

MID-PROJECT REPORT

Submitted to
Office of Evaluation
Program and Policy Coordination
Agency for International Development
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by
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MID-PROJECT REPORT

This mid-project report is being submitted in accordance with the work plan for the RRNA contract with AID/PPC to evaluate AID documentation and its holdings on AID's part and current rural electrification projects. The purposes of the report are (1) to apprise the client in writing of the status of work completed to date; (2) to indicate the results of the project identification and documentation search undertaken in the first phases of this contract; (3) to outline the methodology for undertaking the case study analysis, and (4) to suggest the specific projects and scope of the case study analysis based on the availability of project documentation which must serve as the critical data base.

To these ends, this report has been structured as follows:

Part A inventories the rural electrification projects identified both by type of project and by geographic region. Rural electrification projects are defined as those so named as well as irrigation, power, power-distribution, or integrated rural development projects with a possible rural electrification component. In all, 220 such projects have been identified. Not all of these projects necessarily

have a rural electrification component but we cannot ascertain this on the basis of currently available information. In some instances, particularly for power projects, AID may not have participated in the distribution phases of the project but the infrastructure AID provided is being utilized by local organizations for rural electrification purposes. In this instance, existing AID documentation will not be helpful in ascertaining the ultimate impact or effectiveness of these subsequent activities even though AID would deserve some credit through the development of rural electrification capacity. Part A also provides a discussion of the coverage of each of the documentation holdings -- i.e., DIS, PAIS, PBAR, Status of Loan Agreement (SLA), etc., including extent of gaps within DIS. Finally, the kinds of documentation are also identified as located in each of the source files.

For the purposes of this contract, documentation has been defined as any "evaluative material" which can contribute to an understanding of any phase of a project from its early identification, design and feasibility to evaluation reports on one or more aspect of the project both during the construction and distribution phases and/or after AID's participation in the project was terminated.

Part B reviews the steps taken, and problems encountered in identifying the projects and searching for the documentation.

Part C explains and outlines the conceptual framework for evaluating the documentation for the case study analysis.

Part D, on the basis of the preceding three sections, makes recommendations regarding the specific projects to be studied in the case study analysis, the scope of such analysis and alternate ways of proceeding with subsequent phases of this work. Because we are still awaiting information from the bureaus, the recommendations on projects are based on information we now have and are subject to change should more documents on other projects be forthcoming.

Part A: Rural Electrification Project Inventory

Project Identification

Attachment A lists all AID past and current projects identified to date which are either known to involve rural electrification (RE) or which are of a type which may have involved RE as a component. These are listed by region and are grouped according to the following categories: (1) Rural Electrification Projects; (2) Other Projects with an RE Component according to the DIS Code; (3) Additional Power Projects; (4) Power Distribution Projects; (5) Integrated Rural Development Projects (IRD); (6) Irrigation Projects. Categories 1 and 2 are a comprehensive listing to the best of our current knowledge. Categories 3 and 4 deliberately exclude projects with an obvious urban focus (as in cases where the name of a capital city appeared in a project name), but are otherwise comprehensive. Categories 5 and 6 are thought to represent a fair but not representative sampling of Integrated Rural Development and Irrigation Projects, but should not be regarded as comprehensive listings.

The tables contained in Attachment A list projects (where such information was available) by country, project title, project number, loan number, starting and completion dates. Part 2 of each table cites the information source from which the existence of the project was established. The identification of the RE projects began by making use of the resources of AID's Development Information System (DIS) which has been supplemented through the use of AID's Status of Loan Agreements Report and information provided by various bureau offices and other sources.

Part 3 of each table identifies the nature, source, and date of project documentation which is currently known to exist and, in certain cases, provides space for miscellaneous comments and observations regarding the projects and their documentation.

Table 1 summarizes the progress and findings of the RRNA project search to date. Table 1 contains projects for which a known or presumed RE focus has been established.

As can be seen, 45 past and current AID projects with a direct RE focus have been identified to date: 17 in Asia, none in Africa, 23 in Latin America, and 5 in the Near East. These projects were implemented in 23 different countries. Forty of these were identified by one or another of AID's automated data retrieval systems, but only 17 of these were accessed by searching the DIS files for the Rural Electrification coded identifier. A test run of the DIS-IRD code revealed 8 projects with a rural electrification component which were not listed when simply the RE code was used.

Table 1.

A. Known RE projects by region						
Regions	Number of RE projects	Active 1974 to date	Retrieved through DIS RE code	Retrieved through auto-mated search	Number of countries represented	Countries with 2 or more RE projects
Asia	14	7	4	13	7	3 ^a
Africa	0	0	0	0	0	0
Latin America	19	7	6	16	11	5 ^b
Near East	4	3	0	3	3	1 ^c
TOTAL	37	17	10	32	21	9
B. Additional projects with presumed RE component						
Asia	3	3	2	3	3	0
Africa	0	0	0	0	0	0
Latin America	4	1	4	4	3	1 ^d
Near East	1	1	1	1	1	0
TOTAL	8	5	7	8	7	1
GRAND TOTAL	45	22	17	40	23 ^e	9 ^e

a. Indonesia, Philippines, Thailand.

b. Bolivia, Brazil, Ecuador, Guatemala, Nicaragua.

c. Syria.

d. Bolivia.

e. The Grand Total avoids double-counting of countries appearing in both Sections A and B.

Table 2

A. Other power projects by region					
Regions	Number of projects	Retrieved through auto-mated search	Number of countries represented	Countries with 5 or more projects	Countries names
Asia	74	60	10	6	Indonesia, India, Pakistan, Taiwan, Thailand
Africa	9	7	6	0	
Latin America	25	9	8	1	Brazil
Near East	20	15	6	1	Turkey
TOTAL	128	91	30	8	
-----B. Power distribution projects-----					
Asia	16	10	4	1	Pakistan
Africa	0	0	0	0	
Latin America	0	0	0	0	
Near East	4	3	3	1	
TOTAL	20	13	7	1	
GRAND TOTAL	148	104	31^a	8^a	

a. The Grand Total avoids double-counting of countries appearing in both Sections A and B.

It should be noted that the DIS files were established in 1974 with projects then active. Only 22 of the 45 RE projects identified are known to have been active at some time between 1974 and the present. It was found, however, that certain projects identified through the DIS-RE code had in fact been completed prior to 1974. These are included among the total of 17 projects reported as having been accessed through DIS-RE.

Table 2 includes other power and power distribution projects. It indicates that 148 other power or power distribution projects in 31 countries were identified, 104 of which were identified through an automated search of AID computer files.

Project Documentation

Evaluation reports of varying coverage and quality for DIS-RE projects in 10 countries have been identified. These countries are: India, the Philippines, Thailand, Vietnam, Bolivia, Colombia, Costa Rica, Ecuador, Guatemala and Nicaragua. These evaluations are contained in 15 documents, only 3 of which are available in DIS. Other evaluative materials such as Capital Assistance Papers, Project Papers, etc., have been located for 12 additional projects. Undoubtedly, a great deal more of this type of material exists and is readily accessible but its usefulness for the purposes of the current study is limited unless accompanying evaluations or project implementation status reports can be identified.

Part B: Review of AID Documentation Holding as
Data Base for Evaluation of Effectiveness
of AID Rural Electrification Projects

For the purpose of this contract, documentation holdings were defined to include the following:

1. AID centralized computer management information systems, i.e., DIS, PBAR, PAIS;
2. Bureau computer management information systems;
3. Bureau Evaluation Office Files;
4. Bureau Development Projects and Development Resources Files;
5. Central Engineering Office Files;
6. AID Reference Center;
7. AID Budget and Accounting Office -- Status of Loan Agreement.

Initial efforts focused on the AID centralized computer management information systems; however, as the preceding discussion indicated, there was an inadequate identification and even more so compilation of evaluative materials in that system which could form the basis of the case study and

effectiveness¹ analysis. DIS personnel acknowledged from the outset that the system did not contain a representative sample of AID's RE projects, much less the documentation on these projects. For example, only 3 out of 15 evaluation reports located were contained in the DIS system. This is not necessarily the fault of DIS personnel. The primary problem appears to be the absence of an agency wide systematic means of getting such documents from the missions or bureaus into the system. A staff member in the Asia Evaluation Office indicated in a 1 1/2 year of working there she had never received an evaluation report from a USAID mission. The process of getting documents distributed to the central evaluation office to the DIS system is only now being designed and implemented with most probable impact on future rather than past evaluations.

Therefore, it was necessary to search beyond the DIS system for both a fuller identification of the universe of rural electrification projects and to locate more project documentation. This search was complicated by a number of factors. First, the task of tracking down information on such a large group of projects, many of them quite old, is formidable. Bureaus in many instances lack personnel to carry out this task and the RPNA contract did not provide sufficient funds to cover, in addition to other assignments, this kind of task. We are, however, fortunate to obtain the assistance of a PPC/evaluation office staff member for these

1. The coverage of the DIS system may be adequate for other purposes but not for ascertaining the effectiveness of AID rural electrification projects.

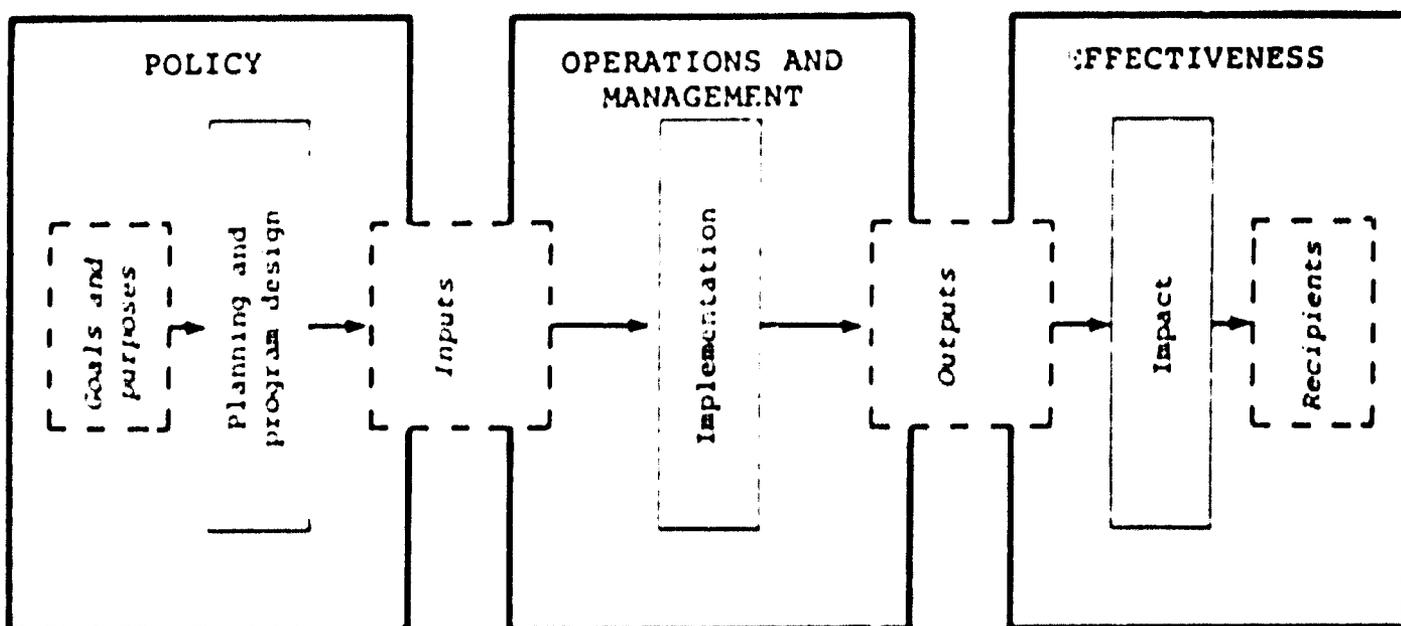
searches. Second, the search is time-consuming and, although all the bureaus have been contacted, we have not yet received a list of those documents which have been located. Hence, recommendations regarding projects to be studied in the case study analysis will be subject to change based on the new information which will be received after this report is written. In fact, the searches are continuing in all four regional bureaus at the present time.

Part C: Conceptual Framework

A conceptual framework determines what is relevant for reviewing, analyzing or evaluating a program. It serves the purposes of identifying those issues which should be addressed in determining some aspect, in this case, effectiveness, of a program and hence evaluating the existing documentation on a program.

The conceptual framework reflects the structure of a program and hence should identify relationships and raise issues for the specific purpose of evaluating program effectiveness. That is, the conceptual framework decomposes the program into 3 components - policy-making; operations and management; and effectiveness. These components are inter-related in that policy and operations aspects impinge or facilitate effectiveness while the latter feeds back into the policy and operations components. It is thus important to understand to what extent policy issues affect the effectiveness of a program as opposed to operational issues or problems or local conditions in which the program operates. These will surely vary from one program to another and from

one country to another. The three components are linked by program elements - goals, purposes, inputs, outputs and recipients and these elements are tied together by three processes - program design and planning, implementation; and impacts. The implementation process includes both construction and distribution phases as are relevant to a program. The following chart summarizes these relationships.



Conceptual Framework for Rural Electrification Projects

The review of existing documentation on rural electrification program -- both financed by AID and other donors -- has served as a basis for designing a conceptual framework specifically for rural electrification programs. The presentation of the rural electrification program framework i

divided into 3 sections. Section I outlines the range of components, elements and processes which comprise the structure of rural electrification program. No one program is likely to have all of the specified kinds of purposes, inputs, outputs, recipients or impacts since these vary from program to program and country to country depending on the circumstances. The itemization of such categories, however, serves as a useful guide for determining how the programs to be reviewed in the case study analysis compare both in terms of key similarities and differences. It also permits the classification of projects according to each characteristic.

Section II similarly lists the types of program institutional forms -- i.e., projects, which have generally characterized rural electrification programs. For example, in some instances cooperatives are the major program institution whereas in other instances public or private electricity boards serve as the key distribution institution.

Section III provides a suggested list of issues to be addressed in comparing and evaluating these projects and hence the evaluation materials on these projects. The issues flow directly from the program structure as outlined in sections I and II. If additional issues are found in the case study review that are not among the suggested list they will be added and also evaluated.

The proposed conceptual framework is thus provided in Attachment B.

Use of Conceptual Framework

Each of the project documents will be analyzed in terms of the list of issues and questions identified as relevant from the conceptual framework to any effectiveness evaluation. The conceptual framework, therefore, serves as a format for evaluating the existing materials in terms of their usefulness for determining the effectiveness of these rural electrification projects. More specifically, the following items will be discussed:

1. To what extent existing documentation addresses each of these issues.
2. To what extent conclusions are drawn in these documents regarding the effectiveness of these programs.
3. To what extent such conclusions are based on actual testing as opposed to hypothesized assumptions.
4. To what extent conclusions can be drawn regarding the effectiveness of these projects.
5. To what extent one can generalize from these projects on AID's programming of rural electrification projects.
6. Recommendations

In addition to the analysis using the conceptual framework, summaries of each of the case studies will also be provided. This shall include an identification of critical information gaps, if any, which would have to be filled before more effectiveness conclusions could be made. Finally recommended approaches to ascertaining the effectiveness of past and current projects will be provided both in terms of improving existing documentation holdings and/or resort to other evaluation methods and sources.

Part D: Recommendations

On the basis of the current set of evaluation reports available on rural electrification projects the following list of countries and their projects by type can be reviewed in the case study analysis.

Table 3. Distribution of Rural Electrification
Projects with Evaluation Reports by Country

Number of Projects

Project type						
Country	R.E.	IRD	Power	Power dis- tribution	Irrigation	Total
<u>Asia</u>						
India	1	--	1	--	--	2
Philippines	4	--	--	--	--	4
Thailand	1	--	--	--	--	1
Vietnam	1	--	--	--	--	1
<u>Latin America</u>						
Bolivia	1	--	--	--	--	1
Colombia	1	--	--	--	--	1
Costa Rica	1	--	--	--	--	1
Ecuador	1	--	--	--	--	1
Nicaragua	2	--	--	--	--	2
Grand Total						14

The projects for which evaluations have been located do provide good historical coverage of AID programming in RE-named projects as they include Nicaragua project funded in 1963 through recent (1977/78) RE projects in the Philippines.

Reliance on this group of projects, however, has several limitations. First, these evaluation reports are of widely varying quality and each review different aspects of rural electrification projects. No one report will provide a complete picture of what was intended and what occurred for each project. Together, they will not serve as an adequate basis for RRNA to make conclusions regarding the effectiveness of these specified projects. Nor are these projects a representative sample of the broad definition of AID rural electrification programming so that generalizations can not be made from these specific projects to the universe of projects. Thus, the main focus of the case study analysis would in essence be an evaluation of the "evaluation materials" a scope narrower than that implied in the RRNA contract. An amendment to the contract may thus be in order.

Second, in most instances we still lack adequate other project documentation -- i.e., PPs, CAPs, PARs, PIDs, etc. -- which would help give a broader picture of any one project. The bureau searches which are still ongoing may, however, uncover more reports of this type to improve on the current collection. Third, all of these projects are NRECA-affiliated except for the one in Thailand, hence the desire to achieve a broader mix of project sponsors would not be obtained using this data base for the case study analysis. Fourth, with the exception of one dam project in India the definition of rural electrification projects would have to be limited to those so named rather than to the broader definition as outlined in the RRNA contract. This possibility was acknowledged, however, in the RRNA work plan. Fifth two regions, Africa and Near East are clearly absent in the

above group of projects.

There are two possible opportunities to obtain a broader coverage. First, the FY 80 annual budget submissions indicate that there were 13 evaluations scheduled in 1978 on 12¹ additional projects. We are in the process of verifying the existence of these evaluations and get copies. This would increase the number of countries by five (adding Indonesia, Bangladesh, Korea, Morocco, and Sri Lanka) and add two more rural electrification projects so named, five irrigation projects, three power project, one power distribution project and one IRD project. The second means of increasing the coverage of the case study analysis is the possibility that many more evaluations and other documents will be uncovered through the bureau searches. Since we are still awaiting some feedback on what these searches are producing and there is still a need for extra PPC staff time to be devoted to locating this material we can not speculate on how productive these efforts are likely to be.

If neither the of the above coverages is satisfactory to PPC then one of two alternative options should be considered - either to put more time into the bureau searches on the chance more fruitful materials can be found or seek other means outside of existing documentation for establishing the effectiveness of AID rural electrification projects. This would most likely entail special follow-up reports

1. One evaluation is on a project already included in initial list.

undertaken by USAID missions on the current status of a select group of old and current projects or field visits. This approach however, may not be consistent with PPC's scheduling of a report to Congress nor to budgetary matters. If more time is spent by RRNA staff in the search effort this will reduce time to be devoted to the case study analysis. An alternative to this would be to have PPC staff conduct the search, themselves, particularly since most bureaus have indicated they do not have adequate staff for this effort. The current status of the four bureau searches

is as follows:

<u>Region</u>	<u>Status</u>
Latin America	Evaluation and Development Resources office files have been searched.
Africa	List of projects sent to Fred Zobrist who agreed to check on project documentation. No further word yet.
Asia	Dennis Brennan has given permission for PPC staff member (Sally Patton) to locate materials in Asia bureau files. Pat Dixon of Asia Bureau is identifying project papers. Sally is to begin work on Monday, December 3, 1978.
Near East	Joan Silver has circulated memo regarding rural electrification projects in Near East. Expect to receive results by next week.
Central Engineering	By December 8 staff of Costables Associates will have organized documents in Central Engineering division which could also serve as a means of improving data base.

One major benefit of the searches apart from the information uncovered for our purposes is that these materials can also be channeled into DIS in order to improve its current meager coverage of rural electrification documents. Time devoted to the search during the first week of December, while PPC reviews this report, will not alter the work schedule as outlined in the work plan.

Certain considerations suggest themselves with respect to reviewing the alternatives on the further implementation of this study. First, if further efforts are to be made in locating documentation on power, distribution and other types of projects with potential relevance for RE, they could probably most productively be concentrated on Pakistan, Korea, Taiwan, and Brazil where a large number of such projects are known to have been funded.

Second, if further documentation searches, or review of evaluation office files for those evaluations known to have been scheduled for 1978, substantially increase the number of documented projects available for analysis, it is suggested that any screening which is done to reduce the number of case studies assign priority to those countries in which more than one project has been implemented and where a history of RE programming within a unified setting exists. For example, this will enable us to examine how and why the concept of rural electrification has changed over the past 25-30 years from emphasis primarily on construction to involvement through distribution.

Finally, three very new RE projects are ongoing in Bangladesh, Honduras, and Guatemala. It is proposed that PID's and PP's for these projects be reviewed in the light of whatever findings emerge from the case studies, to determine the extent to which transfer of AID experience with RE has already taken place with respect to project design and evaluation planning.

RRNA principal staff for this project (Phillip Rourke and Phylcia Fauntleroy) each have about 27 days remaining in the contract (as of December 1, 1978), out of 42 working days possible before the contract ends (January 31, 1979). Therefore PPC, in deciding whether RRNA should devote more time to the searches rather than having PPC staff conduct the task must decide what proportion of the 27 days they would prefer to have devoted to the case studies analysis. The more countries and projects to be analyzed, the more time will be required.

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PRAR	SLA	
RURAL ELECTRIFICATION PROJECTS AS NAMED:											
ASIA											
Banladesh	Rural Electrification	3880021	388T012	77	83				X	X	
Indonesia	Rural Electrification I	4970267	497T052	78	83	X			X	X	
Indonesia	Rural Electrification II	4970283		7					X		
India	Rural Electrification Cooperative Development	3860342		67	72	X		X			ARC
Pakistan	Rural Electrification	3910408		7					X		
Philippines	Rural Electrification Cooperative Development TSM	4920189		66	69			X			
Philippines	Victorias Rural Electrification Service Cooperative	4920189	492W025	68		X				X	DIS
Philippines*	Rural Electrification	4920248	492W028	71	80	X				X	*DAIADI *Yeable *Denton *PPC
Philippines	Rural Electrification II	4920314	492W034	74	80				X	X	
Philippines	Rural Electrification	4920321		78	79				X		
Philippines	Rural Electrification V	4920931	492T041	78	79					X	
Thailand	Rural Electrification Cooperative Survey	4910175		65	68			X			ARC
Thailand	Rural Electrification Planning	4910217		71	72			X			ARC
Vietnam	Rural Electrification Cooperative	7100357		70	72			X			ARC

ATTACHMENT A.

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAR source	Date	Other source	Date		
	DIS	9/2/77	Venables	4/77							Rural welfare focus	Evaluation scheduled 5/79 AID planning environmntl asmt; evaltn sched'ld 7/79
6/71							Venables	2/69			Increase agricultri production	Evaluation scheduled 1/80 Evaluation scheduled 12/79
None												Nisamis study
1/77	DIS	3/8/72										
10/78	DIS	5/74 & 12/74										Tendler Report; evaluation scheduled 5/78 covers II, III, IV & V.
12/68												
11/70												

Listing of AID Rural E

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bur. file	Eval. rept. source
						DIS-RE	DIS-IND	PAIS	PBAR	SLA		
<u>AFRICA</u>												
<u>LATIN AMERICA</u>												
Bolivia	Rural Electrification I	5110049	5110046	73						X		
Bolivia	Rural Electrification II	5110205	511049	74	79				X	X		DAI&DIS
Bolivia	Rural Electrification III	5110488	grant	?							X	
Bolivia	Rural Electrification IV	5110493		?					X			
Brazil	Rural Electrification	5120228		63	71			X				
Brazil	Rural Community Electrification	5120105		62	65			X				
Chile	Rural Electrification Cooperative	5130191	513024	65	72			X		X		
Colombia*	Rural Electrification Cooperative	5140098	514035	64	72	X		X				**ARCADIS **Ass Rpt **E/F.L. **Ass **Valta
Costa Rica**	Rural Electrification	5150092	515015	64		X				X	X	**RECA/ **Ass **ARCADIS **Ass Rpt **Ass Rpt
Ecuador	Rural Electrification Cooperative	5180071	518023	64				X		X		
Ecuador***	Rural Electrification	5180099	518035	70		X				X		***LA/DP ***Ass Rpt ***E/F.L. ***Ass ***Valta
Guatemala****	Rural Electrification	5200214	520019	71						X	X	LA/DP
Guatemala	Rural Electrification II	5200248	520031	78					X			

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAR source	Date	Other source	Date		
	CE/Y. L.	2/73							LA/DR Prog.Rpts Audits	75-78 76		Evaluation scheduled 4/79; 7/78 Report not yet rec'd.
1/77	CE/Y. L.	10/73							CE/Y. L.			Evaluation scheduled 4/79
	CE/Y. L.	6/74										Evaluation scheduled 1/80
	CE/Y. L.	9/64										
8/73 72												Evaluation scheduled 7/78; 7/78 Report not yet rec'd.
4/66												
7/678	CE/Y. L.	6/65										
8/73 72												
4/76 72	CE/Y. L.	4/70							CE/Y. L.			
4/66												
4/77			LA/DR	6/78					***LA/DR Interim Report Project Rev Ppr	6/77		Poyner -- Village Elec- tricity Utilization Study Good info; evaluation scheduled 12/79

Listing of AID Rural EI

Country	Project name	Project #	Loan #	Date began	Date ended	Project listings					Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA	
<u>LATIN AMERICA</u> (Continued)											
Honduras	Aguan Valley Rural Electrification	5220138	522T033	78		X				X	
Nicaragua	Rural Electrification Cooperative	5240044	524L007	63	67			X		X	DAIADIR Ross IM
Nicaragua	Rural Electrification Cooperative II	5240078	524L021	68	73	X			X	X	CE/7.L. Ross Svaltin
Nicaragua*	Rural Electrification Cooperative III	5240096	524L025	71	75	X				X	
Peru**	Rural Electrification	5270119	527L048	67	73				X	X	
Uruguay	Rural Electrification	5280008		63	66			X			
<u>WEAS EAST</u>											
Egypt***	Provincial Electrification	2630074							X		
Jordan****	Rural and Urban Electrification	2780209	278R020	77						X	

Verification and Related Projects

Project data available											Type of project	Comments	
Date	CAP source	Date	PP source	Date	PROP source	Date	FAR source	Date	Other source	Date			
			CE/P.L.	4/77									Evaluation scheduled 7/79
77													
66	CE/P.L.	6/66											
	CE/P.L.	4/71	DIS	71					CE/P.L. Data/Study				
									CE/P.L. Prog. Study	5/71			
									LA/SP-LEB	7/71			
									LA/SP-LCB	7/76			
	CE/P.L.	6/66							**CE/P.L.- LCB				
									**CE/P.L. Prog. Study	2/67			
									**LA/SP-LCB	6/74			
									***CE/P.L.- DR for Imple- ment	1/79			
	CE/P.L.	6/77	CE/P.L.	76					****CE/P.L.- ABS and backdrop paper	ABS			In construction phase; evaluation scheduled 1/85

Listing of AID Rural El:

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bar. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PSAR	SLA		
NEAR EAST (Continued)												
Syria	Rural Electrification	2760018	276K016	77				X	X			
Syria	Rural Electrification II	2760025						X				
OTHER PROJECTS WITH A RURAL ELECTRIFICATION COMPONENT ACCORDING TO THE DIS CODE:												
ASIA												
India	Bass Dam	3060233		66	77	X				X		Unbled 7 Parlip
Philippines	Provincial Development	4920236		68	78	X	X					
Thailand	Tribe Hill Research	4930248		73	75		X					
LATIN AMERICA												
Bolivia	DMFH Technical Support	5110000		63	64	X						
Bolivia	Agricultural Refinancing	5110364				X						
Ecuador	Financing Subloan	5180099	518L035	65	67	X						
Jamaica	Integrated Rural Development	5320046	5320010	77	81	X	X			X		
NEAR EAST												
Afghanistan	Kajakai Hydro-electrification	3060101	306M013	68	77	X				X		
Afghanistan*	Kajakai Hydro-electrification	3060041	306M018	74						X		

ctrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAR source	Date	Other source	Date		
			CE/P.L.	9/77					CE/P.L. - PID; Pre- April Rpt	8/76 12/76		Evaluation scheduled 6/79
	DIS	8/64			DIS	9/12/70					Irrigation dam Institution building focus	
									LA/DP proj. info	2/72		Weak info.
	CE/P.L.	6/72			CE/P.L.	9/70			CE/P.L. loan/yrmt	5/68	Electricity for irrigation	
	CE/P.L.	4/74							CE/P.L. - loan Agreement Table	1/75 11/78	Expansion of plant from earlier Dam	Westinghouse is contractor

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eva rep sou
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA	
ADDITIONAL POWER PROJECTS:											
ASIA											
Indonesia	Diesel Electrification	4970106		57	70			X			
Indonesia	Power Development	4970126		60	64			X			
Indonesia	Medan Power Rehabilitation	4970204	497H022	70						X	
Indonesia	Semarang Steam Power Station	4970033	497H024	71						X	
Indonesia	Central Java Power Rehabilitation	4970200	497H019	72						X	
Indonesia	West Java Interim Generation		497H032	74						X	
India	Rajasthan Power	1060023		54	57			X			
India	Power Development Loan		106A013	58						X	
India	Sharavathi Hydroelectric Power		106H109 106A018 106A046	60				X			
India	Ahmedabad Electric Company	1060234	106A019	60				X			
India	Barauni Indian Power Project	1060187	106A020	60	67			X			
India	Durgapur Thermal Power	1060196	106A022	60	67			X			
India	Kanpur Thermal Power	1060197	106A024	60	67			X			

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval. rept. source
						DIS-RE	DIS-IND	PAIS	PSAR	SLA	
ASIA (Continued)											
India	Sarapani Hydro-electrification	3060190	306A030	60	67			X			
India	Birsinghpur Power	3060200	306A045	61	66			X			
India	Tarchoi Thermal	3060207	306A044	61	60			X			
India	Teta Thermal	3060235	306A063	62						X	
India	Satpura Thermal	3060238	306A077	62	67			X			
India	Pamba Kahke Hydro-electrification	3060190	306A061	62	67			X			
India	Bandel Thermal	3060221	306A056	62	67			X			
India	Conkey Thermal		306A052	62	67			X			
India	Nannapundam Thermal	3060236	306A060	62						X	
India	Chandrapur Thermal		306A064								
India	Chandrapur Thermal		306A021	62	67			X			
India	Nannapur Power Co.		306A123	65						X	
Korea	Seochon Dam Rehabilitation	0090222		56	65			X			
Korea	Steam Power	0090266		56	57			X			
Korea	Steam Power	0090257		56	58			X			
Korea	Chang Pyong Dam Rehabilitation	0090228		56	66			X			
Korea	Jwan Power Rehabilitation	0090224		56	62			X			
Korea	Thermal Power Transfer	0090223		56	59			X			
Korea	Power Systems Operations	0090230		56	64			X			
Korea	Seoy Hui Thermal Rehabilitation	0090220		56	65			X			

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	FAR source	Date	Other source	Date		

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval rept sour
						DIS-RE	DIS-IND	PAIS	PBAR	SLA	
ASIA (Continued)											
Korea	Electric Power Commission	4890150		56	59			X			
Korea	Electric Rate Study	4890435		57	59			X			
Korea	Power System Maintenance	4890415		57	62			X			
Korea	S.W. Thermal Electric	4890501		58	64			X			
Korea	Power Training and Tech. Assistance	4890542		61	70			X			
Korea	Power Expansion Generator and Distribution	4890541		61	70			X			
Korea	Pusan Thermal	4890620	489MO14	62	66			X			
Korea	Power Expansion Generator and Distribution	4890604		63	66			X			
Korea	Kumasan Thermal	4890624	489MO19	64	67			X			
Korea	Yongnam Thermal	4890643	489MO44	67						X	
Laos	San San II Hydro- electrification		439MO01	74						X	
Nepal	Power Development	3670084		58	67			X			
Pakistan	Karnafuli Dam	3910023	391AO11	59	64			X			
Pakistan	Quetta Thermal	3910157	391AO34	61	64			X			
Pakistan	Power Commission	3910135		62	64			X			
Pakistan	Electric Corp.		391MO42	62						X	
Pakistan	Siddhirganj Thermal	3910224	391MO82	64						X	
Pakistan	Lynli / r Thermal	3910225	391MO83	64				X			

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bur. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		
ASIA (Continued)												
Philippines	Electric Power Industrial Survey	4920169		64	67			X				
Philippines	Power Resource	4920315		71	77				X			
Philippines	Tiwu geothermal	4920262		73						X		
Taiwan	Hanpu I Thermal	4840036		52	59			X				
Taiwan	Peipu Thermal	4840035		52	58			X				
Taiwan	Wushett Hydro-electrification	4840018		53	62			X				
Taiwan	Hanpu II Thermal	4840037		55	60			X				
Taiwan	Lung Chien Hydro-electrification	4840034		55	61			X				
Taiwan	Ku Kuan Hydro-electrification	4840303		56	63			X				
Taiwan	Shen Ao I Thermal	4840372		56	62			X				
Taiwan	Shen Ao II Thermal	4840494		58	64			X				
Taiwan	Hanpu Thermal Expansion	4840563	484A020	60	64			X				
Taiwan	Tachien Reservoir	4840516	484A024	61	63			X				
Taiwan	Shen Ao Thermal	4840589	484A039	63	64			X				
Taiwan	Linhon Thermal	4840593	484A045	64	68			X				
Taiwan	Lower Tachien Hydroelectrificatn	4840592	484A044	64	73			X				

Listing of AID Rural EI

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval. rept. source
						DIS-RE	DIS-IND	PAIS	PBAR	SLA	
<u>ASIA</u> (Continued)											
Thailand	Power Diesel Electrification	4930021		55	58			X			
Thailand	Power Service and Training	4930019		55	59			X			
Thailand	Power Survey	4930022		56	59			X			
Thailand	Power Service and Training	4930094		57	67			X			
Thailand	Mae Moh Power	4930096		57	65			X			
Thailand	Electric Power Expansion	4930146	493A005						X		
Vietnam	Electric Power	7300108		56	67			X			
Vietnam	Electric Power	7300295		65	70			X			
<u>AFRICA</u>											
Cameroon	Electric Power	6310012		63	66			X			
Ethiopia	Electric Power Station	6430032		57	63			X			
Ethiopia	Finchaa Dam	6430107	643B011	66	70			X			
Guinea	Electrification of 4 Towns	6750016	675K008	65					X		
Liberia	Electrical Survey	6690028		58	61			X			
Liberia	Mt. Coffee Hydro-electrification	6690081	669M005	61	67				X		
Liberia	Power Development Study	6690104		67	71			X			

sacrificion and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAB source	Date	Other source	Date		

Listing of AID Rural EI

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bur. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		
AFRICA												
(Continued)												
Malagasy	Electric Energy Project	6870010		61	63			X				
Nigeria	Electric Corporation of Nigeria	6200759		65	68			X				
LATIN AMERICA												
Bolivia	Santa Cruz Electric Power	5110644	511L031	64							X	
Bolivia	Equipment Operator	5110071		55	59							
Brazil	Portaleza Power	5120262	512L016	63	65			X				
Brazil	Sao Francisco Hydroelectricity	5120233		64	73			X				
Brazil	Palmito Power Expansion	5120232	512L026	64	72			X				
Brazil	Electric Power Expansion	5120260		63	67			X				
Brazil	Camet Power Expansion	5120187	512L022	64	71			X				
Brazil	Santa Cruz Thermal		512L066	71								
Brazil	Comig Power Expansion	512L014		63							X	
Brazil	Copel Power System		512L041	65							X	
Brazil	Boe Esperanca Hydroelectricity		512L053	65							X	
Brazil	Maccarenhas Hydroelectricity		512L062	64							X	
Brazil	Power Training and Tech. Assistance		512L070	67							X	
Brazil	Passo Real Hydroelectricity		512L075	69							X	

Detritification and Related Projects

Project Data Available											Type of project	Comments
Date	CAP source	Date	FP source	Date	FACP source	Date	FAD source	Date	Other source	Date		
									LA/SP	5/75		Weak info.
	LA/TS	5/74										

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bur. file	Eval. rept. source
						DIY-RE	DIS-IND	PAIS	PRAR	SLA		
LATIN AMERICA (Continued)												
Brazil	Power Training and Tech. Assistance		512L085	71							X	
Brazil	Central Electric Matagrosso		5120030	64							X	
Brazil	Central Electric Minas Gerais		5120044	65							X	
Costa Rica	Cachi Hydroelectric- electrification	5150076	515L007	63	65			X				
Ecuador	Electric Power		5180025	64							X	
Honduras	Canoveral Hydro- electrification	5220050	5220003	60	64						X	
Nicaragua	Matagalpa Public Utility	5240043	5240001	59							X	
Nicaragua	Sio Yuma Hydro- electrification	5240044	5240002	60							X	
Parana	Water Resources & Electric Power	5250054		54	66			X				
Peru	Palvico Hydro- electrification		527L025	63							X	
Peru	Hydroelectrification Project Construction	5270093	527L024	65	67			X				
Paraguay	Pedro Juan Caballero Electric		526L020	69	73						X	
MID EAST												
Afghanistan	Kandahar Diesel Generator	3060041	3060009	66							X	
Afghanistan	Helmand Arghandab Electric	3060041		66	69						X	
Afghanistan	Kajaki Hydro- electrification	3060041	3060018	74							X	

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	FP source	Date	FRCF source	Date	FAR source	Date	Other source	Date		
					LA/DP	9/77						
			LA/DP	69					LA/DP-LCR	7/75		

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA	
NEAR EAST											
(Continued)											
Iran	Karsj Dam	2650073		53	59			X			
Iran	Master Elec. Plans	2650236	265M016	63	69			X			
Iran	Mgmt Assistance Development Elec- trification	2657236	265HG25	55						X	
Jordan	Electric Power Plant	2780117	278A007	59	64			X			
Libya	Electricity and Triangle Power	6700058	670B002	57	65			X			
Libya	Small Power Plant Development	6700018		57	58			X			
Tunisia	Electrical Equipment II	6640102		67						X	
Turkey	Power Production	2770141		54	56			X			
Turkey	Hydroelectrificatn Plant Training	2770251		54	61			X			
Turkey	Load Dispatch Trng	2770242		55	56			X			
Turkey	Sarıyer Hydro- electrification	2770244		55	60			X			
Turkey	Utilities Directors' Training	2770291		56	60			X			
Turkey	Power Supply Study	2770296		57	61			X			
Turkey	S.W. Anatolia Power	2770381	277B035	62	62			X			
Turkey	Koccehaya Hydro- electrification	2770386	277B053	64						X	
Turkey	Abbasli Power	2770410		66	72			X			
Turkey	Kaban Hydro- electrification	2770423	277B063	66						X	

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAF source	Date	Other source	Date		

Listing of AID Rural E

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Sur. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		
<u>POWER DISTRIBUTION PROJECTS</u>												
<u>ASIA</u>												
India	Hot Lines Maintnce	3860045		53	55				X			
Korea	Rehabilitation & Constructn Transmen	4890721		56	64				X			
Korea	Electric Power Distribution System			56	61				X			
Korea	Power Transmission and Distribution	4890627	4898023	64	67							
Korea	2nd Power Transmen and Distribution	4890643	4898047	67						X		
Pakistan	Multan Power Transmission	3910106		57	62				X			
Pakistan	Power & Transmen Lines	3910226	391A013	59	73				X			
Pakistan	Secondary Transmission Grids	3910156	391A015	59	65				X			
Pakistan	H.P. Power Distribution		391B043	62							X	
Pakistan	Hydrogen Power Distribution		391B090	64							X	
Pakistan	H.P.-J Transmission Lines		391B091	64							X	
Pakistan	Electric Distribtn Expansion		391B086	64							X	
Pakistan	Wangla Dam Transmen	3910250	391B092	64	69				X			
Pakistan	Wangla Transmen II	3910293	391B126	68							X	
Taiwan	Power Transmission and Distribution	4840475		53	64				X			
Taiwan	Primary System Improvement	4840474		53	64							

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Eval. rept. source	
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		Sur. file
<u>AFRICA</u>												
<u>LATIN AMERICA</u>												
<u>NEAR EAST</u>												
Morocco	Power Transmission & Telecommunications Training	608000J		58	59							
Tunisia	Power Distribution Improvement	6640200	6440021	64	67							
Turkey	Electric Power Distribution	2770379	277A015	60	65							
Turkey	12 Load Centers Transmission	2770386	277W059									
<u>INTEGRATED RURAL DEVELOPMENT PROJECTS</u>												
<u>ASIA</u>												
Philippines	Provincial Devlpmnt	4920236		68	78	X	X					
Philippines	Basic Integrated Area Development	4920275	492T041	73	75							
Thailand	Accelerated Rural Development	4930163	493H015	64	77							
<u>AFRICA</u>												
<u>LATIN AMERICA</u>												
Costa Rica	Rural Development	5150120	515T025	75	78							
Jamaica	Integrated Rural Development	5320046	5320010	77	81	X						
Peru	Community Devlpmnt	5270134	527L082	71	75							
<u>NEAR EAST</u>												
Afghanistan	Rural Works	3060131	306T019	74	78							

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PRCP source	Date	PAR source	Date	Other source	Date		
							1/75- 6/77		LA/DP	8/7743,75 5/7769,78		
												Evaluation scheduled 7/79
												Miscellaneous

Listing of AID Rural E

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Bur. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		
<u>IRRIGATION PROJECTS</u>												
<u>ASIA</u>												
Bangladesh	Small-Scale Irrigation I		108TG10	76						X		
Indonesia	Sederhana Irrigasi		497T037	75						X		
Korea	Irrigation Construction		489T090	74						X		
Pakistan	Chaj Doab Irrigation Project		191M087	64						X		
Philippines	Irrigation Equipment Loan		492M024	67						X		
Philippines	Small-Scale Irrigation Loan		492T038	75						X		
Sri Lanka	Mahaweli Ganga Irrigation		103T018	58						X		
Thailand	Irrigation Project		493A010	63						X		
Thailand	Lam Han Dam Irrigation		493M013	67						X		
<u>AFRICA</u>												
Ghana	Volta River	6410031	641A001	61	62						X	
Mali	Betuba Dam Survey	6800002		61	61						X	
Nigeria	Niger Dam	6200726	620M006	64	70						X	
<u>MID EAST</u>												
Jordan	Carac Triangle Irrigation	2780179	278T011	74							X	
Jordan	Masarus Dam and Irrigation	2780030	278M019	77							X	

Electrification and Related Projects

Project data available											Type of project	Comments	
Date	CAP source	Date	FP source	Date	PRCP source	Date	PAB source	Date	Other source	Date			
													Evaluation scheduled 7/78
													Evaluation scheduled 5/78&6/79
													Evaluation scheduled 7/80

Listing of AID Rural

Country	Project name	Project #	Loan #	Date begun	Date ended	Project listings					Sur. file	Eval. rept. source
						DIS-RE	DIS-IRD	PAIS	PBAR	SLA		
NEAR EAST (Continued)												
Morocco	Lower Moulouya Irrigation	6080045	608H031	60	68					X		
Morocco	Triffa Irrigation	6080136	608T041	75			X					
Morocco	Doukkala Irrigation	6080137	608T044				X					
Syria	Euphrates Irrigation	2760011	276E011	76						X		
Tunisia	Irrigation	6640179	664A005	60						X		
Tunisia	Irrigation		664G041	69						X		

Electrification and Related Projects

Project data available											Type of project	Comments
Date	CAP source	Date	PP source	Date	PROP source	Date	PAR source	Date	Other source	Date		
												Evaluation scheduled 9/78&9/79

KEY: AID Rural Electrification Project Inventory

DIS	Development Information System
ARC	AID Reference Center
RE	Rural Electrification
PAIS	Project Accounting Information System
P BAR	Country Program Data Bank
IRD	Integrated Rural Development
SLA	Status of Loan Agreement
PPC	Program and Policy Coordination
DAI	Development Alternatives, Inc.
CE/FL	Central Engineering/Fred Lowell file
PRP	Project Review Report
LCR	Loan Completion Report
LSR	Loan Status Report
V	Tom Venable, consultant

ATTACHMENT B**SECTION I - PROGRAM STRUCTURE****Program Goal**

To contribute to an improved standard of living in rural areas, particularly among the poor through rural electrification programs.

Purposes

1. To provide reliable electric service at reasonable rates to rural residents, especially the poor.
2. Increase production, employment, and income in project area - agriculture (irrigation, drainage, etc.). Industry (agro- and other small industry).
3. Reduce social and economic disparity between rural and urban sector.
4. Improve health status - electricity for health centers, refrigeration, pure water.
5. Improve educational opportunity (light for night-time study, electrified schools, radio and perhaps T.V.).

6. Deter night-time crime (security lighting)
7. Encourage democratic participation of people served by the electric system.
8. Improve status of women - ease home chores to provide more time for family, leisure or more productive employment (e.g. home crafts, etc.).
9. Improve communications of the rural electrification area - radio, T.V.
10. Stem rural-urban migration
11. Develop institutional infrastructure - i.e., cooperatives, state electricity boards, etc.
12. Reduce birth rate
13. Increase commerce and trade
14. Facilitate marketing and storage of agricultural goods.

Participating Agencies

1. AID - Washington and USAID Missions;
2. U.S. Technical Assistance Organizations - contractors i.e., NRECA, construction companies, etc.;

3. LDC Central Government - Planning authorities, Cognizant Ministries or Departments (e.g. Min. of Agric, Energy, electricity, etc.; State Electricity Authority, etc.)
4. LDC Local Government - Governor, Provincial Planning Authority, Mayors, Community Development Leaders.
5. LDC Central and Local Institutional Leaders - Farmer's Associations, Cooperatives, Community Organizations (School, health, tribal, church, etc.) Electric Power Agency, Company or Individual Franchise - holders, etc.
6. Other International Agencies - World Bank, IDB, ADB, etc.

Planning and Program Design Process

1. Country Surveys - Identify scope for rural electrification within country taking into consideration existing sectoral and regional plans, conditions and other related activities.
2. Program Identification - Identify and design proposed rural electrification programs if need has been established.
3. Program Appraisal - Review engineering, economic and social feasibility of proposed programs.

4. Contract Negotiations and Preparation; and Recruitment of Personnel

Inputs

Personnel

AID - Washington-based planners and project back-stoppers; Mission Specialists, Host Country Engineers and technicians, laborers. U.S. Technical Assistants - Organization and Management advisors, Engineers and other technicians

Finance Capital

Host Country - Tax revenues, Grants, Loans, Contributions from AID or other International Donor sources

Materials

Host country - vehicles, power poles, cross-arms, conductors (the power lines), or other line materials as available. Off-shore Procurement - materials and equipment not provided by host country.

Infrastructure

Roads into the area to be served by the rural electrification as needed. Port and dock facilities to handle imported materials may need improving. Physical plant - Generation, transmission and distribution facilities as

the target population and the achievement of goals and objectives.

Everyone involved in the project should be made aware of the kinds of information that must be collected and maintained to measure specific types of impact subsequently.

Outputs

Economic

1. Dependable and adequate electric service (i.e., number of hookups, utilization rates, etc.)
2. Skilled, trained personnel
3. Institutions
4. Employment on project from construction through distribution phases

Impacts

1. Increase household electricity usage - related consumption (use of appliances, lights, etc.)
2. Increase agricultural and agro-industrial production
3. Increase commercial activities

4. Increase public services (i.e., health, education, safety)
5. Increase communications
6. Increase incomes
7. Increase community interaction
8. Reduce rural-urban disparities
9. Increase women opportunities
10. Increase employment

Recipients

Farmers

Households

Businesses and Commerical Activities

Government Offices

SECTION II - PROJECT TYPES

The following represents a typology of more or less "pure" types of rural electrification projects. In practice one might expect to find varying combinations and/or gradations of these types.

1. Power generation projects
 - Hydroelectric
 - Thermal
 - Geothermal
 - Diesel
 - Microgeneration of various types, e.g., hydro, wind, diesel, etc.
2. Power Distribution Projects
3. Mixed generation and Distribution Projects

Projects of these types can be and have been implemented through and administered by a wide variety of institutional types or combinations thereof. These include:

1. Governmental Institutions or Agencies
 - National
 - Regional
 - Local
2. Recipient Organizations
 - Cooperatives
 - Other community or regional organizations

3. Private Enterprises

In addition, small-scale auto generation projects may be implemented without recourse to a permanent administrative organization as in the case of microgeneration units distributed directly among farmers, small manufacturers, etc.

SECTION III - SALIENT ISSUES AND ANALYTICAL AREAS

A. The Rural Electrification Setting

1. Is there a concensus among governing officials and rural leaders that rural electrification is needed? What reasons are given for this need?
2. Can rural electrification benefit the poorest segment of the rural population? Will modern clinics, health centers, pure water supplies, the safety of village lighting benefit the poor who are unable to utilize electric service in their homes?
3. To what extent is rural electrification experience from other countries relevant in this context?
4. Is there some rural electrification in the country or area at this time? How does it relate to the above?
 - a. Is it served by the government (power author-

ity)? By an individual franchise holder? or a company? How is existing power capacity utilized?

- b. Are all people being served by the existing electric system? If not, why? Are they eligible for service? Can they afford it at current rates? And, is the electric service adequate in voltage and is it reliable?
 - c. Is there a need for a voluntary agency to become involved? How would this improve the present system (if any exist)? Would it be desired by a majority of people in the area? by governing officials? others?
5. If there is inadequate rural electrification, is a foreign aid program to improve electric coverage justified? To what extent can governments or private enterprises undertake project without foreign assistance?
- a. How can a rural electrification program benefit all rural people in the area served?
 - b. How will such a program relate to agricultural production and to food supplies?
 - c. How will such a program relate to better water, sanitation and other health factors?

- d. Should a capital-intensive rural electrification program be justified in a labor surplus area found in most LDC's? Will employment opportunities be increased? Will rural electrification stimulate industrial development? local processing of raw materials? crafts, etc.?

B. Program Structure

Purpose: Examine the background and current status of rural electrification at the program and project levels, analyze the role of cognizant agencies (participating agencies at the beginning, if any), cost and range of inputs, the recipients to be reached initially and in the long run. Consider the social benefits to indirect recipients (those not on the rural electrification lines, but benefiting from social uses of energy-school lighting, public lighting, public water supplies, etc.).

1. Are roles of participating agencies and affected groups compatible, conflicting, or complementary? (Agencies would include, where appropriate, AID, the ministries of agriculture, planning, rural development, electricity or energy, cooperatives; present voluntary agencies; ex-patriate advisors and local counterparts.) To what extent is program development coordinated among agencies?
2. What kind of project organization and technology is required? Has the issue of autogeneration vs. central-station power supply been addressed?

3. Required inputs: Do inputs impose a significant constraint on program development (as a capital-intensive project, is extent of project development limited?) Does it impose limits on other projects or activities? Are inputs in existing developmental plans of the state or community?
 - a. Major inputs? (land, labor, materials). By whom provided? Portion provided locally, within the LDC and from abroad? Foreign exchange, loan, grant requirements?
 - b. What inputs can the area served provide? How might local participation be increased?
 - c. How are indigenous inputs obtained? What impediments exist, if any? Are engineering specifications well-suited to local conditions and project purposes?
4. Adequacy of project outputs (e.g., electric service).
 - a. What is the form of the output? (Reliability, duration of service). For whom is it intended?
 - b. How does the area served differ from authorized or planned levels?
 - c. Is training provided to insure continuity of reliable service? and to teach users, conservation and better use of energy?

- d. Is power source adequate to meet growing demand?
 - e. Is cost of service compatible with income levels in the area served? Are rates and charges properly structured?
5. Recipients: Are recipient levels appropriate? Is project design appropriate to the needs of these recipients?
- a. What are trends in recipient (or user) levels by geographic areas or socioeconomic status?
 - b. Do recipient levels meet AID's criteria of assisting the lower 40 percent of the population? Does the project reach the "poorest of the poor"? To what extent are they reached?
 - c. How do participating agencies (official host government and American private voluntary) assess the adequacy of outputs and recipient levels?
 - d. Is it possible to assess the extent to which rural electrification service is reaching the rural target group? Is service as adequate and reliable as intended?
 - e. Were costs of construction comparable to the estimates of the feasibility studies?

C. Policy Analysis

Purpose: Relate the policies of host governments to rural electrification at the project level, testing for congruence and harmony of purpose, strategies and other policy-related matters.

1. To what extent are relevant host government, social and economic policies and conditions consistent with the rural electrification program?
 - a. Are relevant host government policies articulated? If so, is there apparent conformity between stated and practiced policies?
 - b. Is there a host government urban or rural development strategy related to the rural electrification program.
 - c. What host government priorities are assigned to public health, education, family planning or full employment in the context of rural electrifications contribution to economic and social development?
 - d. How do host government agricultural and rural development policies affect the rural electrification program?
 - e. To what extent does local infrastructure facilitate or impair rural electrification operations and effectiveness?

2. To what extent are the goals and purposes of indigenous electric power suppliers (e.g. private companies or individual franchise holders) congruent, compatible, or un-favorable? What is the impact on the rural electrification program?
3. Are goals and purposes of voluntary or other non-governmental agencies compatible? Are they consistent with the AID rural electrification concept?
4. How do government or other participating agencies rank the importance of rural electrification to other rural development projects? To other national development programs or projects?
5. Does the rural electrification project have support of all levels of government? National levels as well as at the local level?
6. At the project level, how carefully are basic AID guidelines followed?

D. Construction, Operations and Management Analysis

Purpose: Appraise the relation between project inputs and outputs, focussing on how well the rural electrification infrastructure is built and institution is developed and how efficiently key functions are performed.

1. Construction: Building of electrical power infrastructure.
 - a. Was project construction phase completed on schedule? If not why?
 - b. Was construction consistent with standards and specifications? If not, why? Was this properly monitored and by whom?
 - c. To what extent were local as opposed to foreign or imported materials required and utilized?
 - d. What steps were taken to properly maintain and repair equipment?

2. Project organization and physical plant: What type of organization has been developed (e.g. state electricity authority, rural power company, cooperative, etc.)? How was this determined? Does the electric system (plant) adequately serve its users?
 - a. Are the people served by the rural electrification system involved in its management? If so, in what ways? Can they establish operating policies? Select operating staff? Develop by-laws and establish rules and regulations?

- b. Has plant operating personnel been adequately trained? Is voluntary agency assistance required for operations and management? If so, for how long (when can operation and management be turned over to local people?)
 - c. By what criteria is service provided to users? Does the rural electrification system have a defined service area? Is the rural electrification system obliged to provide service to all persons living in its area ("Area coverage" is the American term). Or, can users be selected by the system management? What plans are there for broadening coverage?
 - d. Does the physical plant adequately meet the needs of those it serves? Will it accommodate expected growth?
 - e. Is plant construction of good quality materials and equipment?
3. Logistics: How efficiently were (and are) plant equipment, fuel supplies and other commodities ordered, received, installed, warehoused or stored?
- a. Is construction efficient? What bottlenecks were, or are, encountered? To what extent do bottlenecks or other problems reflect lack of concern at the policy level, as distinct from mechanical or operational carelessness.

- b. Are logistical problems being reduced as construction and maintenance proceeds?
4. Costs and Budgeting: Are cost and operational data complete and accurate? Do they reflect all significant aspects of operations at the project and program level?
- a. What is the level of detail in the cost accounting system? Are accurate records maintained at the project level? Are the personnel engaged in billing, collecting, bookkeeping, and accounting thoroughly trained in the purpose and practice of utility record keeping? If not, is a training program planned?
 - b. How is cost effectiveness measured? Within the rural electrification system? By an involved agency such as a state utility commission? Are audit reports by others available?
 - c. How are such data utilized or analyzed?
5. Monitoring and evaluation output: To what extent and by whom is the impact of the rural electrification program on users being monitored and evaluated? Is impact on community development being evaluated?
- a. Do users have meters to measure their electrical usage? Are data collected which show

how electric power is used (e.g. agriculture, industry, small industry, home crafts)?

- b. Are efforts made to provide service to all persons in the service area? Is information obtained regarding reasons some do not take the service? Have users and non-users been surveyed as to their economic status? What kinds of surveys or measures are taken? By whom? How frequently?
 - c. How are such data utilized or analyzed?
6. Monitoring and evaluation-operations: To what extent and by whom is the operation of the rural electrification being monitored and evaluated?
- a. In addition to cost and budgeting evaluations, is the effectiveness of other operational factors appraised on a continuing basis? By whom?
 - b. How is such information analyzed and used?
 - c. Are the measures adequate? Is the concept of evaluation being used to improve the operation and the effectiveness of the rural electrification projects and programs?

E. Program Effectiveness

Purpose: Assess the contribution of rural electrification outputs to the improved economic, educational, health and general welfare status of target recipients. (Outputs have a wide range of benefits, with both direct and indirect effects. Measurement of these impacts depends on availability of data. If, as in the case of social impact, data are difficult to quantify, some inferences can be made and recommendations should be offered for undertaking surveys or studies to provide evidence of impact and effectiveness.)

1. To what extent is cost effectiveness of project
certained?
2. Project outputs are related to target users of
rural electrification: are the target groups
correctly identified, and to what extent are the
projects reaching these groups?
 - a. What are the criteria for appraising the
impact of a rural electrification project on
the individual user? On his family? On the
community served? How and by whom are these
established? By AID or other donor? By
voluntary agency? Other?
 - b. Is there consensus as to the suitability of
these criteria?
 - c. How closely do project users conform to these
criteria?

- d. How do project outputs conform to the location of target groups? To classes of users, residential, farm, commercial, home crafts, industrial? To economic level of users (e.g. the lower 40 percent).
3. What is the economic impact of rural electrification on recipient groups?
 - a. Is energy used to increase agricultural production, storage, marketing, irrigation, drainage, poultry production, feed grinding and mixing, home crafts, light industry, income from services such as repair shops, etc.? Is individual or family income increased? To what extent has electricity replaced other energy usage? To what extent does the project imply a government subsidy?
 - b. How has the project impacted investment, employment and production in the project area?
 4. What is the educational -- non-formal and formal -- impact of rural electrification?
 - a. Is energy used to electrify schools? Does this increase adult educational opportunities? Provide better conditions for regular classroom operation? Provide community meeting place?

does the family perceive the coming of the services of the rural electrification program?

- b. Have community attitudes been affected? How do communities perceive the rural electrification project activities?
- c. Has rural electrification had any effect on family planning practices? In what ways?
- d. Have employment opportunities been increased or changed?
- e. Has worker productivity been affected? Can this be measured?
- f. Can any spillover effects be discerned? (e.g. improved diet and general level of health through higher food production, refrigeration and sanitation). Has community pride been enhanced as shown by neater premises, house painting, etc.?
- g. Has migration to the cities been reduced as economic activity absorbs more of the rural labor force?

F. Rural Electrification and Other Programs

Purpose: Assess the extent to which the rural electrification is coordinated with other similar programs and how closer this and improved integration might be affected at both program and project levels.

1. What is the relationship between rural electrification and the programs and projects of host country participating agencies (e.g. ministries of electric power and rural development), multilateral donors (e.g. the World Bank, regional development banks), and other donors?
 - a. How do other programs affect the AID financed rural electrification program?
 - b. How does the AID financed rural electrification program affect other programs?
2. Is greater integration or linkage desirable? How can it be brought about and what purposes would be served?