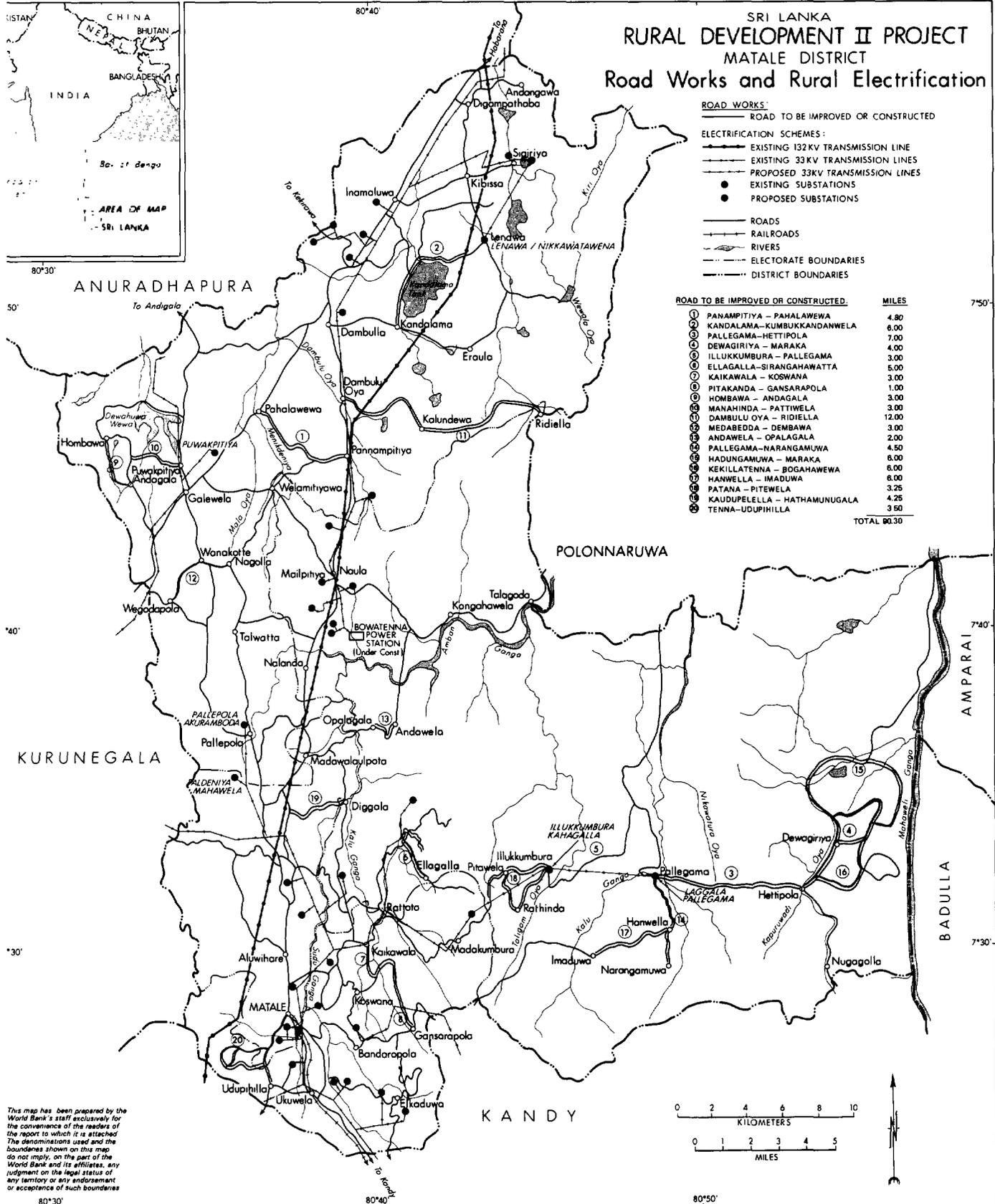


# SRI LANKA RURAL DEVELOPMENT II PROJECT MATALE DISTRICT Road Works and Rural Electrification

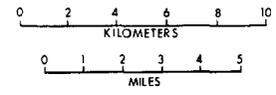


- ROAD WORKS:**  
 — ROAD TO BE IMPROVED OR CONSTRUCTED
- ELECTRIFICATION SCHEMES:**  
 — EXISTING 132 KV TRANSMISSION LINE  
 — EXISTING 33 KV TRANSMISSION LINES  
 — PROPOSED 33KV TRANSMISSION LINES  
 ● EXISTING SUBSTATIONS  
 ● PROPOSED SUBSTATIONS
- ROADS  
 — RAILROADS  
 — RIVERS  
 — ELECTORATE BOUNDARIES  
 — DISTRICT BOUNDARIES

ROAD TO BE IMPROVED OR CONSTRUCTED.	MILES
① PANAMPITIYA - PAHALAWEWA	4.80
② KANDALAMA - KUMBUKKANDANWELA	6.00
③ PALLEGAMA - HETTIPOLA	7.00
④ DEWAGIRIYA - MARAKA	4.00
⑤ ILLUKKUMBURA - PALLEGAMA	3.00
⑥ ELLAGALLA - SIRANGAHAWATTA	5.00
⑦ KAIKAWALA - KOSWANA	3.00
⑧ PITAKANDA - GANSARAPOLA	1.00
⑨ HOMBAWA - ANDAGALA	3.00
⑩ MANAHINDA - PATTIWELA	3.00
⑪ DAMBULLU OYA - RIDIELLA	12.00
⑫ MEDABEDDA - DEBBAWA	3.00
⑬ ANDAWELA - OPALAGALA	2.00
⑭ PALLEGAMA - NARANGAMUWA	4.50
⑮ HADUNGAMUWA - MARAKA	6.00
⑯ KEKILLATENNA - BOGAHAWEA	6.00
⑰ HANWELLA - IMADUWA	6.00
⑱ PATANA - PITEWELA	3.25
⑳ KAUDUPELELLA - HATHAMUNUGALA	4.25
㉑ TENNA - UDUPIHILLA	3.50
<b>TOTAL</b>	<b>90.30</b>



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**IMAGING**

16418

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