DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

PROJECT PAPER

Proposal and Recommendations For the Review of the Development Loan Committee

INDONESIA - Rural Electrification I

AID-DLC/P-2244

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

UNCLASSIFIED
AID-DLC/P-2244
September 2, 1977

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Indonesia - Rural Electrification I

Attached for your review are recommendations for authorization of a loan/grant to the Government of Indonesia ("Borrower") of not to exceed Forty-Eight Million Dollars ($48,000,000) - Loan in the amount of Forty-Two Million Dollars ($42,000,000) and a related Grant in the amount of Six Million Dollars ($6,000,000) to assist in financing certain foreign exchange and local currency costs of goods and services required for the project. The loan-grant project is for the purpose of introducing electric power into the rural areas.

The loan/grant proposal is scheduled for consideration by the Development Loan Staff Committee on Friday, September 9, 1977 at 2:30 p.m. in Room 3886 New State.

Please note that your concurrence or objection is due by close of business Wednesday, September 14, 1977. If you are a voting member, a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development
Program Review

Attachments:
Summary and Recommendations
Project Analysis
Annexes (See Listing)

Capital Assistance Committee

USAID/Indonesia:

Project Officer	:	David C. Woody
Capital Development Officer	:	David W. Devin
Program Officer	:	Larry Marshall
Sociologist	:	Dr. Ferdinand Okada
Economist	:	Dr. Mark Gellerson
Rural Electrification Engineer	:	Earl Clark
Legal Advisor	:	Edwin Clapp
Financial Advisor	:	Paul Bisek

AID/Washington:

Chairman, ASIA/PD	:	Robert Queener
Engineer, SER/ENGR	:	Wilson Hodgin
Legal Advisor, ASIA/GC	:	Herbert Morris
Loan Officer, ASIA/PD	:	Felicia Morrow
Loan Officer, ASIA/PD	:	Alberto Ruiz de Gamboa

RURAL ELECTRIFICATION

Indonesia

Table of Contents

	Page
PART I - SUMMARY AND RECOMMENDATIONS	
A. PP Facesheet	1
B. Recommendations	2
C. Description of the Project	3
D. Summary Findings	10
E. Project Issues	11
PART II - DETAILED DESCRIPTION OF THE PROJECT	
A. Background	15
B. Logical Framework Narrative	25
PART III - FEASIBILITY ASSESSMENTS	
A. Social Soundness Summary	31
B. Environmental Assessment	39
C. Economic Analysis	40
D. Technical Feasibility	47
E. Administrative Feasibility	50
PART IV - FINANCIAL PLAN	
A. Summary	53
B. Financial Requirements	53
C. Provision of Funds	57
D. Second Step Loan to Cooperatives	64
E. PLN Arrangements	64
F. Financial Viability	64
PART V - IMPLEMENTATION PLAN	
A. Implementation Arrangements	72
B. Project Schedule	74
C. Procurement Plan	76
D. Implementation Issues	77
E Conditions and Covenants	79
PART VI - EVALUATION PLAN	83

ANNEXES

A. Logical Framework
*B. Statutory Checklist
C. 611(e) Determination
D. Request for Assistance
E. Draft Authorization
F. Draft Agreement
*G. Technical Annexes
  1. Housewiring Program
  2. Scope of Work for Organizational, Management and Technical (OMT) Team
  3. Scope of Work for the Architect and Engineering (A&E) Team
  4. Site Selection in Central Java
  5. Site Selection in the Outer Islands
  6. Site Descriptions
*H. Administrative Annexes
  1. Letter dated 25 April 1977 from DG Coops Requesting PLN Approval of Cooperative Sites (with Translation)
  2. Letter dated 17 May 1977 from PLN Approving Coop Sites (with Translation)
  3. Letter from USAID to PLN dated July 8, 1977
  4. Letter Exchange, USAID to DGC dated July 29, 1977 and August 9, 1977
  5. Sample Cooperative Charter
  6. Flow of Funds Charts
  7. Administration of PLN Rural Electric Project
  8. Administration of Cooperative Project
  9. Justification for Direct Contracting for A&E and OMT Firms
  10. Justification for Non-Competitive Procurement of NRECA for OMT Team
*I. Financial Annexes
  1. Financial Balance Sheets for PLN
  2. Capital Requirements for PLN
  3. PLN Rate Structure
  4. Description of BRI (Bank Rakyat Indonesia)
*J. Maps
*K. Economic Analysis
*L. Social Soundness Analysis
*M. Cost Analyses
  1. A&E Team Costs
  2. OMT Team Costs

*These annexes have been printed in a separate volume. They may be found in the official project file maintained at ASIA/PD.

*N. Feasibility Studies
1. Project Assumption Sheets
2. Statement of Operation
O. PRP Review Cable, STATE 097682
*P. Initial Environmental Examination

REFERENCES

A. Prefeasibility Study by NRECA, May 1976
B. Project Feasibility Studies, August 1977
C. Village Baseline Data

*These annexes have been printed in a separate volume. They may be found in the official project file maintained at ASIA/PD.

ACRONYMS

A & E	-	Architect and Engineering Firm
BAPPEDA	-	Provincial Economic Development Officer
BAPPENAS	-	Planning Board of the Government of Indonesia
BIMAS	-	Agriculture Credit Program
BKK	-	Badan Kredit Kecamatan
BRI	-	Bank Rakyat Indonesia
CIDA	-	Canadian International Development Agency
COOP	-	Cooperative
CP	-	Condition Precedent
DGC	-	Directorate General of Cooperatives
DSC	-	Debt Service Coverage
GNP	-	Gros National Product
GOI	-	Government of Indonesia
GWH	-	Gigawatt hour, or a billion watt hours
IBRD	-	World Bank
IDA	-	International Development Agency
IFB	-	Invitation for Bid
IGGI	-	Intergovernmental Group for Indonesia, the Indonesian Foreign Aid consortium
IPB	-	Institut Pertanian Bogor - the Agricultural College
KM	-	Kilometer
KV	-	Kilovolt or a thousand volts
KW	-	Kilowatt
KWH	-	Kilowatt hour, or a thousand watt hour

LEKNAS	-	National Institute of Economics and Social Research
MW	-	Megawatt, or one million watts
NEA	-	National Electric Administration of the Philipines
NRECA	-	National Rural Electric Cocperative Association of the USA
OMT	-	Organizational, Management and Technical Team
PACD	-	Project Assistance Completion Date
PBS	-	Indonesian Control Bureau of Statistics
PDO	-	Project Development Office of the Directorate General of Cooperatives
PID	-	Project Identification Document
PLN	-	Perusahaan Umum Listrik Negara, The National Electric Power Agency
PP	-	The Project Paper
PRP	-	Project Review Paper
STM's	-	Technical High School
TIER	-	Times Interest Earned Ratio
V	-	Volt
VA	-	Volt-Ampere, approximately one watt

DEFINITIONS

Desa	-	Village (usually 500-5000 houses)
Kabupaten	-	District Smaller Than Province (20 to 30 per Province)
Kecamatan	-	District Smaller than Kabupaten (10 to 20 per Kabupaten)

BEST AVAILABLE DOCUMENT

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE) — PP

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9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY [7|7] B. QUARTER [4] (Enter 1, 2, 3, or 4); C. FINAL FY [8|2]

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 = 414.5 Rps.)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	37,450	7,550	45,000	40,400	7,600	48,000
(GRANT)	2,950	50	3,000	5,900	100	6,000
(LOAN)	34,500	7,500	42,000	34,500	7,500	42,000
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		13,045	13,045		22,700	22,700
OTHER DONOR(S)						
TOTALS	37,450	20,595	58,045	40,400	30,300	70,700

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 78 F. GRANT	E. 1ST FY 78 G. LOAN	H. 2ND FY 79 I. GRANT	H. 2ND FY 79 J. LOAN	K. 3RD FY 80 L. GRANT	K. 3RD FY 80 M. LOAN
(1) FN	B 153	060	060	3,000	42000	1500	-0-	1500	-0-
(2)									
(3)									
(4)									
TOTALS				3,000	42000	1500	-0-	1500	-0-

A. APPROPRIATION	N. 4TH FY 81 O. GRANT	N. 4TH FY 81 P. LOAN	Q. 5TH FY 82 R. GRANT	Q. 5TH FY 82 S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) FN	- 0 -	-0-	-0-	-0-	6000	42000
(2)						
(3)						
(4)						
TOTALS	-0-	-0-	-0-	-0-	6000	42000

12. IN-DEPTH EVALUATION SCHEDULED: MM [0|6] YY [8|0]

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET. [1] (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Sarah Jane Littlefield

TITLE: Acting Director, USAID/Indonesia

DATE SIGNED: MM [0|8] DD [1|8] YY [7|7]

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM [0|8] DD [1|5] YY [7|7]

AID 1330-6 (3-76)

RURAL ELECTRIFICATION

Indonesia

PART I

B. Recommendations

1. The Grant/Loan and Terms

It is recommended that a grant/loan be authorized to the Government of Indonesia to finance the foreign exchange and part of the local currency costs for a rural electrification project as described below. The proposed grant will not exceed US$ Six million ($6,000,000) and could be budgeted annually over US fiscal years 1977 to 1980. However, if funds are available, the entire grant component could be obligated in FY 1977. The proposed terms of the loan are:

Loan Amount	:	Forty-two million United States dollars ($42,000,000).
Maturity	:	Forty (40) years including a ten (10) year grace period.
Interest	:	Two percent per annum during the grace period and three percent per annum thereafter.
Currency	:	Interest and principal repayable in US dollars.
Waivers Requested (Grant)	:	Justification for AID Direct Contracting for Consulting Teams (Annex H-9). Justification for Non-Competitive Procurement of NRECA Advisory Team (Annex H-10).

2. Borrower and Recipient Agencies

The Borrower is the Government of the Republic of Indonesia (GOI). The recipient agencies are the National Power Company (PLN), the Peoples Bank of Indonesia (BRI) and the Directorate General of Cooperatives (DGC).

3. GOI Contribution

The total GOI direct contribution is estimated to be US$22.7 million equivalent in local currency which is 32% of the estimated total project costs.

4. Second Step Loans and Terms

The GOI will reloan the entire AID loan to the PLN for the Central Java projects and to the BRI for the Outer Island projects which will be implemented through cooperatives under Law No. 12/1967 covering the Basic Regulations of Cooperatives. The BRI will in turn reloan these funds to the individual rural electric cooperatives to be chartered under the existing cooperative laws of the GOI. The cooperatives will use the funds to finance all of the foreign exchange and part of the local costs for their systems. All of these sub-loans will be made on the same terms as the AID loan and signed second step loan agreements will be included as initial CP's to disbursement of the AID loan.

C. Description of the Project

1. Why

Indonesia is one of the more densely populated rural countries in the world in its settled areas and the poverty of rural residents, who constitute 80% of the population, is among the worst. Half the rural people, farmers and others, live on incomes of $200 per capita or less. Most farmers live on less than half a hectare of land (especially in Java) and must supplement their incomes with laboring jobs. Food production, although increasing, is deficient nationwide and over one million tons of foodgrains are imported annually. The Government has a wide range of programs intended to stimulate farm productivity and employment, but rural poverty persists and migration to cities is accelerating. Family planning, although becoming effective, cannot prevent the population from sharply increasing in the next 25 years. Basic infrastructure, although rudimentary, exists in many areas--roads, irrigation and some health services. Marketing is effective through existing cooperatives and the regular market. Minimal small industry and handicrafts exist in rural areas. Sanitation is non-existent in the rural areas. A conservative estimate is that 50% of infant and child morbidity is caused by gastro-intestinal ills, directly related to impure water.

The GOI has adopted as a priority goal the improvement of the lot of rural people and AID and other donors are participating in projects to assist in meeting this goal. Most of the efforts to date have concentrated on improving and expanding the road and irrigation system, assisting in flood control, upgrading health and educational services and developing the agriculture assistance to become more efficient.

New initiatives are badly needed to help the lot of the rural poor. The experience of developed countries and many still in development stages is that electric power is one of the basic requirements for increasing agricultural yields, for lowering crop losses and for stimulating small-scale and handicraft industries which create additional employment opportunities and income. It has also been experienced that numerous social benefits such as night lighting for educational, recreation and employment purposes and refrigeration for health and food preservation, come to large numbers of people only when electricity is introduced. Indonesia has the least use of electricity of any major country in the world, a mere 46 KWH per capita per year (vs. 300 KWH in the Philippines) and nearly all this is used in industrial and commercial applications and by the wealthier residents of major cities. Only one million families in a population of 140 million have electricity and less than 50,000 of these are in rural areas.

Since 1969 AID and the World Bank have invested almost $500 million in PLN capital programs. Other foreign donors, particularly Japan and Germany, have come in more recently and current plans call for PLN capital expenditures to reach about $1 billion annually by 1981. Most of this investment has and will be concentrated on Java. Unfortunately most of the direct benefits of this investment program bypass the rural poor over whose heads in some areas high tension power lines are strung.

The GOI believes that a program for introducing electric power into rural areas is necessary and timely if a system or systems can be devised to distribute the electricity at a price that large numbers of poor people can afford. Other conditions also exist that make such a program urgent: the rural residents have high expectations and are clamoring for action by the Government; actions taken so far have been expensive and ineffective, such as providing very small generators in isolated towns to provide small numbers of residents very expensive and unreliable power, and especially the subsidy on kerosene for lighting and cooking which costs the Government nearly $400 million per year; erosion of watersheds is advancing rapidly because of overcutting for household cooking fuel. The national power grid is finally built up to the point where a surplus of generating capacity exists in some areas and electricity can be provided to rural residents by extending distribution systems out from the grid. In other areas, especially in the Outer Islands, outside Java, the grid is non-existent and new ways must be found to get electricity to the rural poor.

The GOI is concerned with this problem and is taking steps to expand electric service to the rural areas. Again most of these efforts have involved uneconomic, unreliable small diesels or mini hydros which are operated only at night and provide power to less than 5% of the population in any one service area. This is why there has been such a deep and widespread interest within several agencies of the GOI as well as among several foreign donors in the concept of rural electricity through area-wide coverage. Officials of PLN, the DGC and BAPPENAS have been working with USAID staff on the development of this Project for the past 20 months. They have specifically requested AID technical and financial assistance for rural electrification as part of the U.S. Government IGGI pledge for concessionary aid to Indonesia in GOI fiscal year 1977-78.

2. What

The Project which has been developed is intended to provide electricity to rural residents at a price the large majority can afford, assist the residents in wiring their homes and making use of the electricity, and promote the use of electricity in productive enterprise such as irrigation, small industry, home and cottage industry, commercial establishments and in health services such as potable water and clinics. In order to do this, low cost per customer was found to be the critical ingredient along with provision of services needed to convert electricity to productive uses. It was determined that a number of devices could be used to reduce the cost, such as the area coverage concept in which a compact distribution system is built in a discrete service area, cost cutting measures especially on poles, a house wiring loan plan, the reduction of connection charges to a very small amount by financing construction on very soft loan terms. Other features such as providing technical assistance to introduce appropriate technology for productive use of electricity in the service areas, constructing a three-phase backbone so large motors for irrigation and industrial use can be served, providing reliable 24 hours service to encourage developmental uses and careful selection of service areas to maximize economic and social benefits, could be incorporated.

The Project, as developed and as described in this paper incorporates the above features to the extent possible. It involves constructing and placing in operation ten separate rural electric distribution systems on Java and three Outer Islands. These ten service areas have a population of over

two million people or about 400,000 families living in over 600 mostly small and very rural villages which are now totally without electricity except for a few small private generators of 50kva or less. It is planned that within five years of the signing of the loan agreement that over 50% of the people living in these service areas will be enjoying the benefits of electricity in their homes. The majority of commercial firms and cottage industries will be connected up and there will be street lights, village water supply systems, significant numbers of irrigation pumps and many other productive uses of this power. The productive uses programs will be underway assisting the economic growth of the areas.

These programs will consist of a staff of people, trained under the OMT team to provide advice and encouragement to local governments, agencies and entrepreneurs in organizing, setting up and financing household and small industries, pump irrigation systems, potable water systems and food processing and preserving installations as well as organizing for community lighting on athletic fields, streets and in public buildings. They will work with existing programs in assisting in getting credit and technical assistance and help organize new programs. One of the main areas of assistance will be in promoting and producing electric equipment such as lamps and cookers, and materials required for the system, such as small switches, insulators, etc.

The three Outer Island systems will be owned and eventually operated and maintained by private cooperatives. As such the project will assist the DGC to organize these cooperatives, design and build the systems and train a management and operating staff for each. The seven systems in Central Java will be owned, operated and maintained by PLN. The project will include technical assistance to PLN in the design, procurement of materials and construction supervision, financial assistance for the physical construction of these systems and some training for the PLN staff to manage and operate these utilities. All the systems will have house-wiring loan programs to ensure mass participation and a productive usage program, financed by the AID loan. The Project will also involve some institutional development for the DGC and PLN. The DGC will decree the establishment of an agency for supervision of rural electric cooperatives. This agency's personnel and the staff of the new Subdirectorate of Rural Electrification within PLN will receive training as will certain key officials at the Central Java PLN office in the special requirements of low cost financing and construction as well as the need for local participation and the encouragement of productive usage.

The three systems to be constructed for the cooperatives on the Outer Islands are isolated from any grid so they will have to be provided with their own generation equipment. These generating plants will be financed under the AID loan. The initial generators will be relatively small, easily installable machines that will allow these systems to be energized without delay as soon as the first connections are completed. Within the third year of operations larger generators will be installed so that the cooperatives can expand through the service areas by the project assistance completion date (PACD) which will be approximately five years from the date of the loan agreement.

Two of these proposed cooperative projects will be located in densely populated areas, Central Lampung District and East Lombok Districts, and it is planned that each will have about 25,000 connections completed by the PACD.

The other proposed cooperative will be located in the center of the Luwu transmigration area and is expected to have about 16,000 consumers by the PACD. The people reached by the three cooperative systems are as follows assuming all members of connected households and 50% of all others in the service areas are beneficiaries.

Site	Villages Served	Household Connections	Total Beneficiaries
Central Lampung	108	23,500	211,500
East Lombok	34	22,000	198,000
Luwu	65	16,000	144,000
	207	61,500	553,500

The seven PLN systems will be located in the Province of Central Java and will connect up to the PLN grid for their power requirements. This grid presently has a surplus capacity which will grow faster than the demand for the foreseeable future especially when it is inter-connected to the East and West Java grids (1980). These Java systems will be energized as the various increments are completed and will be expanded through the life of the project so that by the PACD they will have approximately the following form.

Site	Villages Served	Household Connections	Total Beneficiaries
Klaten	98	25,000	225,000
Pemalang/Pekalongan	102	20,000	180,000
Bantul	21	20,000	180,000
Wonogiri	54	15,000	135,000
Sragen	47	15,000	135,000
Magelang	83	20,000	180,000
Banyumas	35	15,000	135,000
Total	440	130,000	1,170,000

Based on a total Project cost of $70.7 million and 1,723,500 total beneficiaries tabulated above, the cost per beneficiary is $41.02.

3. How

The two parts of the Project will be implemented by the electric power agency (PLN) and the Directorate General of Cooperatives (DGC), respectively. PLN already is staffed with engineering, construction and operating personnel as well as management and financial staff and is therefore capable of implementing the Project. A Subdirectorate for Rural Electrification in the Operations Directorate has been formed recently and will be the direct counterpart staff. Technical assistance in design and construction supervision will be supplied to PLN as required. The DGC has also formed an office for Rural Electrification and has been training a nucleus staff to handle the Project. As soon as the Project is authorized the DGC will decree a Project Development Office (PDO) as its primary implementing agency and recruit a staff. Technical assistance will be provided to this group under the grant portion of the AID assistance in the form of an organizational, management and technical advisory team (OMT) and an architect engineering design and construction supervision team (A&E).

Steps in PLN implementation will be:

a. Completion of the six feasibility studies of the technical and economic aspects including environmental and social effects. The NRECA Feasibility Team is continuing its assistance in this effort.

b. Signing of the consultants' contracts under the AID grant.

c. Survey and design of the systems.

d. Material procurement.

e. Construction by PLN force account of Indonesian contractors.

f. Organization of the productive use group and programs in Central Java.

g. Connections to customers and energizing of the systems.

h. Addition of more connections.

i. Assistance to productive users, potable water systems, etc.

Most material procurement will be from Code 941 countries under the AID loan. Design and construction will be local currency costs funded under the budget.

Steps in the DGC implementation will be:

a. Completion of the three feasibility studies in conjunction with the NRECA team. (Three additional studies will be completed by the end of the year.)

b. Signing of the architect engineering contract and the contract under the AID grant and start of surveys and design.

c. Begin organization and training of the Coops with assistance of the OMT team.

d. Obtain local construction contractors.

e. Construction of the systems.

f. Organization of productive use group and programs.

g. Continuance of training of the DGC and Coops staffs.

h. Connections to customers and energization of the systems.

i. Addition of more connections.

j. Assistance to productive users, potable water systems, etc. Construction will be done by local contractors.

AID support to the Project will be through grants to cover the costs of the OMT and A&E contracts and the loan to

cover the foreign exchange material and part of the local currency costs. Portions of both the grant and loan will be used for direct training costs. The OMT team will provide technical assistance to both PLN and the three cooperatives in organizing and implementing the productive uses programs. AID staff will be required to approve designs and cost estimates and the contracts financed by AID. Frequent site inspections and project reviews will be made. Additionally AID will retain a consultant out of the grant fund either expatriate or local to make project evaluations. AID personnel requirements for the Project will be minimum of three full-time staff.

D. Summary Findings

The Project is based upon the prefeasibility study which was conducted by the NRECA team during February-May of 1976 (Reference A) and the feasibility studies which the NRECA Feasibility Study Team has been preparing since March of 1977. Two of these studies, one each for Central Java and the Outer Island systems have been completed. In addition a preliminary feasibility has been prepared for all systems. The two final feasibility studies contain detailed analyses of the engineering, financial, organizational and administrative requirements, a social/economic analysis and recommendations for institutional development, system development, power usage, technical assistance and training. The preliminary studies include load forecasts, cost estimates and financial forecasts based upon less data and with more general assumptions than will be found in the completed studies (see Part IV F and Reference B). All the sites will have completed feasibility studies by the time scheduled for beginning the detailed design of the systems. If for any reason, one or more of the systems later is shown to be unfeasible, another system will be substituted following a positive feasibility determination.

The USAID concludes that the analysis as presented in this paper is reasonable and valid, that the Project is technically, financially, economically and socially sound and that administrative arrangements have been made or planned which assure that it can be carried out on a timely basis.

An initial environmental examination conducted by the Mission determined that no significant adverse conditions will result from the project which cannot be corrected or will be justified by the other more favorable aspects of the Project. A further environmental assessment will be conducted and the findings will be incorporated into the Project as agreed by USAID and the GOI. The Project meets all applicable statutory criteria including the Mission Director's 611(e) certification

concerning the country's capability to maintain and effectively use the projects (Annex C). As described in this Project Paper, rural electrification is justified as a means of meeting the AID program goal of Section 103 of the FAA to improve the standard of living and increase the productivity of the rural population in Indonesia.

E. Project Issues

1. Section V of the PRP identified a number of issues which have been dealt with since submission of that document. For example, the role of the new Subdirectorate of Rural Electrification in PLN vis-a-vis the other more traditional PLN directorates and the local PLN agencies has been worked out as described in Part V A and as shown in Annex H-7. The relationship between the rural electric coops and the existing agricultural/fisheries coops has become a non-issue as the rural electric coops will be separate entities (Annexes H-5 and H-8). Existing coops will be solicited to assist in development of the rural electrification projects wherever possible. The recruitment, training and organization of sufficient staff by both PLN and the DGC to implement the Project on a timely basis is a problem well understood by both PLN and DGC. Both agencies have taken steps to improve their staff and considerable training is built into the Project.

For the early design and procurement, PLN has a trained staff available from projects now being completed and a subcontract consultant firm will be retained to assist the DGC. The methods which will be employed to reduce construction costs sufficiently so that a majority of the residents living in the service area can afford service have been worked out as described in Part III D 3. Likewise, the economic, social and financial issues identified in the PRP have been analyzed during the preparation of this paper and the results as presented in the respective parts have satisfied USAID that they are no longer issues.

2. The PRP review cable identified a number of issues which were of concern to AID/Washington. (See STATE 097682, Reference O)

a. Equity/Income Considerations. The social survey and economic assessment have shown that a minimum of about 50% of the families in the selected service areas can afford and want electricity at a minimum monthly bill of between Rp. 1000-Rp. 1500 (US$2.50-3.75). This social penetration is sufficient to reach people in the poorer half of the

population. The treatment of connection and housewiring costs to reduce the total bill to under Rp. 1200 (US$ 3.00) is described in Annex G-1.

b. Site Selection. The process used was based on technical, economic, social and political considerations as described in Annexes G-5 and G-4. The main AID/Washington concerns of selecting sites where low income residents could be served and where preconditions for cost-effective investment in rural electrification exist were among the strongest considerations and all sites meet these criteria.

c. Magnitude of Loan. This issue is dealt with in detail in Part II A 5. In summary, this paper justifies the proposed level of funding, the mix between PLN and DGC and the demonstration character of the Project.

d. Availability of Funds. USAID and the GOI have taken steps to attract other donor contributions to the Project. It is hoped that no further restructuring of the Project will be necessary to obtain authorization in FY 77.

e. 611(a) Requirements. The concerns of AID/W on this issue have been satisfied (see Part III D 4). The NRECA team has completed one full feasibility study for each model and a preliminary study establishing tentative feasibility for all proposed systems. Reasonably firm cost estimates for all systems have been calculated. (See Part IV B, Financial Requirements, and Reference B for the NRECA Feasibility Studies.)

f. Technical Assistance and Training. Detailed Scopes of Work for the OMT team and the A&E firms have been developed which show the requirements for technical assistance (see Annexes G-2 and G-3). Adequate funds for training have been included in the Project on the basis of training plans prepared by staff of the DGC and PLN. A detailed training plan will be required as a CP to disbursement in the loan agreement.

g. Productive/Economic Benefits. This issue is dealt with in Part III C below and Annex K. Both PLN and the co-operatives will set up productive use programs to assist farmers and entrepreneurs in planning projects and obtaining equipment for enterprises using electric power. The Provincial Planning Officer will also work toward focussing existing programs for development into the service areas. Productive uses are estimated to consume 40-45% of the total power used in some areas with large potential, e.g., Lampung, and between

30 and 35% in areas with lesser productive/economic potential, e.g., Klaten.

h. Relationship of Project to Rural Development Strategy. The Governor and his staff including the BAPPEDA (Provincial Economic Development Officer) of each Province in which sites are located has been contacted and all expressed a determination to take advantage of these rural electrification projects to focus available developmental programs in these areas. These efforts would include agricultural programs such as BIMAS, the various handicraft and small industry programs and credit programs. In addition PLN in Central Java and each of the coops will set up productive use programs to promote the use of electricity. It is planned that each coop will have authority to make small development loans. Since the specific service areas were not identified until early June (some not until late June), it has not been possible yet to organize a program for each service area nor to analyze the extent to which supporting services can be focussed. This will be a large program, the magnitude of which will be evaluated and determined as the Project proceeds.

i. Social Analysis/Evaluation. The social analysis was performed by a contract anthropologist who had the assistance of an Indonesian University team retained by USAID. His assessment is in Part III A and Annex L. It has been determined that over 50% of the population in the site areas will take the service during the Project. A large amount of baseline data was collected. The evaluation plan is in Part VI. PLN and DGC have assumed responsibility for the evaluation with grant technical and financial assistance from AID.

j. Financial Viability. The two completed feasibility studies show that the Klaten and Lampung sites are financially viable under the conditions and assumptions used (see Part IV F). The preliminary studies of the other eight sites also indicate they are financially viable. The longer range aspects of financing rural electrification in Indonesia are treated in Part IV G.

k. Institutional Arrangements. These are described in detail in Part III E and the rationalization of the bifurcated approach to administrative implementation is in Part II A-4.

l. Long-Range AID Programming. This is discussed in Part IV G. At least one additional sizeable AID loan is recommended for FY 79.

m. Demand on Indonesian Oil Resources. This is discussed in the Economic Annex K. Basically, since a liter of kerosene gives five times as much light when converted to electricity as when burned in a lantern, and electricity is a more efficient source of power than the numerous direct diesel drives now used, it can be argued that the substitution of electricity will have a positive impact on the utilization of Indonesia's precious oil reserves. Development aspects of electrification do increase the use of energy, as would other stimuli to accelerate economic growth. Besides, Indonesia has other sources of energy available to convert to electricity, including several billion tons of coal reserves in Sumatra which will be exploited beginning in the near future. Note that if 25 million rural families in Indonesia are provided with 30 KWH per month each of electricity, the fuel oil required to generate the resulting 9,000 GWH per year would be 40,000 barrels per day, or 2.7% of Indonesia's current oil production. This compares to the 86,000 barrels per day of kerosene currently used for all purposes in Indonesia. To supply the ten systems in this Project with all their power in the tenth year after go-ahead will require about 1200 barrels per day of diesel and fuel oil based on the sales projections of the NRECA team.

PART II - DETAILED DESCRIPTION OF THE PROJECT

A. Background

1. Summary of Project Development Activities

USAID has been assisting the GOI with rural electrification through its participant training program since August 1961 and to date approximately 45 Indonesians have received training in the US and over 30 in the Philippines in the various aspects of rural electrification.

Discussions began between USAID and the GOI as to the interest in mounting a rural electrification program similar to the ongoing program in the Philippines in November, 1975. This dialogue resulted in a Project Identification Document (PID) which was submitted to AID/W in November 1975 and a request from the GOI for a prefeasibility study. The prefeasibility study of a rural electrification program for Indonesia was conducted by a team from the NRECA with support from PLN and the DGC between February and May of 1976. During the course of this study the team visited seven provinces where discussions were held with local officials and performed an analysis of two systems in Java. Their final paper received widespread dissemination and stimulated a large amount of discussion within the GOI (Reference A).

In December 1976, the DGC and PLN jointly sponsored a seminar on rural electrification in Jakarta at which papers were presented covering general and specific aspects of a program for Indonesia. The conclusions of the seminar were that rural electrification is an important tool for rural development and that a national electrification program should be started immediately so that by year 2000 most villages in Indonesia can be served with adequate electricity. The conclusions also noted that concessional financing would be necessary for the systems and stated the opinion that both the DGC and PLN should establish separate projects as well as joint projects and that cooperatives should take an active role to secure participation of the people.

During January and February 1977 PLN sent the Chief of its new Subdirectorate for Rural Electrification and three other key officials to the Philippines for six weeks of intensive training in how to prepare feasibility studies, organize local utilities/coops and other general orientation to project implementation. The DGC likewise sent its proposed project manager and four other staff. As part of this course both teams prepared reports with proposals describing how

they would launch a rural electrification program in Indonesia. The reports showed recognition of the social benefits of electrification and its successful use as a development tool. Both proposals presented reasonable, realistic plans for bringing electricity to the inhabitants of rural Indonesia.

In March 1977 a six-man NRECA Feasibility Team arrived at the request of DGC to conduct six feasibility studies for rural electric coops on the Outer Islands. In the meantime, the President Director of PLN requested financial and technical assistance from USAID to enable PLN to construct six rural electric systems on Java. This request was based upon high level acceptance within PLN of the proposal for a rural electrification program prepared by the PLN participant trainees following their return from the Philippines.

While PLN was getting organized to assist in the feasibility studies, the NRECA team began working with the staff of the DGC and USAID on a survey of some sixteen Outer Island sites. A preliminary system design and financial forecast was prepared for twelve of these sites. Because of the higher than expected investment cost caused by the need for generators at most sites, it was determined that the number should be reduced to two or three coops for its initial program. Accordingly three sites were selected for development at a meeting between the Vice Chairman of BAPPENAS, the Director General of Cooperatives and the Director of USAID on June 2, 1977. See Annex G-5, Site Selection on the Outer Islands, for a detailed description of the process employed.

On June 2, 1977 a USAID/NRECA team went to Central Java where they assisted PLN in the identification of the presently proposed list of seven sites. The number of sites for PLN, their sizes and locations evolved after a lengthy series of discussions and field trips with PLN, local officials and the Governor's representative of Central Java. See Annex G-4, Site Selection in Central Java for a detailed description of this process.

During the months of June, July and August, the staffs of DGC, PLN, NRECA and USAID were engaged in the preparation of feasibility studies for the ten areas and in the drafting of this Project Paper. Agreement was reached with AID/W that at the time of submission of the PP that one feasibility study would be completed for each model, PLN and cooperative, and preliminary feasibility would be established for each site (see Annex N-1). The full feasibility studies will be completed for each site as a condition precedent (see Part IV D).

Organizationally the DGC has made some progress in recent months and is now gearing up for project implementation. The five DGC staff who returned as participant trainees from the Philippines were assigned in March as counterparts to the NRECA team. At the June 2 Site Selection meeting, referred to above, it also was decided to create a special unit, termed a Project Development Office within the DGC to have the responsibility for implementing this Project and a Supervisory Group composed of representatives from the Departments of Public Works, Finance, Internal Affairs, Cooperatives and BAPPENAS to coordinate and supervise the Project. Besides its own staff, the DGC is hiring three engineers, two secretaries and a draftsman as an initial full-time staff for the PDO and a letter has gone out from the Minister of Manpower, Transmigration and Cooperatives to the other concerned ministries asking them to appoint representatives to the supervisory steering committee. See Annex H-8 for the PDO organization and copies of the above letters.

2. Description of the Power Sector

The power sector currently consists of two major parts, the public sector, which is synomymous with PLN, the national power agency, and a large number of "captive" generating systems and minor distribution systems owned by hotels, industries and agricultural estates as well as a few small private local distribution systems. In 1976 the total generating capacity of PLN was 1,250 MW compared to 1,310 MW for the captive systems. The PLN total includes the 125 MW Juanda hydro station which is owned by the Jatiluhur (irrigation) Authority but which sells most of its electric power to PLN.

PLN was originally formed in 1945 and in 1954 was greatly expanded through its merger with three nationalized (formerly Dutch-owned private companies) utilities. A major change in the makeup of PLN occurred in 1972 following a study made by an IDA-financed consulting team. Among the changes was the creation of a national monopoly authority for all generation, transmission and distribution of electricity by Regulation 18-72. Under this authority any generation facility over 25 KW as well as any significant distribution system must be licensed by PLN. Until this reorganization the system had grown very little and was burdened with high operating costs and an old, obsolete generation and distribution system.

AID made its first loan (Tuntang Loan 019) to PLN in 1969 to rehabilitate generation and distribution systems in Central Java and this was followed by seven more loans through FY 1974 (total for eight loans $132.4 million); however, for various reasons, no construction was actually started until 1974. IDA loans to PLN began in 1970 and to date IDA and IBRD loans total $348 million. Other foreign aid donors and commercial lenders have come in more recently and current plans call for PLN capital expenditures to reach about $1 billion annually by 1981 including about 75% foreign exchange (Annex I-2).

Electric generation capacity of PLN has not increased substantially since 1970 and the increases that have occurred have come mostly from diesel stations and gas turbines. Generation of electricity has increased from 2,354 GWH in 1971 to 4,400 GWH in 1976 largely resulting from increased efficiency of existing equipment plus the addition of the interim generation capacity. Large new PLN steam stations at Semarang (AID Loan 024), Jakarta (IBRD) and Surabaya (Japanese loan) will be coming on the line within two years and generation is expected to increase sharply to over 10,000 GWH by 1981. Cost of generating power has been increasing from the use of interim equipment. The construction of efficient new facilities is expected to reduce the financial operating losses of past years to a comfortable surplus by the early 1980's (Annex I-1).

On the consumption side PLN sold 3,250 GWH in 1976 and assuming an equal amount utilized by captive plants (no records available), the annual consumption per capita by Indonesia's 140 million citizens was 46 KWH, among the lowest in the world. This is used mostly in commercial and industrial (including estates) applications (40% of PLN and nearly all the captive) and by wealthier residents of a few large cities. Efforts to bring electricity to rural areas has followed two different lines. In areas outside of the PLN grid there are various programs of village electrification in which a small diesel or hydro generator of 300 KW or less is operated usually only at night to give power to public buildings, street lights and a few restaurants and private houses (usually less than 500 total connections). This effort is widespread and is being undertaken by both PLN and Departamen Dalam Negeri (Department of Internal Affairs, sometimes translated as Home Affairs) under various aid donor and GOI financing programs. In some areas conveniently located near the PLN grid, e.g., Bali, West Sumatra and North Sulawesi, PLN has extended its lines into the countryside where it is able to

get two to ten percent of the rural residents to take the service even with a high connection charge.

In Central Java the PLN grid is further along in development than in most areas of the country. As of the end of 1978 the Province (including the Special District of Yogyakarta) will have over 500 Km of 150 KV transmission line tying together the major cities (and by 1981 tying into both Jakarta and Surabaya) and over 2,500 Km of recently installed pole distribution line sufficient for serving over 200,000 customers. In early 1977 the actual number of customers being served in the area was 182,000, most still connected to the obsolete systems being replaced (under AID Loans 019 and 025). Generation capacity in the area totalled 129 MW in 1977 but will be expanded to 229 MW on completion of the Semarang Steam Station (AID Loan 024) by mid-1978. By 1981 three additional hydro units now under construction will add 26 MW capacity and the IBRD is planning to fund a new 200 MW steam unit in Semarang.

Peak generation in Central Java and Yogyakarta in February 1977 was 79,599 KW and 24,500,000 KWH were sold during the month. Of the 182,000 total customers, 126,000 are unmetered "social rate" connections, 34,000 are regular metered domestic customers, 16,000 are commercial customers and only 1,000 are small industry (minimum 13.5 KW). Sixty-seven are large consumers (over 100 KW) which are connected for a total of 17,746 KW demand. The remainder are government buildings and street lights.

The PLN rate structure (Annex I-3) consists of a connection-charge based on the service capacity as set by current limiters, a monthly demand charge and an energy, or surcharge. The A rates, or so-called "social" rates are for unmetered services and have an upper limit of 200 VA for houses and 250 VA for mosques, schools, etc. The A rate connections are more expensive per KWH of electricity used both in connection charge and monthly charge and can even result in a higher monthly bill than the lowest metered rates. PLN is beginning to discourage A rate connections now that it is going into an era of surplus generation capacity in some areas. The B1 schedule is a metered rate for domestic consumers. The average monthly consumption of electricity by all customers in Central Java under the B1 schedule in early 1977 was 135 KWH. The average monthly bill including all surcharges was Rp. 3,882 (US$9.37); the cost per KWH was Rp. 28.79 (7¢). The average B1 connection for Central Java was 820 watts. The rate structure led to the following unit charges in Central Java in February 1977:

Class of Rate	B1 Domestic Consumers	28.79Rp/KWH	(6.95¢)
	B2 Commercial Consumers	40.88	(9.86¢)
	C1 Small Industry	28.56	(6.89¢)
	E Large Industry	24.78	(6.70¢)

Electric power standards in Indonesia are 220V 50 cycle with 20KV primaries. The older 110V systems are gradually being replaced (e.g., by the AID Tuntang, Ketenger and Medan loan projects).

In addition to electric power it should be mentioned that thousands of large and small direct drive diesel and gasoline engines power most of the small industrial plants in the country. These operate most of the several thousand rice mills, coconut oil plants, crumb rubber plants, etc., which are the typical industries of the rural areas. Diesel consumption for the country in 1976 (not including fuel used in trucks) was 1.2 billion liters (20,675 barrels per day), enough to generate about 3,600 GWH of electricity. Less than one-fourth of PLN power is generated by diesel-driven machines (PLN uses about 250 million liters diesel oil per year or 4,300 barrels per day) and assuming the diesel oil consumption of captive electric generation plants to be over twice that of PLN it is seen that a large amount of direct drive power is used, the equivalent of around 1,000 GWH per year.

3. Description of the Problem

The problem is to devise institutional, financial, construction and operating methods by which electricity can be provided for home use and economic development to the majority of families including the poor in rural areas where the per capita GNP is $200 per year or less, and to encourage the productive uses of the electricity to increase food production and employment.

The institutional problem is complicated by the fact the National Power Company (PLN) is required by covenants in loan agreements with various lenders (including AID and IBRD) to operate at a positive cash flow basis while receiving commercial credit terms and by the institutional weakness of the cooperative system. The financing of rural electric systems must be subsidized by very soft terms (as it is in every country including the US). Construction and operating costs of existing electric systems in Indonesia are high by world comparisons and must be reduced to provide cheap power. Furthermore, although it has been determined that rural families can afford to pay at least the necessary minimum

monthly bill for electricity, rural people are not accustomed to pay for services on a monthly basis and a part of the rural population is outside the cash economy to some extent.

The determination that these serious problems can be overcome to at least the minimum extent necessary for success of this demonstration project has been made as described below. The social and economic benefits of making this effort are also described.

4. Bifurcated Approach to Rural Electrification

The Project will have two parts representing two different approaches to solution of the problem and handled by two agencies of the GOI. The problem in Java is to devise a method to extend service from the existing PLN grid into the rural areas in a manner which can provide electricity at a price which the rural population including the poor can afford. In the Outer Islands, in areas where PLN has no service or minimal service, the problem is to organize the local people to build and operate new systems which can provide electric service to a large proportion of the population in remote areas at a price which a majority of the rural people, including the poor, can afford. Subsidy in some form will be necessary for both types of systems. The GOI, under the influence of strong local political pressures for rural development, desires to attempt rural electrification projects in both types of environment. In Java, where exceedingly strong population and political pressures exist, it is considered logical that the National Power Agency (PLN) extend its existing systems. In the Outer Islands, the Government needs to promote its projects of transmigration from more populated areas, primarily Java, while at the same time establishing programs of rural development for the more established native population. PLN's priority area is Java where major generation and transmission projects are underway with more to follow. On the Outer Islands the Directorate of Cooperatives desires to set up cooperative systems in frank emulation of those in some other countries, especially the Philippines.

USAID's conclusion after following the increase in GOI institutional interest and activity as regards rural electrification over the past 20 months is that PLN is wisely devoting the bulk of its investment program to Java while operating and maintaining its Outer Island systems. PLN is, of course, building rural electric systems in remote areas of the Outer Islands at the present time but these systems use small diesel generators and serve district capitals.

PLN desires to help the rural poor in the Outer Islands and has given written consent for the coop projects after previously standing on its prerogatives as monopoly electricity distributors in Indonesia. USAID also concludes that it is impractical to establish cooperative projects in the areas of Java near the PLN grid. Much has been made of the incompatibility of such a situation. If coop systems are ever built on Java they will probably be in areas remote from the PLN grid. As mentioned previously, the opportunity to improve the attractiveness of transmigration programs and establish coops in remote areas is more in keeping with the aims of the Ministry of Manpower, Transmigration and Cooperatives. The bifurcated approach appears within this framework to be the logical way to proceed.

5. Magnitude of the Project

Rural electrification in Indonesia has a high priority with the GOI as has already been demonstrated by the large number of isolated towns which are provided with small diesel and mini-hydro generators connected to one or two hundred customers. In Central Java alone there are 26 such isolated systems supplying power to about 2,500 users. More substantial systems extending service from the PLN urban grid are in operation, especially in North Sulawesi, where about 10,000 rural customers are connected, and in West Sumatra and Bali.

This Project will begin the phase of rural electrification in which larger areas are served and mass participation achieved, where the number of connections in an area will be 20 to 25 thousand and the coverage of an estimated 50% of the families in the area at the PACD. It is established that it is feasible at this time to enter this phase, the third phase as described in the IBRD report*, by the economic, technical, social and financial analyses contained in this paper. The administrative arrangements necessary to carry out this Project and the nationwide program for which this Project will be the forerunner have been carefully made as described in Part III A. These arrangements have been made within the existing authorities of the GOI agencies involved and are not the optimum or final scheme. Plans have already been considered for other, more focussed administrative organizations and it is certain that an evolution will occur during the progress of this Project.

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* Electricity Economic by Ralph Turvey and Dennis Anderson 1977

During the course of developing this Project different subproject mixes were considered. For both PLN and the cooperative projects there is a need to balance the size and number of subprojects to be large enough to get the required administrative arrangements from the involved GOI agencies but yet small enough in size to assure construction completion in three-five years and in number to permit coordination of activities. The possibility of reducing the number of subprojects was explored with both PLN and DGC. PLN on two occasions indicated a desire to withdraw from the Project because of the major effort required, including policy decisions, on its part. In fact at least two donors (Australia and Netherlands) have provided PLN with equipment and material for small isolated electric systems in excess of $10 million value each. PLN interest really grew only when the major differences and advantages of this area coverage concept began to be realized and it appeared that a large, potentially nationwide program might result from the Project. The desirable number of cooperative projects was considered to be six until late May when it was realized by USAID that the required coordinating agencies would not be created in time to handle such a widely spread effort. USAID suggested reducing the cooperatives to two but later agreed with the DGC that three were needed and justified to get the advantages of scale and to assure adequate opportunity for testing the system.

During the NRECA feasibility studies another factor that became apparent was that the cooperative projects, located in the Outer Islands and requiring their own generators and operating staff, were more expensive to build per connection and had to be larger in order to become financially viable. Also, two of these areas are quite densely populated so that larger systems had to be designed in order to make a significant impact. The PLN systems in Central Java could be smaller because they are to receive power from the PLN grid and will be operated by a central organization already established. PLN is under pressure to build rural electric systems in all districts in Central Java and chose to have more, smaller systems. The seven areas chosen were arrived at based on an ordering of priorities by the Governor and the Central Java PLN staff after a large number of sites had been proven technically feasible.

6. Provision of Grant Funding

The experience of USAID on nearly every one of the previous AID loan projects to Indonesia is that most of the difficult problems and most of the delays occur at the very beginning of project implementation. The average time required to sign contracts with consultants has been over one and a half years and after the contracts are signed consultants have been slow to move into the field and begin work. The causes for these delays are bureaucratic, both within AID and within the GOI. AID's Handbook 11 procedures are cumbersome, requiring a minimum of one year after expressions of interest are solicited to arrive at a signed contract. Delays caused within the GOI are usually related to GOI support--houses, vehicles, education allowances, etc. GOI regulations on house size, for example, prohibit supplying or constructing houses up to the minimum standard most expatriates demand. Many of these facilities are not readily available to the GOI agency and sometimes months or years pass with advisors living in unsuitable hotels. Often, by the time work really begins, the relationship between the consultant and the GOI agency has deteriorated because of personal support and other problems.

The Project can afford no such delays as shown by the schedule in Part V B elsewhere. The only way to sidestep these inevitable delays is to use direct contracting with all of the most essential support items furnished under the consultant contracts paid by grant funds. In order to shorten the procedures for direct contracting under Handbook 14, AID has already solicited expressions of interest for the A&E team and is ready to solicit proposals as soon as the Project is authorized. It is expected under these circumstances that the A&E contract can be signed in December 1977 as shown in the schedule. The other consultant contract for the OMT team has been requested to be with NRECA under non-competitive procurement (Annex H-10) and this contract can be signed in October.

It is the conclusion of USAID that by grant funding and direct contracting that at least one year will be saved in the implementation of this Project.

B. Logical Framework Narrative

1. Program or Sector Goal

The goal of this Project is to improve the standard of living and increase productivity of the rural population in ten selected areas of Indonesia.

Discussion

The provision of electric power to these areas should bring a new dimension to the package of existing rural development programs that together will improve productivity and employment opportunities as well as raise the quality of life for the people who live in the target areas.

There is a very large number and variety of potential productive uses of electricity in these ten rural areas, most of which could benefit the poor and the very poor. A partial list would include rice and other grain mills, irrigation, poultry farms, sugar processing, copra, tobacco and other food processing, refrigeration in shops, sawmills and box factories, rattan furniture and other woodworking shops, hollow blocks, floor and roof tiles and pottery factories, blacksmith, machinery and repair shops, food, pharmacy and general merchandise stores. Many of these activities already exist in the target areas using substitute forms of power. However, in other countries the extension of electricity to the rural areas caused dramatic increases in the number of new activities as well as increased output from existing farm, commercial and agro-industrial enterprises. There is strong reason to believe that this will also occur in Indonesia.

In addition to stimulating production in the selected areas, the introduction of electric power into these rural areas should generate considerable employment thus making a contribution to one of Indonesia's more intractable problems. For example, one coop in the Philippines reports that in the four years since energization twenty-five new business enterprises have been established creating a total of 430 new jobs. This does not count additional employment generated at the existing firms or home industry, e.g., handicrafts. Also each system will employ over 100 people in management, operation and maintenance. Extrapolating from this example we estimate that the ten utilities planned to be established in this proposed project should create at least 5,000 new jobs. The Project may also demonstrate that further indirect benefits to rural residents will occur through the impact of electricity on such things as potable water supply, quality of health services, availability of education and training, and the nature and quality of government services.

2. Project Purpose

The purpose of this Project is to demonstrate that electricity can be provided to the rural areas of Indonesia at a price which the majority of the people can afford through systems which are technically sound and financially viable and that the introduction of electricity to the selected areas will bring about a significant increase in production and improve the quality of life of the rural poor. A subsidiary purpose is to train a sufficient cadre of Indonesian experts in all phases of rural electrification so as to manage and expand their rural electric systems.

End of Project Status

By PACD the following conditions and improvements are expected to be achieved:

(1) Seven rural areas in Central Java including over 400 villages will be provided with cheap reliable electric power 24 hours a day from the PLN grid. These areas have a combined population of over 1.3 million people including approximately 260,000 families. It is expected that at least 50% of these people will enjoy the benefits of electricity in their homes and nearly all the people living in these areas will benefit through street lighting, the lighting of schools and other public buildings, the increased use of refrigeration and ice in markets and restaurants, the use of irrigation pumps, potable water pumps and other productive usages.

(2) Three rural areas in the Outer Island districts of Central Lampung, East Lombok and Luwu including almost 200 villages will be provided with cheap reliable electric power 24 hours a day by member-owned and managed electric cooperatives. Likewise the combined population of these areas is over 650,000 including approximately 130,000 families and it is expected that at least 50% of them will be connected to the system. All the other people in the area will benefit in much the same manner as described above for the Central Java systems.

(3) A three-phase backbone system expandable to serve additional residents in the area.

(4) An active power usage program at each of the ten areas which is working with local leaders and private individuals to promote a whole host of productive power use projects and enterprises.

(5) The existence at each site of a three to four hectare headquarters site complete with office space, warehouse, storage yard, maintenance facilities and as necessary staff housing.

(6) Each system will have a fully trained and functioning management and operating staff to operate, maintain and expand their service.

(7) Both PLN and the DGC will be fully capable of organizing financing, designing, procuring materials for, supervising construction and initial operation of rural electric systems.

(8) The Project will have been continually evaluated during implementation and the first three years of operation by a local research contractor working under the direction of PLN and the DGC. This evaluation will provide a continuous flow of feedback information to the GOI and USAID project managers and will indicate the linkages between project purpose and the sector goal.

Assumptions for Achieving the Project Purpose

(1) The Central Government will continue its commitment to the Project and provide the necessary local support including funds, charters for the coops and other policy guidance.

(2) That PLN will be able to reduce its construction costs and connection charges so that at least 50% of the people living in the target areas will be able to afford the service.

(3) That financial arrangements will be made to pass on the AID loan terms to the local systems so as to make them financially viable.

(4) That sufficient manpower will be made available capable of being trained for the jobs requiring technical skills.

Discussion

In the letter of request (Annex D) the GOI has stated a clear commitment to the project. The involved agencies have made policy commitments necessary to successful execution of the Project (Annexes H-1 through 8).

The loan agreement will also contain conditions precedent to initial disbursement (see Part V E) which will require among other things:

(1) commitment of required local currency funding.

(2) an official charter for the three coops,

(3) an agreement on all connection charges, tariffs, surcharges, etc., that will affect the percentage of participation in the Project and

(4) signed subloan agreements between the GOI and PLN, the BRI and the Cooperatives.

It is felt that these and other conditions and covenants are sufficient to achieve the described end of project status.

3. Outputs

The Project will finance the following discrete but interrelated outputs.

a. Plans and Specifications

The first output of the Project will be the detailed designs and materials specifications for the ten systems. This will be the primary responsibility of PLN assisted by the A&E consultant for the seven Java systems and of the A&E consultant with assistance from a local engineering firm for the three Outer Island coops. In both models the design will be compatible with PLN's present local systems.

b. Headquarters Facilities

Each of the ten systems will have a headquarters site consisting of three to four hectares of centrally located land upon which will be an office, warehouse, storage yard, maintenance facilities and staff housing. In addition the Outer Island sites will have multi-purpose buildings and generation facilities including fuel storage tanks. See Annex G for a typical headquarters schematic layout.

C. Operating Electric Distribution Systems

Each of the ten systems will have from 200 to 600 Km of primary and secondary lines with from 100 to 380 Km of secondary lines under build on the same poles as the primary, serving an estimated 25 to 100 villages with a

total of 15,000 to 25,000 members/customers by Project Assistance Completion Date (PACD). Present estimates show that the total project will require 3,961 Km of primary and secondary lines, 2,356 Km of secondary under-build, 60,000 poles and 207,742 meters.

d. Internal Housewiring

By the PACD it is expected that almost 200,000 consumers will have been provided housewiring including light fixtures, switches and convenience outlets. A minimum package costing an estimated Rp. 16,000 (US$40) including labor and overhead would consist of three lights and one convenience outlet. To assist the rural poor who are unable to finance the cost of this minimum package, a special housewiring loan program will be established by PLN and the cooperatives with the AID loan funds. It is estimated that 75% of the consumers in the project area will take advantage of this loan program which would only be offered to people living in less than permanent housing. The monies repaid to the coops/utilities by the consumers would be used as a revolving fund to replenish the stocks of housewiring materials and to encourage productive usages of electricity. Eventually this fund would be used for capital improvements to the systems. See Annex G-1 for a detailed description of the proposed housewiring program.

e. Training and Trained Personnel

One of the major activities of the Project will be the training of Indonesian experts in all phases of rural electrification. This training will involve in-country training at Brawijaya University in East Java, and the two PLN training facilities in Central and West Java. Much of the training will also be done in the Philippines where the NEA has established an international rural electrification training institute which now offers over 30 different types of training courses. The NEA is also willing to tailor special courses specifically to the needs of PLN and the DGC. Some of the training will be in the US as conducted by the NRECA. The Chief of Training of the N E A will come to Indonesia during October to assist PLN and the DGC with their training plans in coordination with the resident NRECA team. These training plans will be approved by USAID as CP's to the commencement of any training activities under the Project. It is currently estimated that at least 100 people will be trained at each coop including approximately 35 contract electricians who will do housewiring. A minimum of 20 people in each PLN area will receive some training, principally in management and power use development or as trainers.

f. Billing and Collection System

Both PLN and the DGC, with the assistance of consultants will design and implement a workable billing and collection system tailored to meet the special conditions which exist in the rural areas of Indonesia. Among the factors which will be taken into account in developing such a system are simplicity of design and incentives and mechanisms for paying on a regular and timely basis.

g. Evaluation Feedback

During the course of the Project an evaluation program will be developed to measure the effects of the Project at two levels, goal and purpose. At the goal level the evaluation will attempt to determine Project impact on the increased production and quality of life in the target areas. At the purpose level, during the course of the Project evaluations will be made of implementation activities to determine whether project purposes are being met. These evaluations will be conducted by a local research institution under the supervision of PLN and the DGC with technical and financial assistance from the AID grant and loan.

4. Inputs

The provision of funds by the GOI and AID is described in Part IV-C. Technical assistance in organization and training by the OMT team is described in Part V-A and Annex G-2. Technical assistance in engineering and construction supervision is described in Part III-E and Annex G-3. Institutional arrangements and manpower requirements of the GOI are described in Part III-E and in Reference B. The productive uses program is described in Section IV and V.

PART III - FEASIBILITY ASSESSMENTS

A. Social Soundness Summary

1. Introduction

a. The method used to assess the social soundness of the Project was by sample surveys of local leaders and households in the proposed service areas by teams from an Indonesian University. The objectives of the survey were:

(1) To identify the target beneficiaries of the proposed rural electrification project;

(2) To determine whether or not the sociocultural environment was receptive of the project;

(3) To determine whether or not the people were receptive of, and able to afford, the project; and,

(4) To forecast what the expected benefits would be.

b. During June and July, 1977, the surveys supplemented by systematic observation were carried out in ten sample villages (desa) in each of six proposed rural electrification sites in Central Java (Sragen, Wonogiri, Bantul-Sleman, Klaten, Magelang and Pekalongan-Pemalang) and in three islands outside Java: Lampung, Sumatra; Luwu, Sulawesi; and East Lombok. A tenth site, Banyumas in Central Java, was also surveyed but the data was not received in time to tabulate and incorporate it into this analysis. Teams composed of faculty members of the Institut Pertanian Bogor (IPB), the Agricultural Institute of Bogor, through structured interviews with 90 village heads, 450 sub-village heads, 290 household heads and selected technical and administrative personnel, gathered valid aggregate household data on (except for Banyumas) 40,648 sample households in Central Java sites and, in the Outer Islands, 6,707 in Lampung, 6,373 in Luwu and 20,869 in Lombok. Data thus apply to 74,597 of the target 195,000 households and 90 of the 647 target villages.

2. Direct Beneficiaries

The Numbers of Target Villages and Households at the Proposed Project Sites are given below

Site	No. of target Villages	Pop. of target vill.	No. of target households*	Est. target population**	Vill. pop. density***
A. Central Java					
Pek.-Pem.	102	242,120	20,000	102,000	1141
Klaten	98	245,105	25,000	120,000	2003
Bant.-Sleman	21	169,964	20,000	84,000	1403
Sragen	47	139,278	15,000	70,000	1132
Magelang	83	175,630	20,000	100,000	1002
Wonogiri	54	167,081	15,000	81,000	872
Banyumas	35	145,301	15,000	75,000	791
B. Outer Isl.					
Luwu	65	132,263	15,000	85,500	34
Lampung	108	272,505	25,000	150,000	590
Lombok	34	262,312	25,000	115,000	828
Totals	647	1,952,559	195,000	983,000	-

* Based upon 50% assumption which was made for planning proposed but which has been confirmed to be within reason by various social/economic surveys. See topic F below and Part III C.

** Based on average household size at each site.

*** No. of persons per sq.km. of village land.

Thus a total of 195,000 households (comprised of, as shown above, an estimated 983,000 people) in 647 initial target villages will immediately and directly benefit from the project. Spread effects (through street lighting, lighting of educational and public buildings, potable water pumps, increased jobs and productivity resulting from more activity in the formal and informal economic sectors, etc.) will almost immediately benefit the remaining 1,000,000 people of the target villages even if their households are not electrified. The cost of the project ($70.7 million) will be less than $100 per primary beneficiary and less than $50 per secondary beneficiary. Furthermore, benefits will ripple out to an estimated remaining 8,000,000 people who live in the districts in which the sites are located.

Tabulations of the data gathered by the IPB teams show the following classification of the proposed beneficiaries by primary occupation of the heads of households:

Primary occupation of household head	No. of household heads	%
Farmer	44,743	60.0
Wage laborer	18,200	24.4
Salaried	6,454	8.6
Tradesman	4,078	5.5
Cash crop farmer	1,122	1.5
Totals	74,597	100.0

From the above table it can be seen that the proposed direct beneficiaries will be the rural poor: the small farmer, the daily wage laborer and the small entrepreneur. Together, they total some 90% of the 74,597 sample households.

From further analysis of the IPB data it can be stated that:

(a) The vast majority of the farmers (37,045 or 82.3% of farmers) cultivate less than one hectare of land; this is at or below the national average holding of 0.98 ha. In general, especially in Java, the land holdings of the cash crop farmers conform to this pattern. Because of this, they are forced into secondary, tertiary and even quaternary occupations to sustain a livelihood so that the line between small farmers and daily wage laborers is hard to delineate. Wage laborers rarely earn over Rp. 500 ($1.20) a day; more usual is half that sum.

(b) Tradesmen are also generally engaged in small-scale enterprises. Of 4,078 tradesmen, 3,499 (86.0% of tradesmen) have a maximum of two employees, if any.

(c) Salaried and professional people, including civil servants, amount to 8.6% of the total sample households and usually constitute the village elite.

(d) Transmigrants (i.e., settlers in newly-opened lands in islands outside of Java) are the predominant potential direct beneficiaries in Lampung and, to a lesser extent, in Luwu. In the latter site, however, many of the possible

beneficiaries are, in a sense, still tribal peoples who hitherto have not had full opportunity for direct participation in national life. The provision of electricity will aid considerably their efforts in this direction.

(e) Role of Women. Not the least among potential direct beneficiaries are the women for the IPB surveys showed that much of rural entrepreneurship and activities in the informal economic sector are in their hands.

The village woman may work with her husband in the fields or in other roles supportive of him. Most often, however, she runs and is in charge of her own enterprise whether it be manufacturing and selling tempe (a soybean product) or pastries, or breeding chickens to sell in the market. She may engage in tailoring (an important activity in Lampung and Wonogiri), in weaving sarongs and cummerbunds, in basketry, but most of all she is the operator of a small shop. These shops may have a small but varied inventory or they may specialize in, say, women's apparel and cheap cosmetics. Thus, in many cases, they do not merely assist their husbands. They themselves are in charge of an enterprise. They keep the books.

And the village woman is not necessarily uneducated or illiterate. The percentage of women among the village graduates of the following educational institutions are:

Institution	% of women among graduates
Elementary school	44.1
Junior high school	37.8
Senior high school	30.3
Academy	17.6
University	7.7

Women should benefit from the provision of reliable electric power possibly more than the men. Electric lights should allow them to be both more productive and also to enjoy increased educational and entertainment/recreational opportunities. Women probably more than men would appreciate the increased feelings of security engendered by street lights. Most important for women would be the introduction of labor-saving electric daily tasks as ironing, cooking, going to market, sewing, etc.

Electricity also makes a major contribution to the employment opportunities for women. The power tools and

equipment operated by electricity tend to equalize the physical strength differences between men and women so that this factor becomes much less relevant for employment considerations. A study of three new rural distribution areas in the Philippines showed the rather striking impact of electrification and employment of women.

TABLE

Industrial and Commercial Employment Patterns

Before Electrification		After Electrification	
Male	Female	Male	Female
647	465	651	1,417

The change was consistent in all three areas. Before electrification 42% of employees were female and afterwards the percentage increased to 68%. We would expect approximately the same results in Indonesia because of the similarity of the economy and the nature of small-scale industries in rural areas in the two countries.

There will be considerable labor involved in the installation of the generation plants and construction of the distribution networks. On other public works projects in these areas, women represent a large proportion of the labor force. This is generally true throughout Indonesia and it is expected that women will make up a significant percentage of the work force on this project.

There are no indications at this time that women will be in anyway adversely affected by the project.

3. Non-Participants

Since there are in the villages households which do not own bicycles, or kerosene petromax lamps or have easy access to well water, it is accepted by the villagers that there are fortunate and unfortunate and that the unfortunate can hope, and strive, to join the ranks of the fortunate. Those villages, not initially included in the scheme, will conclude that something is being done finally and will await their turn and perhaps try to speed up the process. Nothing has

been taken away from them; to the contrary, they see concrete evidence that something may come to them.

The number of people who do not benefit directly from the scheme will diminish as the acceptance of electricity spreads. In the last analysis, people and enterprises who already have access to electricity will be the non-participants.

4. Socio-Cultural Environment

No problems are foreseen on the basis of language, religion or ethnicity. The Indonesian language is a lingua franca at all the sites; the vast majority of the proposed direct beneficiaries, however, speak Javanese. The majority religion is Islam but of a liberal variety which imposes but few restrictions either on women's economic activities or on the acceptance of innovations. An ethnic heterogeneity obtains only at one site (Luwu); no group, however, appears to have imposed a hegemony.

It is concluded that the rural electrification project in Indonesia is eminently compatible with the socio-cultural environment. Rooted in a strong tradition of village and community cooperation and concord, both traditional and modern institutions provide a durable framework for the acceptance and exploitation of innovations. Prominent among these are a strong government system of cooperatives and a well-organized local government structure. In the latter, a key role in any village enterprise is played by the lurah, the village headman, who maintains good communications with both those above and below him.

Credit cooperatives and rural banks can extend loans to help exploit any possible benefit that an individual may see as resulting from the uses of electricity. In Central Java, the Governor has established a special rural credit program which is managed by special boards at the subdistrict level and is presently providing loans to the rural population in every subdistrict at all of the seven PLN areas. These Bedan Kredit Kecamatan (BKK) make weekly, six-week and 26-week loans at 10-20%. All that is required is a letter of recommendation from the subdistrict chief and some kind of collateral. For all 486 subdistricts of Central Java, BKK loans outstanding presently amount to Rp. 1,322,243,322 (US$3,190,000) with 273,400 borrowers having average loans of Rp. 4,837 (US$11.70) and the default rate of about 26%. Within the seven service areas Ministry of Interior data show that there are presently

some 563 rural credit agencies, including village units at the BRI, credit cooperatives and the BKK.

Further, there are:

(a) The pragmatic attitude towards maintenance of community projects, and property that is clearly understood to belong to the community, not to some individual or as the responsibility of a higher government level or body. This project will attempt to build wherever possible on the village traditional sense of joint ownership and joint responsibility (which may be extendable, through educative methods, to innovations).

(b) The pragmatic attitude towards things that work or bring profit, which includes investment in kerosene cookers or lamps and in bicycles, the re-use of used machinery parts in different contexts, and experimentation with new types of livestock.

(c) The positive attitude towards work which enables the Indonesian villager and his wife to work all day long with no cultural inhibitions about engaging in manual or in several varieties of labor.

By the nature of their agricultural pursuits and because their land does not usually suffice to support a household, the villagers accept hard work. Moreover, they initiate and engage in an endless variety of handicrafts, small businesses, small industries and outside labor to augment their income. Because of darkness, most activities cease at sundown and the foremost benefit of electricity seen by the villagers is that of lengthening the day, followed by considerations of more specific uses of energy and light to enrich their economic and social lives.

No disruption is foreseen in Indonesian society as a result of the introduction of electricity. It will, however, hasten the inevitable process of change in the villages.

5. Benefits

Among the benefits perceived by the villagers are: improved use of health facilities, night schools for adult literacy and vocational training courses, tapping of water resources both for purer drinking water and for irrigation, energy for various small industries (rice mills, smithies, sawmills,

cabinet-making, tile-and-brick making, food processing). In particular, women will be enabled to increase productivity in their own economic enterprises which form an element of household income, crucial to its maintenance.

More specifically, benefits foreseen are:

(a) The use of incubators for poultry (Klaten; Banyumas).

(b) Home handicrafts such as palm-leaf hat making, mat-making, textile weaving, carving of traditional utensils, etc. (Most notably in Bantul-Sleman where 1,908 households are engaged in such pursuits and in Sragen, 925 households.)

(c) Fish refrigeration (Luwu).

(d) Crop drying (Lampung with 50 and Lombok with 77 installations).

(e) Power for sewing-machines for tailoring (Lampung).

(f) Sawmills and lumberyards (especially in Wonogiri and Magelang, 92 and 111 respectively).

(g) Rice mills (in Bantul-Sleman, only 8 of its 76 rice mills had generators; Sragen had 65 and Lampung, 43).

(h) Clean drinking water (Wonogiri).

(i) Irrigation water (most notably in Luwu where 11,500 ha. could possibly be brought under irrigation, Lombok with 972 ha. and Banyumas with 1,000).

It is anticipated that rural employment will increase as a result of increased activity in the informal sector. More important probably is that the number of enterprises in the informal sector will increase dramatically.

6. Local Support

Because of these perceived benefits, support is strongly expressed by local authorities who have already begun to re-order their development priorities to include electrification and to assess its impact on existing development projects.

Additionally, almost without exception, villagers showed enthusiasm and foresaw no difficulty in providing the voluntary labor necessary for electrification, including transport of materials, the digging of holes for poles and the cutting down of their trees to provide access for electric lines. Only one village out of 90 thought it might not have enough necessary vehicles to help transport material.

It is estimated that, excluding Banyumas for which an assessment could not be made, at least 47% of the target households in each site can afford to pay the proposed rates, the percentages ranging over 50% for six sites to a high of 77%. Affordability is discussed in more detail in the Economic Analysis.

7. Follow-On Action

The mobility of the Indonesian villager spreads news very rapidly in given areas, aided by official channels of communication and the communications-media, especially the radio.

Among the rual institutions which can be utilized for favorable propaganda are the weekly market and fair, the traditional drama, and the village wise man.

An evaluation and monitoring of the social benefits of the proposed project is incorporated as an integral part of the project design.

B. Environmental Assessment

On July 14, 1977, USAID was advised that an environmental assessment will be required for rural electrification projects particularly to address questions concerning ability of service areas to accommodate environmental change stimulated by rural electrification activities. (STATE 162704). It was further advised that this Project can proceed to authorization and signing of loan agreement without having the assessment completed. The conditions under which the Project can proceed are that there is a firm commitment to carrying out a thorough environmental assessment and that the findings and recommendations of the assessment will be incorporated as part of the Project, where feasible, during early stages of implementation.

This requirement for an environmental assessment has been discussed with both PLN and DGC and both agree in principle to its desirability. There is some reluctance to absolute

commitment to incorporating unknown findings and recommendations into the Project when parameters of the assessment are not known. However, USAID is convinced that the GOI agencies are well disposed toward understanding environmental problems and that reasonable recommendations will be followed when the costs are fully justified.

A special covenant has been included in Part V D to cover AID's environmental assessment requirements.

C. Economic Analysis

1. Summary

The economic analysis was performed to provide the answers to four important questions:

1) Can the residents of the rural electrification sites afford electricity?

2) What benefits will electricity provide to these rural populations?

3) What are the costs per beneficiary of rural electrification in Indonesia?

4) Are the proposed investments for rural electrification justified according to the criteria of economic efficiency?

The principal findings of the analysis described in this section can be summarized as follows 1/:

1) On the basis of both observed expenditures on alternative sources of energy by rural households and their stated willingness to pay for electricity, one can conclude that 50% or more of the households in the electrification sites can afford electricity

2) Many benefits will result from rural electrification in Indonesia: a) resources will be saved, and costs reduced, by using electricity for light, cooking, and motive

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1/ For a more complete discussion and derivation of the concepts and results presented here, the reader is referred to Annex K (Economic Analysis).

power; b) new types of commercial shops (e.g. those selling cold drinks) and cottage industries (e.g. woodworking or tailoring) will develop; c) new employment opportunities (especially for women) will be created and--as a result--the incomes of the rural populations will rise; d) improved irrigation will lead to greater agricultural outputs; e) crops will be dried or milled more effectively; f) other types of food production will expand, e.g. the use of incubators will result in increased poultry production and the increased availability of ice will allow fish products to be marketed more widely; g) more healthy living conditions, and better health care, will be achieved; h) greater educational opportunities will be available, and i) other benefits such as greater security at night, increased contact with the "outside world," and more active participation in national affairs will result.

For the purpose of measurement, these benefits can be divided into two categories: a) direct benefits--measured by what consumers actually pay for electricity, and b) surplus benefits--which result because consumers derive additional benefits from electricity for which they are not required to pay in the form of tariffs. Estimates of the value of direct benefits can be obtained from demand forecasts.2/ On the basis of site specific surveys of the rural electrification sites, surplus benefits, which result because electricity is a more efficient source of energy than currently used alternatives, are estimated to amount to 107% and 21% of the direct benefits which electricity provides to residential and agricultural consumers respectively. In this analysis, no attempt was made to quantify other surplus benefits resulting from increased economic activity (benefits (b) - (f) above) or improvements in the quality of rural life (benefits (g) - (i) above). Measurement difficulties are simply too great at this point in time.

3) Based on the total Project cost of $70.7 million, the cost per direct beneficiary (resident of a connected household) is $61.53 and the cost per total beneficiary is $41.02.

2/ Estimates of direct benefits by site and type of consumer are found in Annex K, Table 6.

4) Rates of return on the proposed investments at the ten sites vary between 31% and 5%; and benefit-cost ratios are between 1.65 and .81. These estimates are, however, based on conservative measures of direct and surplus benefits (as discussed above). If all surplus benefits could be quantified and measured accurately, then actual returns to, or benefits from, these investments in rural electrification would be significantly greater than those indicated above. Thus these investments for rural electrification are justified according to the criteria of economic efficiency.

2. Affordability

Rural electrification will provide direct social and economic benefits to rural populations only if they can afford to purchase electricity once it is made available to them. Current levels of expenditures on energy sources which are substitutes for electricity, such as kerosene or wood, provide one indicator of affordability. Stated willingness to pay the proposed tariff charge provides another indicator. On the basis of these two indicators, it was determined that--on average--at least 50% of the currently-existing households in the rural electrification sites can afford electricity at the proposed charge. Estimated percentages of households in each site which can afford electricity are presented in Table 1.

Table 1: Households in the Rural Electrification Sites and the Percent of Households that can Afford Electricity

Site	Current Number of Households	% Households that Can Afford Electricity 3/
Central Java		
Banyumas	27,942	NA
Bantul	32,685	57
Klaten	47,136	57
Magelang	33,775	47
Pekalongan	46,562	58
Sragen	26,784	47
Wonogiri	32,131	51
Outer Islands		
Lampung	52,405	49
Lombok	50,636	58
Luwu	25,435	77
Total	375,491	Wgt.Av. 55

3/ These percentages are averages of the three estimates of affordability presented in Table 1 of Annex K.

3. Benefits of Rural Electrification

There are many potential benefits of rural electrification in Indonesia: 1) Households can save resources, and reduce costs by using electricity--instead of kerosene--for cooking and lighting. Similarly, productive enterprises can reduce their costs by using electricity for lighting and motive power. 2) New types of commercial shops, e.g. those selling cold drinks or ice cream, cottage industries, e.g. woodworking and tailoring, or other enterprises, e.g. small movie theaters, will develop. 3) As a result of such increases in economic activity, new employment opportunities will be created and rural incomes will rise. This is especially true for women since electrification will reduce the brute strength needed for many jobs. 4) The production of various types of agricultural products will be increased. Improved irrigation will increase the number of crops that can be grown during the year and thus raise outputs. Rice and maize can be milled more efficiently after electrification; and, rice and tobacco can be dried more effectively. Poultry production will increase with the use of electric incubators. Finally, the marketable output of fish products will be increased once ice is made more readily available. 5) More healthy living conditions should develop with the advent of more pump water systems and better health care. 6) Greater educational opportunities will be made available through schooling in the evening and vocational training which utilizes electricity. 7) Finally, other benefits such as greater security at night, increased contact with the world outside the rural village, and more active participation in nation affairs will result from electrification.

A minimum measure of these benefits of rural electrification is obtained from estimates of the revenues generated by electricity tariffs. This is because electricity must be worth at least as much to consumers as they are willing to pay for it. Benefits measured in this fashion are called direct benefits. In many cases, however, consumers would be willing to pay more for electricity than they are actually required to pay; and therefore, actual benefits exceed this minimum measure. The difference between actual benefits and direct benefits is a measure of the surplus benefits which result from the provision of electricity.

Direct benefits are those benefits derived from electricity for which consumers actually pay in the form of tariffs. Thus demand forecasts[4/]--translated into revenue

forecasts--can be used to estimate such direct benefits.

Surplus benefits take the form of: 1) Saved resources ((1) above); 2) increased economic activity ((2) - (4) above), and 3) other benefits ((5) - (7) above). Since consumers do not pay directly for these benefits, their measurement is more difficult. The resource savings achieved by using electricity instead of some other energy source can be determined in a straightforward manner, however, from available cost estimates. Based on site specific surveys of the proposed sites, surplus benefits in the form of resource savings which result from residential consumers using electricity instead of kerosene are estimated to equal 107%[5/] of the direct benefits which such consumers derive from electricity. That is, surplus benefits equal 107% of the revenues generated by residential consumption. Similarly, surplus benefits in the form of resource savings for grain mills equal 21%[5/] of the tariff revenues for this class of consumers.

Other surplus benefits will clearly result from rural electrification in Indonesia. However, accurate measurement of such benefits would required either: 1) an ability to quantify inherently non-quantifiable concepts--such as the monetary value of either increased security or a reduced incidence of various diseases, or 2) an ability to foresee the future in order to determine, for instance, how many new shops will form or how many new jobs will be created. Since these abilities do not exist at present, such other surplus benefits have been considered only in qualitative terms.

Therefore, the estimates of the total economic benefits of rural electrification used in this analysis consist of: 1) estimates of direct benefits (i.e., tariff revenues), plus 2) estimates of resource savings realized by residential consumers and grain mills. The result is clearly a very conservative estimate of the total economic benefits of rural electrification in the proposed sites.

4/ The specific assumptions underlying the demand forecasts made for different types of consumers are discussed in Sections IV, V and VI of Annex K.

5/ The derivations of these results are found in Sections IV and VI, Annex K.

4. Costs per Beneficiary of Rural Electrification

Total AID investments for rural electrification will be $48 million. $6 million are for grants and $42 million are for loans. Total GOI investments will be $22.7 million. By the fifth project year, an estimated 191,500 households will be supplied with electricity. Such households, or household members, constitute the direct beneficiaries of this program. Other people will also benefit from electricity, however, even if they do not live in connected households. It is assumed that such other beneficiaries amount to 50% of the site residents who do not live in connected houses. Based on the total Project cost of $70.7 million, the cost per direct beneficiary (resident of a connected household) is $61.53 and the cost per total beneficiary is $41.02.

5. Rate of Return and Benefit - Cost Analyses

On the basis of yearly estimates of project costs and economic benefits, internal rates of return and benefit-cost ratios were calculated for each of the electrification sites. The results of these calculations are summarized in Table 2 below.

Table 2: Estimated Minimum Rates of Return and Benefit-Cost Ratios for the Rural Electrification Sites

Site	Rate of Return (%)	B/C
Central Java		
Banyumas	29	1.57
Bantul	31	1.65
Klaten	27	1.48
Magelang	26	1.48
Pekalongan	24	1.43
Sragen	28	1.52
Wonogiri	22	1.36
Outer Islands		
Lampung	10	.95
Lombok	11	.97
Luwu	5	.81

Economic returns on investments are high for all the Java sites; in contrast, returns are significantly lower for

the Outer Island sites. This distinct difference is due primarily to the large investments in generating capacity which must be made early in the construction and operating periods at the Outer Island sites and to the lower population densities found there. Yet these estimated returns--even for the Outer Island sites--together with a recognition of the other economic and social benefits expected to result from rural electrification[6/] provide sufficient economic justification for the proposed investments.

Finally, sensitivity analyses indicate that the economic returns on these investments depend crucially on the ability of the rural electrification program to translate the large existing potential for residential demand into actual residential loads at each of the sites.

6/ The nature of such other economic benefits is discussed in detail in Annex K.

D. Technical Feasibility

1. Appropriateness of the Project Design

Technical design of the Project is based on the following criteria:

a. US REA standard design specifications adopted for local conditions.

b. Dense coverage of discrete service areas to get the maximum number of customers for the investment in distribution systems.

c. Reduction in system costs by following minimum construction standards compatible with reliability requirements.

d. Procurement from Code 941 countries or local procurement based on cost and delivery time for installed material.

e. Reliable 24 hours generation and distribution of electricity.

f. Three phase backbone systems.

The design criteria are appropriate considering the project purpose as described in Part II B above. The design specifications are similar to and compatible with the PLN grid in Central Java. PLN has requested that the cooperative systems also be designed to be compatible with the PLN system. Low cost design for dense area coverage is logical and necessary to meet the goal of providing electricity at a price poor people can afford while maintaining financial viability of the system and the Project. Reliability of power is essential to encourage the growth of industry and agriculture based on the use of electric energy.

2. Description of Technology Involved

The material, equipment and construction specifications will be basically the same used for rural electrification (as well as many private and public utilities) throughout the US. They are identical to that used for electric distribution in Central Java as installed under the Tuntang and Ketenger projects (AID Loans 019 and 025). Modifications will be made where feasible to reduce costs (see Annex A of Reference B).

As described in Part V, a US architect and engineering consulting firm will be retained under the grant portion of

this Project to assist both DGC and PLN in designing the systems, preparing material, equipment and construction specifications and IFB's, to evaluate proposals, to receive and inspect delivered goods and to supervise construction. Experience with rural electric distribution systems will be among the most important qualifications in choosing the consulting firm.

3. Materials, Design and Construction

a. Materials. Most materials for this Project are expected to be procured from the US and Code 941 countries except for poles, crossarms and housewiring materials. PLN and the DGC cooperatives will issue IFB's and place orders for all of the necessary materials during the first quarter of 1978. The IFB's will provide for an adjustment in the quantities of each item of material as system designs are finalized. All materials for PLN systems will be received at Semarang, divided and recrated as necessary and shipped on to the construction sites. Because of the large quantities of materials that will pass through the port and the logistic problems involved, PLN has requested the services of a material supervisor. This service will be provided by the A&E under an AID grant. The materials for the cooperatives will be procured under one set of IFB's but the actual shipments by the suppliers will be made to the port of entry nearest each cooperative headquarters. The IFB's will provide for partial shipments in at least two sections so as not to overload the receiving capability of the local facilities.

1) Poles. Although Indonesia has huge timber reserves, little effort has been made to exploit them for power line poles. Steel poles have been used for many years and the few wood poles that were available were competitively priced with the steel poles. In the interest of reducing construction costs, Mr. James Taylor, a timber and wood pole specialist, made an investigation of the pole production capabilities in Indonesia as part of the NRECA Feasibility Team. He found that there were several small producers at scattered locations that could make a contribution to the pole requirements of this Project. He also found a US timber company with concessions in Kalimantan that is interested in producing large quantities of the treated poles at a reasonable price. This firm could easily supply the entire needs of this Project. Although the company has made no firm decision on the matter, one is expected soon. If the answer is favorable, the company is in a position to deliver a treating plant to Kalimantan by the spring of 1978 in time to make timely pole deliveries. Mr. Taylor's report is included as part of the NRECA Feasibility Studies.

2) Crossarms and Anchor Logs. These items can be procured locally from several sources at competitive prices.

3) Housewiring Materials. This material is produced locally and in sufficient quantities to satisfy the expected needs of this Project.

4) Other Construction Materials. ACSR conductors, aluminum service conductors, transformers, insulators, arresters, switches, reclosers, watthours meters and hardware will be obtained from the US and Code 941 countries through competitive bidding; current limiters will not be used. The local market will be tested for some of these items where it appears promising.

b. Design. PLN has a number of engineers who have worked with foreign A&E firms and contractors and have gained some competence in system design. DGC has no design capability. PLN has requested the assistance of two design engineers and DGC will obtain the services of four design engineers under the proposed A&E service contract. The above services will be financed by the AID grant under this Project (see Annex G-3). An Indonesian subcontract consulting firm will assist the A&E firm in design as well as construction supervision of the coop projects.

The criteria for the design of rural electric distribution systems have been developed and published by the Rural Electrification Administration (US) and are widely known by consulting engineering firms. PLN has been using them with slight modification for several years on all new distribution construction in Central Java. The distribution systems to be financed by this project will all be built in conformance with these standards. The primary systems will be 11.5/20 kv with a solidly grounded neutral; the secondary voltage will be 220. For economy reasons the wood pole design will be used. Sectionalizing will be by oil circuit reclosers and other automatic sectionalizing devices. Conductors will be of the aluminum type for primary and secondary lines. The specifications and drawings used by PLN in constructing the AID financed Tuntang and Ketenger distribution systems (AID Loans 019 and 025) are available to DGC and will be used in constructing the 10 distribution systems included in this Project.

c. Construction. PLN has a construction capability and given time could construct all seven of the PLN systems by force account. However, in order to complete these systems in a timely manner, PLN would have to enlarge greatly its staff and mount a large-scale training program. It would have to

make a large additional investment in trucks, tools and construction equipment. For the above reasons, PLN has decided to construct several systems by force account and the remaining systems will be constructed by local or Code 941 contractors. However, crews of cooperative personnel will construct the consumer services. In any case, the contracts will be labor only since PLN and DGC will furnish all of the materials.

PLN and DGC will need the services of construction supervisors in order to obtain quality construction. The services of six supervisors will be made available by the A&E service contract funded by an AID grant. The Indonesian sub-contract consulting firm will assist the A&E supervisors for the cooperative projects.

4. Summary Conclusions and 611(a) Determination

In developing this Project Paper the USAID Mission prepared an analysis of both the engineering and financial aspects of the Project. (Part III D and Part IV) From these studies the Mission has concluded that: (a) reasonably firm estimates of Project costs have been made; (b) there will be financial, engineering and other plans to carry out this assistance; and (c) the Project is technically feasible and sound. It is therefore the determination of the USAID Mission that Section 611(a) of the Foreign Assistance Act has been met.

E. Administrative Feasibility

1. PLN

USAID has had eight loan projects with PLN for which five will be more or less completed by the time of the final review of this Project Paper. PLN has recognized the difference between this Project and all its others, including other lender projects, and has made special administrative arrangements for its handling. These special arrangements involve close monitoring through the planning, engineering and construction phases by a newly created Subdirectorate for Rural Electrification as well as the Wilayah XIII (Central Java and Yogyakarta) Operations Division.

Aside from the special monitoring, planning including preparation of feasibility studies (assisted by the NRECA team), contracting and negotiation of issues up to signing of the AID Loan Agreement and clearance of CP's will be handled

by the Planning Directorate. A staff headed by the Chief of Planning has been assigned to handle this work. Engineering and construction will be done by a project group (assisted by the AID-provided A&E consultant) organized under the Directorate of Construction and located in Semarang. Operation and management of the systems will be by the Wilayah XIII staff in Central Java assisted by the OMT advisors. A separate cost accounting procedure will be set up within Wilayah XIII to handle the special financial aspects of operating the completed projects, i.e., the minimal connection charge and concessional financing.

PLN administration of new projects is basically a proven system, although its performance on previous AID loans has been slow. Thinness of the staff has been a factor in delays but the most serious delays have been caused by factors outside PLN's control, especially excessive cost escalation and GOI funding shortages.

2. Cooperatives

The Directorate General of Cooperatives has no previous experience with electrical systems and very little experience with construction. Its experience is confined to contracting for area offices under an Asian Development Bank project. For this Project a system of administering the financing, contracting and monitoring has been devised within the existing authorities of the Ministry of Manpower, Transmigration and Cooperatives and within the banking system. Some functions such as organizing cooperatives and training cooperative personnel already are part of the DGC mandate. The major elements of the administrative system will be as follows:

a. The DGC. Its function will be to organize the cooperatives and provide training to members, boards of directors, managers and coop personnel. Assistance will be provided directly to DGC in both functions by an AID-funded NRECA team.

b. The PDO (Project Development Office). This organization will be formed under a decree by the Minister of Cooperatives (see Annex H-8b for draft decree) and will have a separate existence from the DGC, although chaired by the Director General. It will be supervised by appointees from the five involved agencies, DGC, PLN, BAPPENAS, Department of Home Affairs and Department of Finance. Daily operations will be in charge of a full-time Project Officer who will have a staff and full authority to approve key management personnel of the cooperatives, contracts,

plans, etc. The job of coordinating the cooperatives is done by the Project Officer of the PDO. The Minister of Manpower, Transmigration and Cooperatives has taken the first steps in formation of the PDO by soliciting nominations for the Supervisory Group from the five Departments including his own Directorate General of Cooperatives (see Annex H-8a). Responses are expected momentarily. A decree will then be issued by the Minister establishing the PDO.

c. The BRI (Bank Rakyat Indonesia). This is the Agriculture Bank which has 3,265 branches in Indonesia including an office in every district (see Annex H-4). Neither the DGC nor the PDO has the authority to relend the AID loan to the cooperatives and the cooperatives, being private organizations, cannot receive it directly. Therefore, the BRI will be the recipient of the loan and in effect will relend both the AID loan and the capitalized local currency funds to the cooperatives at concessional rates as recommended by the Feasibility Studies. The flow of funds is shown in Annex H-6. The functions of the bank will be to (1) sign as recipient of the AID loan, (2) charge loan funds to the account of the cooperatives as they are paid out for material, construction and other costs, (3) make concessional rupiah loans to the cooperatives to pay for capitalized staffing, contractor/supplier and other costs, (4) collect loan repayments on concessional terms from the cooperatives, and (5) repay the AID and GOI loan amounts (in rupiah) to the Bank of Indonesia as payments are received from the cooperatives.

d. The Coops. They will own and operate the rural electric systems and will, with the assistance of the NRECA team and the AID-funded A&E consultant team design the systems, procure material, contract for construction and supervise construction of the system.

e. The Department of Finance. It will instruct the Bank of Indonesia to deposit rupiah funds in the BRI at concessional rates for lending to the cooperatives and will convert loan repayments from the cooperatives into US dollars and repay the AID loan (see Part V D, Implementation Issues). Financing of the local cost of the cooperative systems will be though two routes. Staff costs for the DGC, the PDO and the BRI will be from the GOI budget. Capitalized local costs will be from a deposit in the BRI made by the Bank of Indonesia on Letter of Implementation from the Department of Finance. The deposit in the BRI will be made on concessional terms which will be passed on to the cooperatives in their loans.

PART IV - FINANCIAL PLAN

A. Summary

The AID loan of $42 million plus the GOI contribution through PLN of $11.2 million and the cooperative loans up to $9.3 million, both in local currency equivalents, are sufficient to design and construct the ten distribution systems and the generation plants for the three cooperatives and pay for start-up costs and housewiring loans through the five years of the Project. The AID grant of $6 million plus a DGC budget amount of $1.4 million mimimum and a GOI budget contribution of $0.8 million both in local currency equivalent are sufficient to cover the AID assistance to organization, engineering, supervision, training and evaluation and the PLN and DGC organization costs. Total US contribution for distribution and generation is $48 million grant and loan and the total GOI contribution is $22.7 million budget and loan.

The NRECA Feasibility Studies show that the three cooperative systems in the Outer Islands will require 31 MW of generation capacity through the sixth year after start of the Project to provide 25 MW of firm power. The estimated cost of 31 MW is $15.5 million in foreign exchange plus $1.55 million in local currency equivalent for local construction costs. USAID is recommending that firm power under this Project be provided through the fifth year at a cost of $12 million in foreign exchange plus $ 1.2 million in local currency equivalent. Firm power generation requirements as well as distribution system expansions after the fifth year must obtain additional financing above that in this Project starting in the fourth year in order to sustain expansion and load growth as projected in the Feasibility Studies. The costs for generation through the fifth year are included in the above figures.

B. Financial Requirements

Financial requirements for capital costs of the ten distribution systems are as shown in Tables IV B-1, 2 and 3, the totals being:

	($1,000)		
	Foreign Exchange	Local Cost	Total
PLN Distribution Projects	18,072	16,406	34,478
Coop Distribution Projects	10,289	11,472	21,761
Total	28,361	27,878	56,239
Coop Generation			
Basis 24 MW	12,000	1,200	13,200
Basis 31 MW	15,500	1,550	17,050

These requirements are the estimates of the NRECA Feasibility Team for the physical system made on the basis of preliminary designs for systems providing over 50% coverage of the discrete service areas as described elsewhere in the PP. The OMT and A&E Team costs are as estimated by USAID (Annex M-1 and 2). Housewiring is as described in Annex G-1.

In the NRECA cost analysis prices were based on recent experience on offshore quotes in the Philippines with a factor added for local variations. Inflation has been considered for most large procurements to be made by the end of the second project year. The PLN distribution system costs include local engineering costs which were separated out for funding purposes in Table IV C-1.

NRECA estimates of generator costs are based on $500 per KW foreign exchange plus 10% for local installation cost. This is higher than recent experience in Indonesia (i.e., the Tuntang and Medan Loans, 019 and 022), but is lower than indicated by a US construction firm now active in Indonesia. The assessment of USAID is that $12 million in loan funds should cover firm power generation for the three coops through the five years of the project.

The NRECA cost estimates for distribution systems were calculated on the basis of a built-up cost for standard kilometers of primary, secondary and underbuild pole line, standard units of installed transformers, security lights, services and meters, sectionalizing etc. Layouts of the systems on large scale maps were made and quantities of standard kilometers and units were computed and multiplied by standard kilometers and unit prices. The cost estimates for the Klaten and Lampung distribution systems are shown in Tables IV B-3&4 as summarized from the completed feasibility studies.

The general plant costs as summarized from the completed feasibility studies for Klaten and Lampung are shown in Tables IV B-5 and 6. The general plan includes a headquarters facility of offices, warehousing and staff housing sized based on experience elsewhere. Office equipment, tools and test equipment were computed on the basis of a fully staffed operation and maintenance organization. Transportation equipment includes one heavy truck, one line truck with A-frame and winch, four 3/4 ton service trucks, two light personnel vans and ten motorcycles for each site. Communications equipment consists of a base radio and eight mobile units. Housing for ten staff members is included for each site.

TABLE IV B-1

Financial Requirements
PLN Distribution Projects

Activity	Foreign Exchange	Local Cost	Total
1. Organization Costs	(1200)	(800)	2000
OMT Team	1.000	100	
PLN		500	
Training	150	150	
Evaluation	50	50	
2. Engineering and Supervision	(1400)	(1096)	2496
A&E Firm	1400		
PLN		1096	
3. General Plant Costs	(2462)	(1050)	(3512)
Klaten	422	165	587
Pemalang	348	150	498
Banyumas	332	145	477
Magelang	348	150	498
Wonogiri	332	145	477
Bantul	348	150	498
Sragen	332	145	477
4. Distribution System Costs	(12,965)	(8955)	(21,920)
Klaten	2,519	1794	4,313
Pemalang	2,455	1753	4,208
Banyumas	1,273	831	2,104
Magelang	2,082	1447	3,529
Wonogiri	1,862	1328	3,190
Bantul	1,353	823	2,176
Sragen	1,421	979	2,400
5. Housewiring		2500	2,500
6. Start-up Costs		1050	1,050
TOTALS	18,072	15,406*	33,478

* Including up to $3,406,000 paid from the AID loan.
See Table IV C-1

TABLE IV B-2

Financial Requirement
Cooperative Distribution Projects
($ 1000)

	Activity	Foreign Exchange	Local Costs	Total
1.	Coop Organization	(1,300)	(2,150)	3,450
	PDO		1,050	
	Coop Expenses		750	
	OMT Team	1,100	150	
	Training	150	150	
	Evaluation	50	50	
2.	Engineering and Supervision	(1,900)	(875)	2,775
	A&E Firm	1,900		
	Subcontractor		875	
3.	General Plant Cost	(1,301)	(573)	(1,874)
	Lampung	464	193	657
	Luwu	373	187	560
	Lombok	464	193	657
4.	Distribution Systems	(5,788)	(6,174)	(11,962)
	Lampung	2,490	2,568	5,058
	Luwu	1,402	1,609	3,011
	Lombok	1,896	1,997	3,893
5.	Housewiring		1,250	1,250
6.	Start-Up Costs		450	450
	Totals	10,289	11,472	21,761
	Cooperative Generators			
	Total	12,000	1,200	13,200
	Total for Coops	22,289	*12,642	34,961

* Including up to $1,972,000 paid from the AID loan. See Table IV C-2.

Table IV B-3

Financial Requirements by Type
Klaten Distribution System ($)

	Foreign Exchange		Local Cost	Total
Primary Lines (KM)	764,300	(451)	761,511	1,525,811
Secondary Lines (KM)	202,236	(110)	204,552	406,788
Secondary Underbuild (KM)	398,106	(390)	200,966	599,072
Services & Meters (No.)	829,550	(26,469)	508,021	1,337,571
Transformers (KVA)	217,053	(7890)	21,656	238,709
Security Lights (No.)	82,769	(1056)	24,248	107,017
Sectionalizing	24,720		52,939	77,659
Right of Way Clearance (KM)	--	(213)	20,145	20,145
Subtotal	2,518,734		1,794,038	4,312,772
Engineering	--		215,639	215,639
TOTAL	2,518,734		2,009,677	4,528,411

Table IV B-4

Financial Requirements by Type
Lampung Distribution System ($)

	Foreign Exchange		Local Cost	Total
Primary Lines (KM)	783,978	(382)	857,577	1,641,555
Secondary Lines (KM)	207,767	(113)	250,088	457,855
Secondary Underbuild (KM)	285,802	(280)	193,740	479,542
Services & Meters (No.)	825,789	(25,368)	849,079	1,674,868
Transformers (KVA)	228,608	(8,310)	28,753	257,361
Security Lights (No.)	93,115	(1,188)	36,322	129,437
Sectionalizing	64,753		7,227	71,980
Right of Way Clearance (KM)	--	(147)	14,838	14,838
Adjustment	--		89,457	89,457
Subtotal	2,489,812		2,327,081	4,816,893
Engineering	--		240,854	249,854
TOTAL	2,489,812		2,567,935	5,057,747

TABLE IV B-5

Financial Requirements
Klaten General Plant Costs
($)

	Foreign Exchange	Local Cost	Total
Land		10,850	10,850
Site Improvements		10,000	10,000
Buildings			
Headquarters	130,000	-	130,000
Warehouse	30,000	-	30,000
Maintenance	7,000	-	7,000
Staff Housing		43,660	43,660
Outdoor Storage Fac.	12,000	-	12,000
Communication Equip.			
Base Station	15,000	-	15,000
Mobile Equipment	15,000	-	15,000
Transportation Equip,	154,000	-	154,000
Tools & Equipment	15,000	-	15,000
Test & Lab Equip.	15,000	-	15,000
Office Equipment	29,000	-	29,000
Contingency		100,000	100,000
Totals	422,000	164,510	586,510

TABLE IV B-6

Financial Requirements
Lampung General Plant Costs
($)

	Foreign Exchange	Local Cost	Total
Site Improvement	10,000	-	10,000
Buildings			
Headquarters	-	130,000	130,000
Warehouse	-	40,000	40,000
Maintenance	-	7,000	7,000
Staff Housing	43,150	-	43,150
Fuel Stock	28,915	-	28,915
Outdoor Storage Fac.	-	12,000	12,000
Communications Equipment			
Base Station	-	15,000	15,000
Mobile Units	-	15,000	15,000
Transportation Equipment	-	154,000	154,000
Tools and Equipment	-	25,000	25,000
Test & Lab Equipment	-	15,000	15,000
Office Equipment	-	51,000	51,000
Contingency	100,000	-	100,000
Totals	192,915	464,000	656,915

C. Provision of Funds

Funds for the Project will come from a number of sources:

1. The AID Loan of $42 million to be authorized in September 1977.

2. The AID Grant estimated to total $6 million over four fiscal years, the first three million being authorized in September 1977.

3. The PLN budget which will be derived from its yearly GOI construction budget. This local currency fund will be used to cover part of the local costs of design, material procurement and construction of the distribution systems in Central Java.

4. The DGC budget which will cover the costs of organizing the cooperatives, monitoring their operation and training by the PDO and the banking service charges of the BRI.

5. Local currency deposits to the BRI from the Bank of Indonesia, on instruction from the Ministry of Finance. These deposits will be reloaned by the BRI to the cooperatives on the same terms as the AID loan for the capitalized local costs and operating capital of the cooperative projects.

PLN fund flows are shown diagrammatically in Annexes H-6a and H-6c. Important aspects of the flows are as follows:

a) Material and contractor prccurements from Code 941 countries paid for in foreign exchange from the AID loan will be paid through the normal L/Comm - L/C method or through direct payments.

b) Material and contractor procurements from Indonesian firms for local costs from the AID loan will be paid by PLN from its own budget funds and will be reimbursed by AID to the Ministry of Finance upon receipt of a certified request from PLN verified by USAID. Alternatively, the procurements may be paid by direct reimbursements to either PLN or the suppliers.

c) AID grant funds will be paid to the A&E firm for technical services on a direct contract L/C or direct payment.

d) Some AID funds, both grant and loan, will be paid for training and evaluation, primarily transportation and per diem, on a direct payment.

e) GOI rupiah funds will be paid by PLN to Indonesian contractors and suppliers on a direct payment.

Cooperative project fund flows are shown diagrammatically in Annexes H-6b and H-6c. The important steps are as follows:

i) Material and contractor procurements from Code 941 countries paid for in foreign exchange from the AID loan will be paid through the normal L/Comm - L/C method or through direct payment.

ii) Material and contractor procurements from Indonesian firms for local costs from the AID loan will be paid by the BRI from rupiah funds deposited by the Bank of Indonesia and will be charged by the BRI to the account of the cooperative. The AID dollar funds corresponding to the rupiah payment will be reimbursed by AID to the Ministry of Finance upon receipt of a certified request from the BRI and the cooperative verified by USAID. Alternatively, the procurements may be paid by direct reimbursements to either BRI or the suppliers.

iii) AID grant funds will be paid to the A&E firm for technical services and to the OMT team for advisory services on a direct contract L/C or direct payment.

iv) Some AID funds, both grant and loan, will be paid for training and evaluation, primarily transportation and per diem, on a direct payment.

v) DGC budget funds, besides paying for its own and the PDO staff, will be paid to the BRI on a direct reimbursement basis for banking services rendered.

vi) The BRI will make payments to Indonesian contractors and suppliers from the Bank of Indonesia deposit funds on the basis of instructions from the cooperatives and will be charged by the BRI to the account of the cooperative.

vii) Some rupiah funds will be loaned directly by the BRI to the cooperatives to pay for certain start-up costs including staff costs, headquarters costs and operating losses.

viii) Repayment of the rupiah loans by the cooperatives will be paid to the BRI at the AID concessional loan terms which, in turn, will be repaid by the BRI to the Bank of Indonesia.

ix) Repayment of the AID loans by the cooperatives will be paid in rupiahs to the BRI at the AID loan terms and will,

in turn, be repaid by the BRI to the Bank of Indonesia. The loan will be repaid to AID in dollars by the Ministry of Finance in the normal fashion.

Funds to be actually provided for the Project are shown in the following Tables IV C-1, 2 and 3. These differ from the amounts and sources as shown in Tables IV B-1 and 2 as follows:

1. Some local costs, e.g., housewiring and part of the local costs for distribution are shown under the AID loan amount. The conversion of AID loan funds to local currency for these costs is described above and is shown in Annexes H-6a, b and c. The total amount of the AID loan which will be used for local costs is about $7.65 million.

2. A contingency is added for all sources of funds.

TABLE IV C-1

FINANCIAL PLAN
PLN DISTRIBUTION PROJECTS
($1000)

Activity	AID Grant	AID Loan	GOI Budget to PLN	Total
1. Organization Costs	(775)	(125)	(800)	1,700
OMT Team	700		100	
PLN			500	
Training	50	100	150	
Evaluation	25	25	50	
2. Engineering and Supervision	(1,400)		(1,096)	2,496
A&E Firm	1,400			
PLN			1,096	
3. Productive Uses Program	300			300
4. General Plant Costs		2,462	1,050	3,512
5. Distribution Systems		14,538	7,382	21,920
6. Generators		None		
7. Housewiring		2,500		2,500
8. Start-Up Costs			1,050	1,050
9. Contingencies	200	375	622	1,097
Total:	2,675	20,000	12,000	34,675

TABLE IV C-2

FINANCIAL PLAN
COOPERATIVE DISTRIBUTION PROJECTS

	AID Grant	AID Loan	DGC Budget and Coop Loans	Total
1. Coop Organization	(1,075)	(125)	(1,400)	3,350
PDO			1,050	
Coop Expenses			750	
OMT Team	1,000		150	
Training	50	100	150	
Evaluation	25	25	25	
2. Engineering & Supervision	(1,900)		(875)	2,775
A&E Firm	1,900			
Subcontractor			875	
3. Productive Uses Program	200			200
4. General Plant Costs		1,301	573	1,874
5. Distribution Systems		7,199	4,763	11,962
6. Generators		12,000	1,200	13,200
7. Housewiring		1,250		1,250
8. Start-Up Costs			450	450
9. Contingencies	150	125	689	964
Total	3,325	22,000	10,700	36,025

TABLE IV C-3

FINANCIAL PLAN

COMPOSITE DISTRIBUTION PROJECTS

($1000)

	Activity	AID Grant	AID Loan	GOI Budget to PLN	DGC Budget and Coop Loans	Total
1.	Organized Costs	(1,850)	(250)	(800)	(2,150)	(5,050)
	PDO				1,050	1,050
	Coop Expenses				750	750
	OMT Team	1,700		100	150	1,950
	PLN Expenses			500		500
	Training	100	200	150	150	600
	Evaluation	50	50	50	50	200
2.	Engineering and Supervision	(3,300)		(1,096)	(875)	(5,271)
	A&E Firm	3,300				3,300
	Subcontractor				875	875
	PLN		1,096			1,096
3.	Productive Uses Program	500				500
4.	General Plant Costs		3,763	1,050	573	5,386
5.	Distribution Systems		21,737	7,382	4,763	33,882
6.	Generators		12,000		1,200	13,200
7.	Housewiring		3,750			3,750
8.	Start-Up Costs			1,050	45	1,500
9.	Contingencies	350	500	622	689	2,261
	Total	6,000	42,000	12,000	10,700	70,700

TABLE IV C-4

(THOUSAND DOLLARS)

YEARLY BUDGET REQUIREMENTS AND DISBURSEMENT

	USFY77	USFY78	USFY79	USFY80	USFY81	USFY82	Total
AID GRANT FUNDS							
Budget	3,000	1,500	1,500		-	-	6,000
Disbursements	-	1,400	1,900	1,600	900	200	(6,000)
AID LOAN FUNDS							
Budget	42,000						42,000
Disbursements	-	25,000	8,000	3,000	3,000	3,000	(42,000)
							48,000

	IFY77/78	IFY78/79	IFY79/80	IFY80/81	IFY81/82	IFY82/83	Total
GOI FUNDS							
PLN							
Budget	1,000	5,500	2,500	2,000	750	250	12,000
Disbursements	500	5,500	2,500	2,000	1,000	500	(12,000)
DGC							
Budget	700	5,100	2,050	1,025	1,350	475	9,700
Disbursements	500	5,050	2,100	1,025	1,450	575	(9,700)
							22,700

D. Second Step Loan to Cooperatives

The portion of the AID loan to be reloaned to the cooperatives for capitalized costs ($10 million for distribution systems and $12 million for generators) will be reloaned on a second step loan from the GOI or Borrower to the BRI or loan beneficiary (see Annex E) at the same terms and conditions as the AID loan. The funds will then be reloaned to the cooperatives by the BRI, still at the terms and conditions of the AID loan.

E. PLN Arrangements

PLN has legal authority to receive the AID loan as a beneficiary and the $20 million portion of the loan will be reloaned to PLN on a second step loan or converted to equity.

F. Financial Viability

The NRECA Feasibility Study Team has completed study reports for one system each of the Central Java and Outer Island sites (Klaten and Lampung). These reports show financial viability for these two systems with a system operating margin "break-even point" reached in four years and eight years after energization, and a times interest earned ratio (TIER) of 4.29 and 2.25 during the tenth year of operations, respectively. See Reference B for these reports. In addition, a preliminary financial forecast has been prepared for each of the eight other proposed DGC and PLN project areas. These forecasts also indicate financial viability for the eight systems listed below. However, should one or more of the systems be shown later to be unfeasible for any reason, another system will be substituted following a positive feasibility determination. An individual assumption sheet and a statement of operations for each study site are found in Annex N.

Conditions and assumptions on which viability was determined are as follows:

a. Approximately 50% of the residential households in the service areas would be receiving electricity by the end of the fifth year (see Part III-C for justification) and 85% by the fifteenth year of operations. Initial average domestic use would range from 18 to 22 KWH per month, depending upon the site, reaching 57 to 61 per month by the fifteenth year (see Reference B, Part II-C).

b. Ninety percent of existing commercial establishments would connect after three years after energization and this

number would increase 1% per year thereafter. Security lights are assumed to be seven per desa after three years of operations increasing to 23 lights per desa after the fifteenth year. Irrigation pumps, grain mill and other small and large power connection and usage were forecasted separately per each site based upon field surveys conducted by PLN, DGC and IPB (see Reference B Part II C).

c. The usage growth was based on current usage patterns existing on the power system of Central Java.

d. The capital costs were based on AID loan terms. The house-wiring loan program was omitted from the financial forecast because those loans were considered to be self-liquidating. Operating loans were considered interest-free because they are expected to be provided from the GOI budget.

e. The system load factors used started as low as 16% increasing to as high as 32% after the 15th year of operation. (see Reference B Part II C).

f. The base cost of electric power from PLN started at Rp. 22 per KWH (5.3¢) increasing 1% per year in the forecast period (see Reference B Part II H). The PLN base cost is computed on the basis of the capital cost of the Semarang Steam Station and the 150 KV transmission lines to the service area with capital costing 9.15% for the power station and 7.85% for the transmission line. The load factor used is 20% and the fuel cost to PLN is Rp. 22 (5.3¢) per liter.

g. The delivered cost of diesel fuel oil to the cooperatives was determined by a quote from Pertamina at Rp. 25 per liter (6¢), which translates into a fuel expense of Rp. 7.25 per KWH (1.75¢) generated for the DGC projects throughout the forecast with assumption that the retail rates would be raised to compensate for fuel price increases, if required. A slight transportation adjustment was made for Luwu (see Reference B Part II H).

h. The domestic revenue for the PLN systems was computed on the basis of a minimum Rp. 900 per month bill, for 15 KWH, based on an assumed average 350 VA connection, which presently bears a PLN demand charge of Rp. 12 per 25 VA and an energy charge of Rp. 49 per KWH. This Rp. 49 includes a special Rp. 36 surcharge for Central Java Rural Electrification areas. Other rate tariffs follow presently prescribed PLN rates for Central Java (see Reference B Part II I).

i. Domestic sales price of electricity for the cooperative systems based on a minimum Rp. 1,000 per month bill for 20 KWH, a charge of Rp. 42 each KWH (10¢) for the next 20 KWH per month and all over 40 KWH per month a charge of Rp. 32 (7.96¢) per KWH. Other rates were based on the expected cost of service to the respective consumer classes (see Reference B Part II I).

j. A 3% depreciation rate on distribution plant and a 4% depreciation rate on generation plant.

k. Operating costs based on estimates of manpower, inventory, and overhead needed to operate a system of the forecasted scale and to operate it in Indonesia.

Table IV F1 shows the operating margins for each system. A positive operating margin indicates that all operating expenses including depreciation and interest will be covered by system operating revenues. A negative margin shows that such expenses are not being covered. In short, the point where the margin goes positive may be taken as the "break-even" point of the system. Therefore, this Table shows that the anticipated "break-even points" will range from year two to five for the Central Java systems and from year eight to eleven on the Outer Island systems. Considering the proposed scale of investment for these projects and the nature of a utility business these "break-even points" appear reasonable. The totals of these margins represent the equity which has accrued to each system at that point. The difference in range between the two models is attributable to the depreciation and interest expenses associated with the required generation plants of the Outer Island systems.

The conditions and assumptions used in the financial studies, as described above, are considered logical and consistent within the intent of the studies. They are not necessarily the conditions which will actually prevail and it is certain that inflation will affect both the costs and revenues of the systems over the years. It is possible and may be desirable to deliberately change some of the conditions to determine the effects on meeting the goals of this demonstration project. One logical area of experimentation would be the tariffs for the Central Java systems. These systems check out to be exceedingly viable under the above conditions and tests to determine the elasticity of demand for power could be tried. It is fairly determined that 50% of households will take the service at the rates used (see Part II A and C). Shortly after systems have been energized tests could be tried to speed sign ups by reducing the monthly minimum to Rp. 600 ($1.45). Depending on the tariff formula for reducing the minimum, the reduced minimum need not affect financial viability significantly if (1) the usage permitted for the monthly bill is reduced proportionately, or (2) the price assumed for the power purchased from PLN is reduced. The Project permits experimentation of this kind and would anticipate doing so in its early stages.

TABLE IV F1

SYSTEM OPERATING MARGINS
($1,000)

PLN

Year	Klaten	Bantul	Sragen	Magelang	Banyumas	Pem/Pek	Wonogiri
1	(234)	(62)	(74)	(178)	(101)	(277)	(184)
2	(110)	26	(38)	(92)	(57)	(199)	(103)
3	(4)	28	19	(27)	63	(137)	(120)
4	12	124	23	(14)	27	(96)	63
5	156	159	87	84	108	25	124
6	245	247	123	169	165	129	67
7	334	256	155	236	218	227	98
8	448	392	222	330	281	322	58
9	424	444	253	382	411	437	207
10	527	490	254	392	294	460	391
11	563	482	197	416	299	527	239
12	631	581	346	475	367	523	302
13	604	513	282	426	322	57[illegible]	227
14	628	581	293	470	345	628	222
15	524	507	245	486	288	509	154
Total:	4,748	4,768	2,387	3,569	3,030	3,656	1,745

Total PLN: 23.903

COOP

Year	Lampung	Lombok	Luwu
1	(406)	(388)	(426)
2	(392)	(445)	(327)
3	(424)	(493)	(234)
4	(467)	(371)	(292)
5	(148)	(271)	(519)
6	(412)	(97)	(534)
7	(181)	(61)	(453)
8	167	123	292
9	385	189	192
10	454	354	(58)
11	613	428	173
12	878	683	233
13	952	856	237
14	1,113	1,107	309
15	1,320	1,277	528
Total:	3,633	2,891	(1,487)

Total COOP: 5,037

The Debt Service Coverage (DSC) ratios for all systems are shown below on Table IV F2. A DSC ratio of 1.0 indicates the ability of a project to pay in full all outstanding interest and principal obligations. These calculations show that debt service will be met sufficiently by each proposed system at the ninth year of operations which is the first year of full debt amortization. Such favorable DSC's continue through the fifteenth year of operations. These ratios show that the financing provided by the AID loan and the GOI to these systems should be self-liquidating with the assumed concessional loan terms.

TABLE IV F2

DSC

PLN

Year	Klaten	Bantul	Sragen	Magelang	Banyumas	Pem/Pek	Wonogiri
9	2.86	3.31	2.39	2.39	3.3	2.2	3.72
10	3.25	3.45	2.33	2.39	2.6	2.3	5.08
11	3.39	3.32	2.04	2.43	2.6	2.4	3.87
12	3.63	3.76	2.74	2.62	2.9	2.4	4.33
13	3.52	3.42	2.41	2.46	1.6	2.5	3.77
14	3.47	3.71	2.45	2.59	2.8	2.6	3.72
15	3.11	3.31	2.21	2.63	2.5	2.3	3.18

COOP

Year	Lampung	Lombok	Luwu
9	2.46	1.80	1.52
10	2.56	2.21	1.67
11	2.68	2.39	1.87
12	3.10	2.70	2.31
13	3.36	2.92	2.35
14	2.94	3.22	1.89
15	3.24	3.52	2.25

The NRECA Feasibility Studies include a discussion of the effects of concessional financing of the system. It shows clearly that none of the systems is financially viable using commercial loan terms (8% at 20-year repayment) and that

they would sink continually further in debt without a drastic increase in rates. An increase in rates would, of course, discourage people from connecting, especially the poor, negating the intended positive effects of the Project.

Table IV F3 shows the expected times interest earned ratios (TIER) for each system over a fifteen-year period, for years 1, 5, 10 and 15 of operations. This ratio is calculated by adding net margins to interest expenses and dividing this sum by the interest expense. This ratio indicates the basic earnings ability of the system through project operations.

The TIER is a standard ratio used by the utility industry to measure relative earnings performance. Presently REA recommends a TIER level of 1.5 for system minimal financial viability. As indicated on the Table, project TIER's ranging from 2.1 to 5.7 are estimated during the fifteenth year of operation. The high earning returns predicted for these systems are primarily due to the anticipated consumer density.

TABLE IV F3

TIER

Year	Lampung	Lombok	Luwu	Klaten	Bantul	Sragen	Magelang
1	(1.70)	(1.91)	(2.14)	(1.89)	(0.60)	(0.51)	(1.70)
5	0.58	(0.05)	(1.16)	2.41	3.52	2.34	1.90
10	2.25	1.87	0.82	4.29	5.80	3.57	3.68
15	4.49	5.71	2.69	4.69	5.53	3.33	4.16

Year	Banyumas	Pem/Pek	Wonogiri
1	(1.4)	(2.2)	(1.8)
5	2.8	1.2	2.5
10	4.1	3.4	4.0
15	3.88	3.5	2.1

G. Long-Range Programming

By requesting AID funding for the Rural Electrification Project described herein the GOI has made a sizeable commitment to establishing a nationwide program for the first time.

Assuming administrative arrangements developed for this Project prove reasonably workable during the first 18 months and the subprojects are beginning to take form, it is anticipated that strong pressures will develop for similar subprojects in adjacent areas and in other Provinces and that the GOI will seek additional financing during US FY 1979. USAID has anticipated this by inserting a PID for $40 million in the FY 1979 Annual Budget Submission. Should one or the other administrative models falter the pressure will probably still be great to continue with the other and only stagnation or demonstrated failure could be expected to still the momentum generated for rural electrification in Indonesia.

Capital expenditures for PLN are projected to increase from an annual amount of $465 million in IFY 76-77 to $1.5 billion in IFY 83-84 including inflation (see Annex I-1), an annual increase of 14% in the Second Five-Year Plan increasing to 25% in the Third Five-Year Plan. These expenditures are programmed for generation and transmission and for distribution systems for urban and industrial customers. A realistic estimate of providing an additional 15% of the PLN expenditure for rural electrification would require $850 million in the Second Plan period beginning in 1979, about half, or $425 million being in foreign exchange. This amount would electrify over three million rural houses, or over 10% of the current rural population. Additional financing required for generation and transmission by PLN to serve the rural systems is significant, amounting to over 5% of the PLN capital budget during the Second Plan period.

Several other bilateral donors have expressed an interest in the areawide concept of electrification being introduced into Indonesia for the first time by this Project. Besides Canada and The Netherlands, Australia and Germany have made contacts with USAID or DGC expressing interest in the program. Other major donors are expected to follow suit, especially France and Japan. IBRD and the Asian Development Bank have expressed no interest in the Project to date and they are not expected to until it can be demonstrated that loans under their terms will make a contribution to financially viable rural electric systems.

Given the developmental aspects of a successful areawide rural electrification program, which are expected to be apparent by the early 1980's, and the expressed interest of other bilateral donors, it is expected that both local and

foreign exchange financing of an expanding nationwide program will be available through the Third Plan period. At that time (1983) well over a million rural families would already be receiving electricity from financing through 1980 and future financing decisions could be made on the proven merits of the program.

PART V - IMPLEMENTATION PLAN

A. Implementation Arrangements

Implementation will occur in three identifiable phases which are planned to satisfy the requirements of a fast start with early visible evidence of progress, a major construction phase in which the main system backbone is completed and a completion phase in which a large percentage of residents in the service area will be connected to the backbone. The first phase is expected to require approximately 18 months from project authorization and the backbone should be completed by the 36th month. The project will be completed in five years (see project schedule, Part V B.).

Critical steps in implementing the project are as follows:

PLN

1. Organization of the Project Group in Central Java under the Directorate of Construction. The Project Group will be responsible for design, procurement and construction. Most of the staff already exist, having been developed and extensively trained under previous AID loan projects in Central Java.

2. Procurement of materials and design of the systems. Preparation of specifications and IFB's (Invitation for Bid) can start immediately after the Project Group is organized, but PLN has requested assistance in system design and procurement which will be provided by the grant funded A&E.

3. Receipt, storage and handling of materials. PLN plans to set up a materials storage yard in each service area. Material will be divided at the port of entry (Semarang) and shipped to the various yards as received.

4. Construction. As material is received construction will begin at the point nearest the power supply and work out so that increments can be energized as completed. Construction will be by PLN force account supplemented by small contracts, especially day labor and in some cases by local construction companies.

5. Operation. As sections are completed they will be turned over to the Wilayah Operations Section for energizing. The Operations Section will assist in house wiring by making deferred payment loans and assisting in obtaining installers at low cost. Connections to the customer's wiring will be done by the Project Group.

DGC

1. Formation of the administrative organization including the Supervisory Group and the PDO (Project Development Office).

2. Formation and staffing of the Cooperatives.

3. Training of the PDO and Coops staffs.

4. Procurement of materials and design of the systems. The preparation of specifications and IFB's can be started as soon as the A&E team arrives. Final procurement actions must be done by the PDO and Supervisory Group. Administrative actions such as signing of the subloan agreements between the BRI and the Coops must precede procurement.

5. Receipt, storage and handling of materials.

6. Construction. Construction of the distribution systems will be performed by either Indonesian or Code 941 construction firms. It has been determined that Indonesian firms capable of such work exist. Bids will be sought from both Indonesian and Code 941 firms and the final determination will be made based on price, schedule and an assessment of individual firm capability. Construction supervision will be by the A&E firm and an assessment of supervision requirements will be included in the evaluation of bidders for construction.

7. House wiring and connections. House wiring will be installed by home owners, small contractors or other special groups such as STM's (technical high schools). Loans for part of the cost will be available from the Coops. Services to the houses and meter installations will be made by the cooperative forces.

8. Operation. When the generation facility is ready and as sections of distribution are completed, they will be turned over to the cooperative for energizing.

USAID Requirements

Monitoring by AID will be by a group of three direct hire personnel who will spend essentially full time on the project during its first year and a diminishing percentage of their time thereafter. The group will be a senior Project Officer, an electrical engineer and a capital development officer. The group will monitor activities of the direct contract OMT and A&E teams, assist the GOI in its organizational development, approve specifications, IFB's and procurements, approve design

and cost estimates for reimbursable local cost work, inspect sites and approve payments. In particular the group must assure that all steps necessary to give the rural poor opportunity to get electric service are being taken.

Included is the grant funding is an amount for the promotion of productive uses of electricity in the service areas. USAID will begin investigations of the preferred form of this program shortly after the Project is authorized. Studies will be made of each of the areas to determine their potential for such uses of electricity as pump irrigation, agro industry, small industry, handicrafts, commerce etc. It is planned that a team will be organized to work with PLN, the DGC and the cooperatives as well as provincial and GOI authorities to advise and assist in developing specific projects for using electricity with the aim of increasing production and employment. These studies will be supervised and monitored by the USAID Project Group.

B. Project Schedule

The schedule shown on the following Table V B-1 is very desirable for this Project from the standpoint of showing visible evidence of progress at an early date. If the schedule can be met, energizations can begin in the second quarter of 1979, about 18 months after approval of the Project. The main determinants as to whether the schedule can be met are:

1. Signing of the OMT contract by October and the A&E contract by December of 1977. The OMT team is needed on the job by November/December to begin organizing the cooperatives and the A&E team must begin design work in early 1978 so that materials procurement can begin.

2. Clearance of CP's to the AID loan agreement by March 1978. Materials awards cannot be placed until these CP's are met. USAID and the GOI agencies of PLN and DGC have discussed the issues involved in the CP's and the wording of the CP's themselves and there should be no substantial delay for this reason.

3. Timely delivery and operation of the cooperative generators.

Past experience with AID loan projects in Indonesia would indicate that the schedule is optimistic but several differences in this Project make it possible to overcome previous delays. These main differences are the grant funding and direct contracting of all technical assistance, the greater flexibility in payments and reimbursement provisions in the AID loan and the expected use of force account and local construction firms. Factors which could cause delays, other than above, are slow delivery of poles from local suppliers and delays in offshore material deliveries.

Part V B

TABLE V B-1
PROJECT SCHEDULE

	USAID	AID/W	DG Coops	PLN	BRI	OMC Team	A&E Team	Coops
1977								
August	Submit PP							
September	Sign Grant Agreement	Authorize Project	Sign Grant Agreement	Sign Grant Agreement				
		Issue IFB for A&E Team						
October	Prepare LA and PIL	Sign OMC Contract				Sign Contract	Submit Proposal	
November	Sign LA	Analyze A&E Proposals		Sign LA	Sign LA			
			Organize Coops			Assist Coop Org.		Organize
December		Sign A&E Contract				Start training	Sign Contract	Start training
		Authorize Second Grant	Request BRI Loan		Approve Subcontract Loan		Sign Subcontract	
1978								
January				Establish Cost Acct'g Procedure		Assist PLN in Cost Acct'g	Prepare Material IFB's	
							Start design	
February	Approve Material IFB's		Issue Material IFB's	Issue Material IFB's			Prequalify Cons. Firms	Issue Material IFB's
March	Clear CP's		Clear CPs	Clear CP's	Clear CPs	Assist Member Drives	Analyze Material Bids	Start Member Drives
April	Approve Awards		Request BRI Loan	Material Awards	Approve Loan for Materials		Prepare Cons. IFB's	Material Awards
May	Approve Cons. IFBs			Issue Cons. IFB's				Issue Cons. IFBs
June								
Third Quarter	Approve Design & Cost Estimates			Construction Awards				Construction Awards
				Start MGT Training		Start MGT Training		
Fourth Quarter	Field Inspections	Authorize Third Grant	Assist Member Drives	Start Constr.	Approve Cons. Loan		Start Cons. Supervision	Start Cons.
			Request BRI Loans					
1979								
First Quarter						Operator Training		Operator Training
Second				Energize First Systems				Energize Fire Systems
Third								
Fourth								
1980				Complete Backbone				Complete Backbone
1981	Complete Evaluation			Add Services to Backbone		Complete Training		Add Services Backbone
1982	PACD	PACD		Complete Systems, PACD	PACD			Complete Systems

C. Procurement Plan

1. AID Grant Funds

The bulk of the $6 million in AID grant funds will be for payments to the A&E and OMT firms which will provide the design, procurement and construction supervision and the technical, organizational and management assistance, respectively. See Annexes G-2 and G-3 for scopes of work for these two teams. Both firms will be procured under the direct AID contracting provisions of AID Handbook 14. See Annex H-9 for justification of AID direct contracting. An advertisement was placed in the Commerce Business Daily for the A&E team on June 9, 1977 and expressions of interest were received until July 22. The short list is under preparation and it is planned to request technical proposals from those on the short list as soon as the Project is authorized.

The OMT advisory team will be a combined group from the NRECA and NEA (Philippines). See Annex H-10 for justification for proprietary procurement of this team from NRECA. As soon as the Project is authorized negotiations should begin with NRECA It is essential, to meet the Project schedule, that training and organization of the cooperative staffs begin by December 1977 (see Project Schedule, Part V B) and the NRECA/NEA personnel performing these functions must be on site by that time. The schedule calls for signing the contract in October 1977.

Part of the grant fund will be for making studies of potential productive uses of electricity in the Project service areas and giving local authorities technical assistance in setting up productive projects. The advisors required for this program will be retained under personal services contracts or on an overall direct contract basis.

Small amounts of the AID grant will be used for international travel for Indonesians and for trainers from the Philippines and the US. An additional small amount will be for the services of an evaluation specialist. These funds will be obligated on direct disbursements. Funds flow for the AID grant is shown in Annex H-6c.

2. AID Loan Funds

The bulk of the AID loans will be used for procurement from Code 941 countries through the normal tender procedures of Handbook 11. IFB's will be prepared by the A&E team with the assistance of the PLN Project Group and the subcontractor funded by the cooperatives. In some cases where there are apparent advantages of large bulk procurement, combined bids for PLN and cooperative bids may be solicited, with separate delivery points. Also, in some cases where the economic choice between offshore and local procurement is not apparent, bids may be sought both locally and from Code 941 countries. When AID loan funds are to be used for local procurement for

material or services it will be on a bid basis in accordance with the procedures of Handbook 11. IFB's will be issued by PLN and the cooperatives. Bids will be evaluated by the A&E team with the assistance of PLN and the cooperative sub-contractor. Procurement contracts will be signed by PLN and the cooperatives (see Part III D). Bid summaries and procurement actions must be approved by USAID before signing.

Generators for the three cooperative systems will be procured from a US contractor on a turnkey supply basis including substations, oil storage tanks, cooling equipment, all machinery and installation. Operating training and supervision for the first two years will be included. Local costs will be paid from the cooperative rupiah loans.

The Project includes provision of a fund from the AID loan to both PLN and the cooperatives to make housewiring loans. Annex G-4 describes this plan. All the AID funds for housewiring will be used to procure housewiring, most locally but perhaps some from Code 941 countries, on a bid basis. The material will be provided to the customers and charged to them on a loan basis. Repayments from the borrowers will be used to purchase replacement material on the same basis.

Small amounts of the AID loan will be used to procure services locally for training and evaluation. Part of the training fund may be used to pay the foreign travel costs of Indonesians travelling to the Philippines or US.

Funds flow for the AID loan is described in Part IV C and shown diagrammatically in Annexes H-6a and H-6b.

3. Procurement with Local Funds

Material and services procurement with PLN budget and local currency loan funds will be through a bidding procedure similar to that in AID Handbook 11 wherever practical. IFB's will be prepared similar to those for offshore procurement (see Section 2 above) and issued by PLN and the cooperatives. USAID approval will be required for all IFB's and bid summaries directly connected with the Project. Provision of the funds is described in Part IV C and the flow of funds is shown diagrammatically in Annexes H-6a, b and c.

D. Implementation Issues

There are several issues outstanding which must be resolved at the time of clearances of the CP's to the AID loan. All have been discussed with the involved GOI agencies and it is expected that there will be no special difficulties in clearing these up.

PLN

The principle of charging a connection fee is well established in PLN and as of August 1 it is still the policy to charge a fee. The charge is based on the size of the limiter installed in all connections and ranges from Rp. 40,000 ($100) to several hundred thousand rupiahs. To charge fees of this magnitude would void all the other advantages of this Project and make it impossible to reach a significant percentage of the population. It is felt that no more than 2% of the people in the target areas would take the service under such circumstances. PLN has agreed for this Project to reduce the connection fee to the lowest possible amount (see Annex H-3) and USAID will recommend that it be no more than about two months' minimum bill. A condition will be added in the Loan Agreement requiring an agreement on this issue.

DGC

USAID has requested GOI agreement that both the AID loan fund for the cooperative projects and the local currency loans will be reloaned to the cooperatives at the same terms as the AID loan. Verbal agreement has been received from DGC and the BRI that this can be done if BAPPENAS approves. BAPPENAS has stated that it desires to see the results of the Feasibility Studies before making this decision. These studies are now complete (mid-August) and show clearly that the concessional terms are needed for financial viability. A covenant covering the AID subloan agreement will be in the Loan Agreement (see Part V E below).

E. Conditions and Covenants

The following represent conditions precedent and special covenants as they may appear in the Loan Agreement. These requirements have been discussed with the Director General of Cooperatives, the President Director of PLN, and the Deputy Chairman of BAPPENAS and their staffs. In addition, letters of agreement on the basic issues have been countersigned by the Director General of Cooperatives and the Director for Planning at PLN (see Annex H). Some of the steps described in the CP's below are already in process by the GOI agencies and others will be put into effect as soon as the Project is authorized by AID so the final list in the Loan Agreement is expected to be much shorter than the following.

1. The standard conditions precedent to initial disbursement are as follows:

a. The legal opinion of the Minister of Justice.

b. The list of authorized representatives of the Borrower, Beneficiaries and other responsible GOI agencies (i.e., DGC) together with evidence of their authority and specimen signatures of each.

2. Conditions precedent to any disbursement for the PLN projects are as follows:

a. Assurance of the required rupiah financing on a timely basis.

b. A signed subloan agreement relending the AID loan funds to PLN on the same terms and conditions as the AID loan or an agreement converting the AID loan into PLN equity.

c. An implementation plan approved by AID which will include: (1) a time-phased schedule of events; (2) an organization plan for the design, construction and operation of the Project; (3) a training plan; (4) an evaluation plan; and (5) a plan for encouragement of the use of electricity in the Project service areas.

d. A letter of agreement between PLN and AID covering all costs to the customers which would affect the ability of people in the project areas to pay for the service.

3. Conditions precedent to any disbursement for the cooperative projects are as follows:

a. Assurance that the required rupiah financing will be available on a timely basis both for the DGC operating costs and the capitalized and operating costs of the cooperatives.

b. A signed subloan agreement approved by AID re-lending the AID loan funds to the BRI on the same terms and conditions as the AID loan.

c. Signed loan agreements approved by AID relending the AID loan funds and the capitalized and operating rupiah funds by the BRI to the cooperatives on the same terms and conditions as the AID loan.

d. Official chartering (licensing or franchising) by the DGC of three rural electric cooperatives with authority to operate as separate public utilities with legal powers to generate, buy and sell eclectricity, to borrow and lend money, to buy materials and construct facilities necessary to provide electric service, to insure themselves against liability, to elect a board of directors with powers to hire and fire personnel and any other authorities necessary to own and operate an electric utility.

e. Official formation of a Supervisory Group to monitor the Rural Electric Cooperatives through the life of the Project.

f. Official formation of a Project Development Office (PDO) to supervise the implementation of the Project.

g. An implementation plan approved by AID which will include: (1) a time-phased schedule of events; (2) and organization plan for the design, construction and operation of the Project; (3) a training plan; (4) an evaluation plan; and (5) a plan for encouragement of the use of electricity in the Project service areas.

Special Covenants

1. Standard

a. The Borrower shall cause the Beneficiaries as well as other responsible GOI agencies (i.e., DGC) to cause the

Project to be carried out in conformity with all of the plans, specifications, contracts, schedules and other arrangements and with all modifications therein, approved by AID pursuant to this loan agreement.

b. Project service areas for both the PLN and cooperative projects shall be selected by a procedure acceptable to AID and shall be verified as being financially viable, and economical, socially and environmentally feasible by feasibility studies approved by AID.

c. Recommendations and findings of an environmental assessment to be performed by AID in cooperation with PLN and DGC will be incorporated into the Project design where feasible except as AID otherwise agrees.

2. PLN Projects

a. PLN shall not charge customers of the rural electric systems financed under this Project at a rate higher than the regular PLN tariff except as agreed to in writing by AID.

b. PLN shall keep separate cost accounting records for each of the service areas included in this Project so that the effects of the concessional financing can be evaluated. In the accounting, the cost of capital shall be computed on the basis of the AID loan terms, the price charged for electricity to the Project service areas shall be on the basis of PLN costs and the price received for electricity shall be on the basis of actual charge to customers.

c. PLN shall take steps to increase the numbers of customers in the Project service areas by reducing any connection charges to the lowest possible amount and by establishing a funded plan acceptable to AID to finance under a long-term payment plan any such connection charge and the housewiring costs.

d. PLN shall take such measures as are necessary to reduce construction costs per customer to the practical minimum, such as designing the systems to provide service to a large percentage of the population of the service areas, lowering the cost of components by bulk procurement, obtaining bids locally as well as AID Code 941 sources, etc.

e. PLN shall take measures necessary to encourage the use of electricity in the Project service areas such as promoting industrial and agricultural use of electricity in the electrified areas, etc.

3. Cooperative Projects

a. The DGC shall take steps to assure that the PDO and the cooperative staffs are provided with qualified personnel who are properly trained to enable satisfactory implementation of the Project.

b. The BRI shall relend the AID loan funds and the rupiah deposit funds to the cooperatives on the same terms and conditions as the AID loan. The BRI banking services shall be provided on a timely basis so as not to delay the Project by payments delays.

c. The GOI shall take appropriate action on a timely basis to assure the availability at reasonable cost of all land and rights in land necessary for the construction and operation of the Project.

PART VI - EVALUATION PLAN

Evaluation of the Rural Electrification Project will (1) measure impact in social-economic terms on the population in the area (both direct users and non-users) and (2) assess project performance in terms of installation of electric service and development and maintenance of institutional capacity to maintain and expand electric service coverage. The social economic variables to be measured include: (a) the use and impact of electricity in agriculture, health, education, small business, entertainment and communication facilities, (b) development of new local industry or expansion of existing local industries and employment generated thereby, and (c) use and impact of electricity in individual homes (effect on reading habits, income generation, entertainment at home, health practices, water pumps, etc.).

Evaluation of project implementation and institutionalization activities will consider materials pipelines, poles erected, line strung, houses connected and wired, training, generators performing, cooperatives developed and capacity thereof, amounts and cost of electricity used, planning management and evaluation capacity and financing methods of all institutions involved in developing the rural electrification systems in project areas.

Several different approaches will be used in evaluating this Project. Firstly there is a wealth of basic information on household and village conditions that is collected on a regular basis by local leaders for the Ministry of Internal Affairs that is relevant to social-economic impact analysis. Over the next several months the reliability of this data and the methods for collecting it will be tested. If found to be valid, institutionally based, regular access to this information in each village will be established in cooperation with PLN, DGC and the Provincial and local officials concerned. In addition to periodic analysis and evaluation of this data by USAID and GOI Project personnel, short-term consultancies will be used to conduct random field surveys every two years in cooperation with Indonesian research institutions. The Social/Economic Analysis for this PP was carried out in part based upon a survey conducted by the Social/Economic Faculty of the Bogor Agricultural University (IPB). The Indonesian Central Bureau of Statistics (PBS) and the National Institute of Economics and Social Research (LEKNAS) are two other Indonesian research institutions that could be helpful for carrying out field research including case studies on project impact, including identifying beneficiaries of rural electrification and the nature and scope of that impact.

Finally, project officers will utilize on a yearly basis in cooperation with GOI personnel the new project evaluation summary and the regular Mission evaluation review with the USAID Director. The regular Mission evaluation process will draw heavily on (1) administrative records to be kept by the PLN and DGC in cooperation with NRECA and USAID, and (2) regular field visits by USAID staff and project officers.

Administrative Responsibilities

Responsibility for evaluation of the rural electrification program rests with the PLN and DGC. USAID will provide special consultants as required for special studies and the establishment of an institutional capacity for regular collection of data relevant to evaluation of all aspects of the impact of rural electrification. Upon meeting CP's consulting services will be provided to establish an evaluation process and strengthen existing evaluation units within PLN and the DGC that will include capacity for regular gathering of already existing data and managing or coordinating special evaluation studies carried out by other institutions (IPB, PBS or LEKNAS) or individuals. This process will create some capacity for designing evaluation or at least to evaluate the relevance and feasibility of designs prepared by other institutions/ individuals since most of the field evaluations and analysis will be carried out through contracts. The initial study will be for the purpose of gathering and analyzing base line data. In addition, at least two major field research evaluations will be conducted during this five-year project.

INDONESIA
RURAL ELECTRIFICATION I

ANNEXES
TO
PROJECT PAPER

ANNEXES

A. Logical Framework
*B. Statutory Checklist
C. 611(e) Determination
D. Request for Assistance
E. Draft Authorization
F. Draft Agreement
*G. Technical Annexes
   1. Housewiring Program
   2. Scope of Work for Organizational, Management and Technical (OMT) Team
   3. Scope of Work for the Architect and Engineering (A&E) Team
   4. Site Selection in Central Java
   5. Site Selection in the Outer Islands
   6. Site Descriptions
*H. Administrative Annexes
   1. Letter dated 25 April 1977 from DG Coops Requesting PLN Approval of Cooperative Sites (with Translation)
   2. Letter dated 17 May 1977 from PLN Approving Coop Sites (with Translation)
   3. Letter from USAID to PLN dated July 8, 1977
   4. Letter Exchange, USAID to DGC dated July 29, 1977 and August 9, 1977
   5. Sample Cooperative Charter
   6. Flow of Funds Charts
   7. Administration of PLN Rural Electric Project
   8. Administration of Cooperative Project
   9. Justification for Direct Contracting for A&E and OMT Firms
   10. Justification for Non-Competitive Procurement of NRECA for OMT Team
*I. Financial Annexes
   1. Financial Balance Sheets for PLN
   2. Capital Requirements for PLN
   3. PLN Rate Structure
   4. Description of BRI (Bank Rakyat Indonesia)
*J. Maps
*K. Economic Analysis
*L. Social Soundness Analysis
*M. Cost Analyses
   1. A&E Team Costs
   2. OMT Team Costs

*N. Feasibility Studies
   1. Project Assumption Sheets
   2. Statement of Operation
O. PRP Review Cable, STATE 097682
*P. Initial Environmental Examination

REFERENCES

A. Prefeasibility Study by NRECA, May 1976
B. Project Feasibility Studies, August 1977
C. Village Baseline Data

*These annexes have been printed in a separate volume. They may be found in the official project file maintained at ASIA/PD.

ANNEX A

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

Project Title & Number: Indonesia - Rural Electrification

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: Improved standard of living and increased productivity of rural population in ten selected areas of Indonesia.	Measures of Goal Achievement: Some of the following are expected to be present as OVI: 1. Electric lights replacing kerosene in home and for street lights. 2. Markets, stores, homes, restaurants utilizing refrigeration and other appliances. 3. Small irrigation (electric pumps) projects increasing yields and allowing for multiple cropping. 4. Increased production from small industries and increased numbers of new rural industries. 5. New employment opportunities especially for women. 6. A slow down in rural migration to cities. 7. Correlation of home lighting and decrease in population growth rate. 8. Limited school and other public facilities utilized at night.	1. Cooperative, PLN and Government records, Min. of Agriculture records. Observation, research and special evaluations.	Assumptions for achieving goal targets: 1. Rural electrification is part of an integrated rural development program defined and adopted by the GOI which includes agriculture research, extension, family planning, credit, marketing and rural roads. 2. Government policies encourage new enterprises. 3. Moderate inflation rate. 4. Government price, tax and import policies support rural development. 5. Farmers respond to economic incentives.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Indonesia - Rural Electrification

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: The purpose of this project is to demonstrate that reliable electric power can be provided to the rural areas of Indonesia at a price which the majority of the people can afford through systems which are technically sound and financially viable and that the introduction of electricity to the selected areas will bring about a significant increase in production and improve the quality of life of the rural poor. A subsidiary purpose is to train a sufficient cadre of Indonesian experts in all phases of rural electrification so as to manage and expand their rural electric systems.	**End of Project status:** 1. At least 50% of a combined population of 1.3 million people living in over 400 villages in seven areas of Central Java will be served 24 hrs/day from the PLN grid. 2. At least 50% of a combined population of 650 thousand people living in almost 200 villages in three outer island locations will be served 24 hrs/day by member owned and managed electric coops. 3. Nearly all the people living in all ten areas will benefit through such items as are listed as OVI for Goal achievement above. 4. A three phase backbone system expandable to serve additional residents in the area. 5. An active power usage program at each of the ten areas. 6. The existance at each site of a three to four hectare headquarters site complete with office space, warehouse, storage yard, maintenance facilities and as necessary staff housing. Coops will have generators. 7. Each system will have a fully trained and functioning management and operating staff to operate, maintain and expand their service. 8. Both PLN and the DGC will be fully capable of organizing financing, designing, procuring materials for, supervising construction and initial operation of rural electric systems.	1. GOI raports. 2. Field visitation and system inspection.	**Assumptions for achieving purpose:** 1. The central government will continue its commitment to the project and provide the necessary local support including funds, charters for the coops and other policy guidance. 2. That PLN will be able to reduce its construction costs and connection charges so that at least 50% of the people living in the target areas will be able to afford the service. 3. That financial arrangements will be made to pass on the AID loan terms to the local systems so as to make them financially viable. 4. That sufficient manpower will be made available capable of being trained for the jobs requiring technical skills.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

Project Title & Number: Indonesia - Rural Electrification

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs: 1. Detailed designs and material specifications. 2. Headquarter sites including office space, warehouse, storage yard maintenance, staff housing and for the outer island coops, generation plants. 3. Operating electric distribution system. 4. Internal housewiring including light fixtures, switches and convenience outlets. 5. Billing and collection system. 6. Training seminars and courses. 7. Train personnel. 8. Evaluation feedback.	**Magnitude of Outputs:** 1. Designs and specification for 10 systems, 7 in Central Java and 3 on the outer islands. 2. 10 headquarter sites of which 3 will have generation plants. 3. The ten systems will require an estimated 4,000 Km of primary and secondary lines, 2,400 Km of secondary underbuild 60,000 poles, 2,500 transformers and 208,000 KWH meters. 4. By PACD it is estimated that 195,000 consumers will have been provided with housewiring. A minimum package will consist of three light fixtures, three switches and one convenience outlet. 5. Approximately 35 courses and seminars. 6. Over 500 people trained including at least 100 at each coop, 20 at each PLN area and 60 project management staff from PLN, DGC, BAPPENAS and BRI. 7. One billing and collection system for the PLN utilities and a comparable system for each coop. 8. One baseline survey plus 4 annual surveys.	1. Reports completed. 2. NRECA, USAID, GOI records.	**Assumptions for achieving output:** 1. The NRECA team with the help of PLN and the DGC staff will complete the feasibility studies for all systems. 2. The GOI will meet the CP's. 3. Contracts will be signed with the NRECA/NEA team and the Consultant. 4. Participant trainees will be made available. 5. Counterpart funds will be made available on a timely basis. 6. The materials will arrive on time, in good order and be properly distributed. 7. PLN and local contractors can construct the systems.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Indonesia - Rural Electrification

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Inputs:			
GOI			
(a) Manpower capable of training for management, construction, operation and maintenance.	(a) Staffed organization properly trained.	Review, inspections, observations.	GOI makes available manpower and finance.
(b) US$22.7 million in local currency to be provided over 4 years from annual budgets.	(b) GOI Budget.		
	(c) Distribution systems in place and operating.	Inspections.	Provincial and Local Government and the rural people continue support of the program.
Provincial and Local:			
(a) Rights of Way.			
(b) Manpower.			
USAID			
(a) Development Loan of US$42 million to cover FY cost of training, construction and materials and part of local cost of construction.	(a) Loan Authorization.	USAID Documentation and Authorizations.	USAID approves Rural Electrification in Indonesia as a DL and Grant Project and authorizes required funds.
	(b) Grant Authorization.		
(b) Grant funding of US$6 million for NRECA technical advisory team and the engineering design and construction supervision.			

ANNEX B

STATUTORY CHECKLIST

The Statutory Checklist has been completed and is on file in ASIA/PD. No negative determinations were recorded.

ANNEX C

Rural Electrification Project

Certification Pursuant to Section 611 (e) of the
Foreign Assistance Act of 1961, as amended

I, S.J. Littlefield, the acting principal officer of the Agency for International Development in Indonesia, am acquainted with and have taken into account, among other things the performance, the development attitude and budgetary planning of the Government of Indonesia and its implementing agencies in connection with prior projects financed by AID in the electric Power Generation and Distribution Sector. Based on these factors and observations, I consider that the Government of Indonesia has the capability to adequately use the AID assistance to be provided for the development of this Project.

Accordingly, I do hereby, certify that in my judgement the Government of Indonesia, Perusahaan Umum Listrik Negara, the Directorate General of Cooperatives and the Bank Rakyat Indonesia have the financial and human resource capability to effectively utilize and maintain the Rural Electrification Project.

S.J. Littlefield
Acting Director

Date: Aug. 8, 1977

Clearances:
MGT:RLBerrett
PRO:LMarshall
PTE:DCWoody

ANNEX D

REPUBLIC OF INDONESIA
NATIONAL DEVELOPMENT PLANNING AGENCY
JAKARTA, INDONESIA

No.: 1793/D.I/8/77.

August 12, 1977.

Miss Sarah J. Littlefield
Acting Director,
US-AID Mission to Indonesia
c/o American Embassy
Jakarta.

Dear Miss Littlefield,

Subject: Rural Electrification Project

The Government of Indonesia requests from the US-AID a loan of up to forty two million US dollars ($42,000,000) and a grant of up to six million US dollars ($6,000,000) to finance the foreign exchange and part of the local currency costs for the first phase of the Rural Electrification Project.

The Government desires to expand electric service to the rural areas and with this service bring the benefits of electrification to its rural poor through low cost systems in the efforts to raise the standards of living, increase production and reduce unemployment.

The plan which has evolved includes two institutional models. Part of the proposed project will help the Directorate General of Cooperative to design, build and staff an initial three rural electric cooperatives on the outer island of Sumatra, Sulawesi and Lombok where they would serve transmigration settlements and surrounding areas, and training program for all phases and skills needed. The project will also help the national electric power company (PLN) with design and implementation of seven rural electrification systems on the island of Java. Training program and technical assistance for the PLN rural electrification systems will be tailored to the PLN's existing staff and skills.

It is envisioned that the distribution systems and policies of the two approaches will be roughly similar, i.e., both will consist of local distribution utility systems designed to provide household lighting to a majority of the inhabitants and the commercial and industrial power needs of the service areas.

Thank you for your kind cooperation.

Sincerely yours,

BADAN PERENCANAAN PEMBANGUNAN NASIONAL

Saleh Afiff
Deputy Chairman

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

PART II

INDONESIA

Rural Electrification
A.I.D. Loan No.
A.I.D. Grant No.

Pursuant to Part I, Chapter 1, Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Loan and a Grant to Indonesia (the "Cooperating Country") of not to exceed Thirty-three Million United States Dollars ($33,000,000) the ("Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project consists of assistance to the Cooperating Country in providing the social and economic benefits of electric service to selected rural areas on Java and several Outer Island locations, inhabited by a poor and small-scale farmer population, through the establishment of a rural electrification system having trained personnel, and necessary generating and distribution facilities. (hereinafter referred to as the "Project").

Of the Authorized Amount, Thirty Million Dollars ("Loan") will be loaned to the Cooperating Country to assist in financing certain foreign exchange and local currency costs of goods and services required for the Project; such local currency costs, except as A.I.D.

may otherwise agree in writing, will not exceed the equivalent of Ten Million United States Dollars.

I approve the total level of A.I.D. appropriated funding planned for this Project of not to exceed Thirty-six Million United States Dollars ($36,000,000), of which $30,000,000 will be Loan funded and $6,000,000 Grant funded, including the funding authorized above, during the period FY 1977 through FY 1980. I approve further increments during that period of Grant funding up to the total of $6,000,000, subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiation and execution of the Project Agreement or Agreements by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Interest Rate and Terms of Repayment of Loan

The Cooperating Country shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in United States Dollars interest from the date of first disbursement of the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter,

on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services

Except for Ocean Shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States(in the case of the Grant) or in the Cooperating Country or in countries included in A.I.D. Geographic Code 941 (in the case of the Loan) except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Loan or the Grant shall be procured in any eligible source country under the Loan or the Grant, respectively, except the Cooperating Country.

c. Conditions Precedent for Grant

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, for grant funds, the Cooperating Country shall furnish, in form and substance satisfactory to A.I.D.:

1. Evidence that there has been established, through the Director General of Cooperatives, up to three Rural Electrification Cooperatives with necessary and appropriate powers such as the authority to generate, buy and sell electric power; to borrow and lend money; to insure against liability; to employ and discharge personnel and engage in other activities consistent with conducting a cooperatively operated electric utility.

2. Evidence that an appropriate monitoring mechanism, such as an official Supervisory Group, has been established to monitor the Rural Electric Cooperatives.

3. Evidence that an appropriate _____ mechanism, such as an Official Project Development Office, has been established to supervise project implementation.

d. Covenants for Grant

The Cooperating Country shall covenant that appropriate action will be taken on a timely basis to assure the availability of local currency funds and facilities supplied in kind as support to the organizations or personnel providing Architectural and Engineering services and Organizational, Management and Technical advisory services.

e. Conditions Precedent for Loan

1. Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement for Loan funds, the Cooperating Country shall furnish, in form and substance satisfactory to A.I.D.:

AA Assurances that required rupiah financing will be available on a timely basis.

B. Evidence that arrangements have been consumated to finance necessary generating capacity for Outer Islands locations.

2. Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement for Loan funds to finance Project activities implemented by the Perusahan Umum Listrik Negara (PLN), the Cooperating Country shall furnish in form and substance satisfactory to A.I.D.:

A. An A.I.D.-approved, signed and valid sub-loan agreement from the Cooperating Country to PLN to relend a portion of the A.I.D. Loan; or, in the alternative, such an agreement to transmit

the same as an equity contribution to PLN.

B. An A.I.D.-approved implementation plan which will include:

i. A time-phased schedule of proposed Project actions,

ii. An organizational plan for Project design, construction and operation,

iii. A personnel training plan, and

iv. A planned program to encourage the use of electricity in the PLN Project service area.

C. A letter of agreement between PLN and USAID describing in principle how costs to customers will be assessed in a manner designed to enable the largest number of people in the project area to pay for the service.

3. Prior to any disbursements, or the issuance of any commitment under the Project Agreement for Loan funds to finance Project activities implemented by the Directorate General of Cooperatives (DGC), the Cooperating Country shall furnish in form and substance satisfactory to A.I.D.:

A. An A.I.D.-approved, signed and valid sub-loan agreement relending (reloan) from the Cooperating Country a portion of the A.I.D. loan to Bank Rakyat Indonesia (BRI) on the same terms and interest rates as the A.I.D. loan.

B. An A.I.D.-approved, signed and valid sub-loan agreement on-lending from BRI to eligible cooperatives a portion of the reloan on the same terms and interest rates as the A.I.D. loan and reloan; provided, that BRI may add a reasonable service charge.

C. An A.I.D. approved implementation plan including:

i. A time-phased schedule of proposed Project actions,

ii. An organizational plan for Project design, construction and operation,

iii. A personnel training plan, and

iv. A planned program to encourage the use of electricity in the DGC Project service area.

f. Covenants for Loan

The Project Agreement covering Loan funds shall contain appropriate covenants of the Cooperating Country to assure that, except as A.I.D. may otherwise agree:

A. Project service areas for both the PLN and DGC projects shall be selected by a procedure acceptable to A.I.D. and shall be verified as being financially viable, and economical, socially and environmentally feasible pursuant to studies approved by A.I.D.

B. The Cooperating Country shall take appropriate action on a timely basis to assure the availability, at reasonable cost, of all land and rights in land necessary for construction and operation of the Project.

C. Recommendations of an environmental assessment to be performed by A.I.D. in cooperation with PLN and DGC will be incorporated into the Project design where feasible.

D. i. PLN charges to the rural electric customers served under the Project shall not be at a rate higher than regular PLN tariff charges.

ii. PLN shall maintain separate cost accounting records for each of the PLN service areas included in this Project.

iii. PLN shall encourage use of electricity by rural residents in the Project service areas by such means as reducing connection charges and by funding a plan to finance payment for both connection charges and house wiring costs.

iv. PLN shall reduce construction costs per customer to a minimum.

E. i. The DGC shall assure that the body supervising Project implementation (such as the Project Development Office) and the cooperatives are provided with qualified personnel who are properly trained to implement the Project.

ii. The BRI shall provide its banking service on a timely basis as not to delay the implementation of the Project.

Clearances:

Signature_____

_____

Date

ANNEX F-2

A.I.D. Project No. _____

Project Grant Agreement

Dated , 19___

Between Government of Indonesia

And

The United States of America, acting through the Agency for International Development ("A.I.D.")

Article 1: The Agreement

The purpose of this Agreement is to set out the understandings of the parties named above ("Parties") with respect to the undertaking by the Grantee of the Project described below, and with respect to the financing of the Project by the Parties.

Article 2: The Project

SECTION 2.1. Definition of Project. The Project, which is further described in Annex 1, will consist of:

(a) an architectural and engineering consulting team that will assist the GOI in designing a rural electrification system for Central Java and several outer island locations; determine specifications for and procure necessary equipment and materials; and supervise construction and installation.

(b) A rural electrification advisory team from the National Rural Electrification Cooperative Association (U.S.) to assist the GOI in Rural Electrification Cooperative organization planning, personnel training and establishment of local cooperatives in the Rural Electric System Service Areas.

Annex 1, attached, amplifies the above definition of the Project. Within the limits of the above definition of the Project, elements of the amplified description stated in Annex 1 may be changed by written agreement of the auhtorized representatives of the Parties named in Section 8.3, without formal amendment of this Agreement.

SECTION 2.2. Incremental Nature of Project

(a) A.I.D.'s contribution to the Project will be provided in increments, the initial one being made available in accordance with Section 3.1 of this Agreement. Subsequent increments will be subject to availability of funds to A.I.D. for this purpose, and to the mutual agreement of the Parties, at the time of a subsequent increment, to proceed.

(b) Within the overall Project Assistance Completion Date stated in this Agreement, A.I.D., based upon consultation with the Grantee, may specify in Project Implementation Letters appropriate time periods for the utilization of funds granted by A.I.D. under an individual increment of assistance.

Article 3: Financing

SECTION 3.1. The Grant. To assist the Grantee to meet the costs of carrying out the Project, A.I.D., pursuant to the Foreign Assistance Act of 1961, as amended, agrees to grant the Grantee under the terms of this Agreement not to exceed six million United States ("U.S.") Dollars ($6,000,000) ("Grant").

The Grant may be used to finance foreign exchange costs, as defined in Section 6.1, and local currency costs, as defined in Section 6.2, of goods and services required for the Project, except that, unless the parties otherwise agree in writing, Local Currency Costs financed under the Grant will not exceed the equivalent of _____ U.S. Dollars ($ _____).

SECTION 3.2. Grantee Resources for the Project

(a) The Grantee agrees to provide or cause to be provided for the Project all funds, in addition to the Grant, and all other resources required to carry out the Project effectively and in a timely manner.

(b) The resources provided by Grantee for the Project will be not less than the equivalent of U.S.$ _____, including costs borne on a "inkind" basis.

SECTION 3.3. Project Assistance Completion Date

(a) The "Project Assistance Completion Date" (PACD), which is September 30, 1982 or such other date as the Parties may agree to in writing, is the date by which the Parties estimate that all services

financed under the Grant will have been performed and all goods financed under the Grant will have been furnished for the Project as contemplated in this Agreement.

(b) Except as A.I.D. may otherwise agree in writing, A.I.D. will not issue or approve documentation which would authorize disbursement of the Grant for services performed subsequent to the PACD or for goods furnished for the project, as contemplated in this Agreement, subsequent to the PACD.

(c) Requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters are to be received by A.I.D. or any bank described in Section 7.1 no later than nine (9) months following the PACD, or such other period as A.I.D. agrees to in writing. After such period, A.I.D., giving notice in writing to the Grantee, may at any time or times reduce the amount of the Grant by all or any part thereof for which requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters, were not received before the expiration of said period.

Article 4: Conditions Precedent to Disbursement

SECTION 4.1. First Disbursement. Prior to the first disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) A statement of the name of the person holding or acting in the office of the Grantee specified in Section 8.3, and of any additional representatives; together with a specimen signature of each person specified in such statement.

(b) Evidence that there has been established, through the Director General of Cooperatives, three Rural Electrification Cooperatives with appropriate authority to generate, buy and sell electric power; to borrow and lend money; to contract for commodities and construct electric service facilities; to insure against liability; to employ and discharge personnel and engage in such other activities as is consistent with conducting a cooperative operated electtic utility.

(c) Evidence that an official Supervisory Group to monitor the Rural Electric Cooperatives has been established.

(d) Evidence that an Official Project Development Office to supervise project implementation has been established.

SECTION 4.2. Notification. When A.I.D. has determined that the conditions precedent specified in Section 4.1 have been met, it will promptly notify the Grantee.

SECTION 4.3. Terminal Dates for Conditions Precedent.

(a) If all of the conditions specified in Section 4.1 have not been met within 90 days from the date of this Agreement, or such later date as A.I.D. may agree to in writing, A.I.D., at its option, may terminate this Agreement by written notice to Grantee.

Article 5: Special Covenants

SECTION 5.1. Project Evaluation. The Parties agree to establish an evaluation program as part of the Project. Except as the Parties otherwise agree in writing, the program will include, during the implementation of the Project at one or more points thereafter:

(a) evaluatio of progress toward attainment of the objectives of the Project;

(b) identification and evaluation of problem areas of constraints which may inhibit such attainment;

(c) assessment of how such information may be used to help overcome such problems; and

(d) evaluation, to the degree feasible, of the overall development impact of the Project.

Article 6: Procurement Source

SECTION 6.1. Foreign Exchange Costs. Disbursements pursuant to Section 7.1 will be used exclusively to finance the costs of goods and services required for the Project having their source and origin in countries included in Code 941 of the AID Geographic Code Book as in effect at the time orders are placed or contracts entered into for such goods or services ("Foreign Exchange Costs"), except as A.I.D. may otherwise agree in writing, and except as provided in the Project Grant Standard Provisions Annex, Section C.1(b) with respect to marine insurance.

SECTION 6.2. Local Currency Costs. Disbursements pursuant to Section 7.2 will be used exclusively to finance the costs of goods and services required for the Project having their source and except as A.I.D. may otherwise agree in writing, th[illegible] origin in Indonesia.

Article 7: Disbursement

SECTION 7.1. Disbursement for Foreign Exchange Costs

(a) After satisfaction of conditions precedent, the Grantee may obtain disbursements of funds under the Grant for the Foreign Exchange Costs of goods or services required for the Project in accordance with the terms of this Agreement, by such of the following methods as may be mutually agreed upon:

(1) by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, (A) requests for reimbursement for such goods or services, or, (B) requests for A.I.D. to procure commodities or services in Grantee's behalf for the Project; or,

(2) by requesting A.I.D. to issue Letters of Commitment for specified amounts (A) to one or more U.S. banks, satisfactory to A.I.D., committing A.I.D. to reimburse such bank or banks for payments made by them to contractors or suppliers, under Letters of Credit or otherwise, for such goods or services, or (B) directly to one or more contractors or suppliers, committing A.I.D. to pay such contractors or suppliers for such goods or services.

(b) Banking charges incurred by Grantee in connection with Letters of Commitment and Letters of Credit will be financed under the Grant unless Grantee instructs A.I.D. to the contrary. Such other charges as the Parties may agree to may also be financed under the Grant.

SECTION 7.2. Disbursement for Local Currency Costs

(a) After satisfaction of conditions precedent, the Grantee may obtain disbursements of funds under the Grant for Local Currency Costs required for the Project in accordance with the terms of this Agreement, by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, requests to finance such costs.

(b) The local currency needed for such disbursements may be obtained:

(1) by acquisition by A.I.D. with U.S. Dollars by purchase; or

(2) from local currency already owned by the U.S. Government; or

(3) by A.I.D. requesting the Grantee to make available the local currency for such costs, and thereafter reimbursing an amount of U.S. Dollars equal to the amount of local currency made available by the Grantee.

The U.S. dollar equivalen of the local currency made available hereunder will be, in the case of subsection (b)(1) above, the amount of U.S. dollars required by A.I.D. to obtain the local currency.

SECTION 7.3. Other Forms of Disbursement. Disbursements of the Grant may also be made through such other means as the Parties may agree to in writing.

SECTION 7.4. Rate of Exchange. Except as may be more specifically provided under Section 7.2, if funds provided under the Grant are introduced into Indonesia by A.I.D. or any public or private agency for purposes of carrying out obligations of A.I.D. hereunder, the Grantee will make such arrangements as may be necessary so that such funds may be converted into currency of Indonesia at the highest rate of exchange which, at the time the conversion is made, that is not unlawful in Indonesia.

Article 8: Miscellaneous

SECTION 8.1. Communications. Any notice, request, document, or other communication submitted by either Party to the other under this Agreement will be in writing or by telegram or cable, and will be deemed duly given or sent when delivered to such party at the following addresses:

To the Grantee:

Mail Address: Departemen Luar Negeri
Taman Pejambon No. 6
Jakarta Pusat, Indonesia

Alternate address for cables:

To A.I.D.:

Mail Address: United States Agency for International Development
American Embassy
Jakarta, Indonesia

Alternate address for cables:

USAID AMEMB JAKARTA

All such communications will be in English, unless the Parties otherwise agree in writing. Other addresses may be substituted for the above upon the giving of notice.

SECTION 8.3. Representatives. For all purposes relevant to this Agreement, the Grantee will be represented by the individual holding or acting in the office of Chairman or Vice-Chairman, National Development Planning Agency ("BAPPENAS") and A.I.D. will be represented by the individual holding or acting in the office of Mission Director USAID Mission to Indonesia, each of whom, by written notice, may designate additional representatives for all purposes other than exercising the power under Section 2.1 to revise elements of the amplified description in Annex 1. The names of the representatives of the Grantee, with specimen signatures, will be provided to A.I.D., which may accept as duly authorized any instruments signed by such representatives in implementation of this Agreement, until receipt of written notice of revocation of their authority.

SECTION 8.4. Standard Provisions Annex. A "Project Grant Standard Provisions Annex" (Annex 2) is attached to and forms part of this Agreement.

IN WITNESS WHEREOF, the Grantee and the United States of America, each acting through its duly authorized representative, have caused this Agreement to be signed in their names and delivered as of the day and year first above written.

INDONESIA

By: _____

Title: _____

UNITED STATES OF AMERICA

By: _____

Title: _____

PAGE 01 OF 02 STATE 097682 4663 STATE 097682
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APPROVED BY A/AA/ASIA:MHBADLER
A/DAA/ASIA:DCOHEN
ASIA/DP:WLEFES (DRAFT)
ASIAPD:ARLOVE
ASIA/TR:GROHLFS (DRAFT)
C/ASIA:CSTEPHENSON (DRAFT)
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TAGS:

SUBJECT: RURAL ELECTRIFICATION PRP

REF: JAKARTA 5052

1. APAC APPROVES SUBJECT PRP ON CONDITION THAT USAID CAN DEMONSTRATE TO AID/W SATISFACTION THAT FOLLOWING ISSUES CAN BE EFFECTIVELY ADDRESSED DURING FURTHER PROJECT DEVELOPMENT. CABLED DISCUSSION OF ABOVE, AS SUPPLEMENT TO PRP, WILL BE ACCEPTABLE.
A. EQUITY/INCOME CONSIDERATIONS - RURAL ELECTRIFICATION PROGRAM APPROPRIATE FOR AID-FINANCING ONLY TO EXTENT IT WILL BE ACCESSIBLE TO AND OFFERS HIGH-PROBABILITY OF GAINS IN PRODUCTIVE EMPLOYMENT/INCOME/QUALITY OF LIFE TO LOW-INCOME RURAL FAMILIES. IT IS NOT CLEAR FROM PRP THAT SUBJECT PROJECT CAN ACHIEVE SUFFICIENT SOCIETAL PENETRATION IN SERVICE AREAS TO BENEFIT LOW-INCOME RURAL FAMILIES. WE NEED BETTER UNDERSTANDING OF MANNER IN WHICH CONNECTION/METERING/HOUSE WIRING CHARGES ARE TO BE PAID BY CONSUMER, E.G. (THROUGH INITIAL OR DEFERRED PAYMENTS, TARIFF STRUCTURE, GOVERNMENT SUBSIDY, OR COMBINATION THEREOF (SEE PARA 10 BELOW), CAN CAPITAL AND OPERATING COSTS BE REDUCED TO LEVEL WHERE ELECTRIC SERVICE IS AFFORDABLE BY LOW-INCOME FAMILIES? IS THE PLN WILLING/ABLE TO ALTER ITS POLICY ON USER

CONNECTION CHARGES AND RATES TO BRING PROJECT BENEFITS WITHIN REACH OF LOW-INCOME FAMILIES?
B. SITE SELECTION CRITERIA - REQUEST USAID DESCRIBE METHODOLOGY AND CRITERIA FOR SELECTING PROSPECTIVE SERVICE AREAS. AT A MINIMUM, SUCH CRITERIA SHOULD PROVIDE ASSURANCE THAT (A) LOW-INCOME BENEFICIARIES WILL BE SERVED AND (B) AREAS HAVE PRE-CONDITIONS FOR COST-EFFECTIVE INVESTMENT IN RURAL ELECTRIFICATION, E.G. SUFFICIENT POPULATION DENSITY, POTENTIAL FOR SIGNIFICANT INCREASES IN AGRICULTURAL PRODUCTION, SUPPORTING INFRASTRUCTURE ALREADY EXISTING OR SOON TO BE AVAILABLE, STRUCTURE OF LOCAL ECONOMY FAVORING MULTIPLE PRODUCTIVE USES OF POWER, ETC.

2. IN ADDITION TO ISSUES IN PARA 1 ABOVE, APAC IDENTIFIED FOLLOWING ISSUES TO BE ADDRESSED IN PP:

3. MAGNITUDE OF LOAN - PRP DOES NOT PROVIDE TECHNICAL JUSTIFICATION FOR SCALE OF EFFORT AND AMOUNT OF FUNDING PROPOSED. PRP IS AMBIVALENT CONCERNING WHETHER PROJECT WILL HAVE DEMONSTRATION CHARACTER OR IS EXTENSIVE APPLICATION OF WELL-TESTED CONCEPT. GREATER COMPLEXITY OF OUTER ISLAND PROGRAM WOULD APPEAR TO ARGUE FOR SMALLER-SCALE, EXPERIMENTAL APPROACH FOR AT LEAST THAT ASPECT OF PROJECT. ADDITIONAL CONSIDERATION IS ABSORPTIVE CAPACITY OF IMPLEMENTING AGENCIES FOR LARGE-SCALE EFFORT PARTICULARLY DGC FOR WHICH RURAL ELECTRIFICATION IS TOTALLY NEW VENTURE REQUIRING MAJOR STAFF BUILD-UP. FINALLY, THERE IS SUGGESTION THAT FUNDING LEVEL IS PARTIALLY BASED ON DESIRE TO MAINTAIN PARITY BETWEEN DGC AND PLN. IS SUCH PARITY REASONABLE WHEN ONE AGENCY (PLN) HAS DECIDED INITIAL ADVANTAGE IN TECHNICAL EXPERTISE AND IMPLEMENTATION CAPABILITY? CONCERN HERE IS TO EMPHASIZE THAT PP MUST CLEARLY JUSTIFY PROPOSED LEVEL OF FUNDING, NOT IMPOSE ARBITRARY LIMIT ON FUNDING.

4. AVAILABILITY OF FUNDS - EVEN IF ISSUES DISCUSSED PARA 3 ABOVE ARE SATISFACTORILY ADDRESSED, UNCERTAIN AVAILABILITY OF FY 77 FUNDS MAY POSE LIMITING FACTOR. PROBLEM MAY BE RESOLVED IN SEVERAL WAYS, E.G., OTHER DONOR CONTRIBUTIONS, PROVIDING AID FUNDS OVER TWO FISCAL YEARS, ETC. RECOMMEND USAID STRUCTURE PROJECT DESIGN IN MANNER THAT WOULD PERMIT AUTHORIZATION OF SMALLER AMOUNT IN FY 77 FOR A SELF-SUSTAINING PROJECT; IF TOTAL FUNDING NOT AVAILABLE.
5. 611 (A) REQUIREMENTS - UNCLEAR FROM PRP WHETHER FEASIBILITY STUDIES AND PRELIMINARY DESIGNS WILL BE COMPLETED FOR ALL PROPOSED SERVICE SYSTEMS PRIOR TO SUBMISSION OF PP TO SATISFY 611 (A) REQUIREMENTS. BELIEVE THAT PP MUST, AT A MINIMUM, (A) ESTABLISH PRELIMINARY FEASIBILITY OF ALL

SERVICE AREAS, (B) PROVIDE FEASIBILITY ANALYSES, PRELIMINARY DESIGN, AND DETAILED COST ESTIMATES FOR REPRESENTATIVE NUMBER OF SYSTEMS (E.G. MORE THAN ONE) FOR EACH ADMINISTRATIVE MODEL, (C) PROVIDE COST ESTIMATES FOR REMAINING AREAS WITHIN REASONABLE LEVELS OF CONFIDENCE (BASED ON APPLICATION OF SAME METHODOLOGY AND PARTIAL RESULTS OF FEASIBILITY STUDY, WITH SIGNIFICANT DIFFERENCES FROM REPRESENTATIVE AREAS ACCOUNTED FOR IN ESTIMATES), AND SCHEDULE FOR EARLY COMPLETION OF DETAILED STUDY/PLANS FOLLOWING AUTHORIZATION.

6. TECHNICAL ASSISTANCE - ANOTHER FACTOR IN 611 (A) DETERMINATION IS EXTENT OF PLANNING FOR TECHNICAL ASSISTANCE. SUCCESS OF DGC, ESPECIALLY, WILL REQUIRE EFFECTIVE LEVEL OF CONSULTING SERVICES TO PROVIDE TECHNICAL ORGANIZATIONAL AND MANAGEMENT SKILLS THAT DGC CAN ONLY DEVELOP OVER TIME AS WELL AS ON-JOB-TRAINING TO ASSIST WITH STAFF DEVELOPMENT. PLN WILL ALSO HAVE CONSULTING NEEDS, THOUGH LESS EXTENSIVE. PP SHOULD PROVIDE THOROUGH ANALYSIS OF TECHNICAL ASSISTANCE/TRAINING REQUIREMENTS AND PROCUREMENT PLAN FOR TECHNICAL SERVICES.

7. PRODUCTIVE/ECONOMIC BENEFITS - PRP TENDS TO EMPHASIZE CONSUMPTION/QUALITY-OF-LIFE BENEFITS FROM RURAL ELECTRIFICATION. PP SHOULD PROVIDE BALANCED TREATMENT OF PRODUCTIVE USES OF ELECTRIC POWER TO OFFER SOURCES OF ADDITIONAL INCOME AND EMPLOYMENT FOR LOW-INCOME FAMILIES, BOTH ON AND OFF THE FARM. WE ARE LOOKING FOR MORE THAN ILLUSTRATIVE LISTING OF PRODUCTIVE APPLICATIONS THAT ARE MADE POSSIBLE BY RURAL ELECTRIFICATION. DISCUSSION SHOULD DESCRIBE PRODUCTIVE ACTIVITIES WITH HIGH PROBABILITY OF DEVELOPING IN SPECIFIC SERVICE AREAS, GIVEN THE EXISTENCE OF ESSENTIAL LEVELS OF CRITICAL PRECONDITIONS FOR SUCCESSFUL RURAL ELECTRIFICATION PROJECTS IN THOSE AREAS.

8. ROLE OF RURAL ELECTRIFICATION IN RURAL DEVELOPMENT STRATEGY - WE ARE ALSO CONCERNED THAT RURAL ELECTRIFICATION, BY ITSELF, MAY HAVE ONLY LIMITED EFFECT ON INCREASING INCOMES AND/OR PRODUCTIVITY OF TARGET GROUPS AND MAY NOT PROVIDE SUFFICIENT STIMULUS TO AGRICULTURAL DEVELOPMENT. FOR EACH SERVICE AREA, PP SHOULD ANALYZE EXTENT TO WHICH SUPPORTING SERVICES, E.G., AGRICULTURAL EXTENSION,

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SMALL INDUSTRY EXTENSION, AGRIBUSINESS PROMOTION, ETC. WILL BE EFFECTIVELY FOCUSSED ON AREA TO STIMULATE PRODUCTIVE USES OF ELECTRIC POWER ANDTO MAXIMUM EXTENT FEASIBLE, DEMONSTRATE THAT PLANNING FOR SUCH SERVICES IS PROCEEDING APACE WITH RURAL ELECTRIFICATION. BROADLY RURAL ELECTRIFICATION MUST BE VIEWED AS ONLY ONE OF NUMEROUS CRITICAL ELEMENTS IN RURAL DEVELOPMENT STRATEGY, WITH ATTENTION

GIVEN TO NECESSARY PRECONDITIONS AND COMPLEMENTARY SERVICES/ACTIVITIES TO ASSURE INCREASED INCOMES/WELFARE FOR TARGET BENEFICIARIES.

9. SOCIAL ANALYSIS/EVALUATION - PER REFTEL WE ARE SEARCHING FOR CONSULTANTS TO ASSIST IN PERFORMING SOCIAL SOUNDNESS ANALYSIS FOR SUBJECT PROJECT. RELATED ISSUE IS MEANS OF DESIGNING EFFECTIVE EVALUATION PROGRAM TO DETERMINE WHAT BENEFICIARY GROUPS ARE BEING REACHED AND IN WHAT WAYS THEY BENEFIT (PRP IS RELATIVELY SILENT ON EVALUATION). PP SHOULD PROVIDE THOROUGH EVALUATION PLAN, INCLUDING MEANS OF COLLECTING BASE-LINE DATA, ESTABLISHING CONTROL AREAS, AND DEVELOPING BORROWER SKILLS IN DATA COLLECTION AND ANALYSIS. WE WOULD EXPECT SOCIAL SOUNDNESS CONSULTANTS TO ASSIST IN EVALUATION PLANNING.

10. FINANCIAL VIABILITY - INITIALLY THE CONCESSIONAL TERMS OF THE AID LOAN WILL MAKE POSSIBLE SUBSIDIZED COSTS FOR LOW-INCOME BENEFICIARIES (THROUGH SOME COMBINATION OF OUTRIGHT GRANT, DIFFERENTIAL TARIFFS ADJUSTED FOR INCOME LEVEL, AND/OR LONG-TERM LOW-INTEREST CREDIT). OVER THE LONG RUN, HOWEVER, WITH WIDE-SCALE REPLICATION OF THE RURAL ELECTRIFICATION PROGRAM, HOW WILL THE PLN AND DGC, RESPECTIVELY, BE ABLE TO SUSTAIN SUCH SUBSIDIES WITHOUT UNDERMINING THEIR OWN FINANCIAL STABILITY? PLN WOULD APPEAR TO HAVE GREATER RANGE OF OPTIONS BECAUSE OF MAGNITUDE AND VARIETY OF ITS OVERALL POWER PROGRAM BUT THERE ARE STILL ONLY LIMITED NUMBER OF WAYS OF MAINTAINING SOLVENCY OF SERVICE AGENCY AND COVERING CAPITAL AND OPERATING COSTS WITHOUT PASSING FULL COSTS ON TO CONSUMER. WITH EXPANSION OF PROGRAM, HOW WOULD MAINTENANCE OF SUCH SUBSIDIES AFFECT PLN'S FINANCIAL STABILIZATION PROGRAM WORKED OUT IN AGREEMENT WITH IBRD?

11. INSTITUTIONAL ARRANGEMENTS - NATURE AND EXTENT OF GOI ENDORSEMENT OF AND COMMITMENT TO BIFURCATED APPROACH TO RURAL ELECTRIFICATION NEEDS TO BE CLARIFIED IN PP. ANALYSIS SHOULD BE ABLE TO DEMONSTRATE SUBSTANTIAL AGREEMENT AND COOPERATIVE RELATIONSHIP BETWEEN PLN, DGC, AND SECTIONS OF BAPPENAS CONCERNED WITH RURAL ELECTRIFICATION, INCLUDING ESPECIALLY THAT OUTER ISLAND AREAS RELINQUISHED BY PLN TO DGC HAVE BASIC VIABILITY FOR RURAL ELECTRIFICATION. PP SHOULD PROVIDE DETAILED ANALYSES OF ADMINISTRATIVE CAPABILITIES OF BOTH PLN AND DGC AS REINFORCED BY CONSULTING SERVICES PER PARA 6 ABOVE. FOR DGC PROGRAM, PP SHOULD ALSO DISCUSS STRATEGY FOR DEVELOPING EFFECTIVE COOP MANAGEMENT AND MEMBERSHIP PARTICIPATION.

12. LONG-RANGE AID PROGRAMING - TO WHAT EXTENT DOES USAID FORESEE SERIES OF FOLLOW-ON LOANS TO ASSIST IN FINANCING EXPANSION OF RURAL ELECTRIFICATION PROGRAM? WHAT ARE THE PROSPECTS OF FINANCING FROM IBRD, ADB, AND OTHER BILATERAL DONORS FOR LATER-STAGE RURAL ELECTRIFICATION?

13. EXPANSION OF RURAL ELECTRIFICATION PROGRAM, PARTICULARLY OUTER ISLAND PROGRAM ESTABLISHING NEW DIESEL-GENERATING FACILITIES, WILL CREATE ADDITIONAL DEMAND ON INDONESIAN OIL RESOURCES. TO WHAT EXTENT HAS THIS IMPLICATION OF RURAL ELECTRIFICATION BEEN ADDRESSED IN LONG-RANGE ENERGY PLANNING BY GOI (GIVEN POSSIBILITY THAT INDONESIA MAY BECOME NET OIL-IMPORTER IN NEXT TEN-TWENTY YEARS?

14. SEPTEL FOLLOWS REGARDING POSSIBILITY OF ADVANCE GRANT FUNDING FOR A AND E SERVICES.
CHRISTOPHER

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

PROJECT PAPER

Proposal and Recommendations

INDONESIA - RURAL ELECTRIFICATION I

(497-0267)

Volume II - Annexes

Date of PP
August 1977

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

Project Title & Number: Indonesia - Rural Electrification

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: The purpose of this project is to demonstrate that reliable electric power can be provided to the rural areas of Indonesia at a price which the majority of the people can afford through systems which are technically sound and financially viable and that the introduction of electricity to the selected areas will bring about a significant increase in production and improve the quality of life of the rural poor. A subsidiary purpose is to train a sufficient cadre of Indonesian experts in all phases of rural electrification so as to manage and expand their rural electric systems.	**End of Project status:** 1. At least 50% of a combined population of 1.3 million people living in over 400 villages in seven areas of Central Java will be served 24 hrs/day from the PLN grid. 2. At least 50% of a combined population of 650 thousand people living in almost 200 villages in three outer island locations will be served 24 hrs/day by member owned and managed electric coops. 3. Nearly all the people living in all ten areas will benefit through such items as are listed as OVI for Goal achievement above. 4. A three phase backbone system expandable to serve additional residents in the area. 5. An active power usage program at each of the ten areas. 6. The existance at each site of a three to four hectare headquarters site complete with office space, warehouse, storage yard, maintenance facilities and as necessary staff housing. Coops will have generators. 7. Each system will have a fully trained and functioning management and operating staff to operate, maintain and expand their service. 8. Both PLN and the DGC will be fully capable of organizing financing, designing, procuring materials for, supervising construction and initial operation of rural electric systems.	1. GOI reports. 2. Field visitation and system inspection.	**Assumptions for achieving purpose:** 1. The central government will continue its commitment to the project and provide the necessary local support including funds, charters for the coops and other policy guidance. 2. That PLN will be able to reduce its construction costs and connection charges so that at least 50% of the people living in the target areas will be able to afford the service. 3. That financial arrangements will be made to pass on the AID loan terms to the local systems so as to make them financially viable. 4. That sufficient manpower will be made available capable of being trained for the jobs requiring technical skills.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

Project Title & Number: Indonesia - Rural Electrification

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Outputs: 1. Detailed designs and material specifications. 2. Headquarter sites including office space, warehouse, storage yard maintenance, staff housing and for the outer island coops, generation plants. 3. Operating electric distribution system. 4. Internal housewiring including light fixtures, switches and convenience outlets. 5. Billing and collection system. 6. Training seminars and courses. 7. Train personnel. 8. Evaluation feedback.	Magnitude of Outputs: 1. Designs and specification for 10 systems, 7 in Central Java and 3 on the outer islands. 2. 10 headquarter sites of which 3 will have generation plants. 3. The ten systems will require an estimated 4,000 Km of primary and secondary lines, 2,400 Km of secondary underbuild 60,000 poles, 2,500 transformers and 208,000 KWH meters. 4. By PACD it is estimated that 195,000 consumers will have been provided with housewiring. A minimum package will consist of three light fixtures, three switches and one convenience outlet. 5. Approximately 35 courses and seminars. 6. Over 500 people trained including at least 100 at each coop, 20 at each PLN area and 60 project management staff from PLN, DGC, BAPPENAS and BRI. 7. One billing and collection system for the PLN utilities and a comparable system for each coop. 8. One baseline survey plus 4 annual surveys.	1. Reports completed. 2. NRECA, USAID, GOI records.	Assumptions for achieving output: 1. The NRECA team with the help of PLN and the DGC staff will complete the feasibility studies for all systems. 2. The GOI will meet the CP's. 3. Contracts will be signed with the NRECA/NEA team and the Consultant. 4. Participant trainees will be made available. 5. Counterpart funds will be made available on a timely basis. 6. The materials will arrive on time, in good order and be properly distributed. 7. PLN and local contractors can construct the systems.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Indonesia - Rural Electrification

Life of Project:
From FY 77 to FY 81
Total U.S. Funding $48 million
Date Prepared: August 12, 1977

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Inputs:			
GOI			
(a) Manpower capable of training for management, construction, operation and maintenance.	(a) Staffed organization properly trained.	Review, inspections, observations.	GOI makes available manpower and finance.
(b) US$22.7 million in local currency to be provided over 4 years from annual budgets.	(b) GOI Budget.		
	(c) Distribution systems in place and operating.	Inspections.	Provincial and Local Government and the rural people continue support of the program.
Provincial and Local:			
(a) Rights of Way.			
(b) Manpower.			
USAID			
(a) Development Loan of US$42 million to cover FY cost of training, construction and materials and part of local cost of construction.	(a) Loan Authorization.	USAID Documentation and Authorizations.	USAID approves Rural Electrification in Indonesia as a DL and Grant Project and authorizes required funds.
(b) Grant funding of US$6 million for NRECA technical advisory team and the engineering design and construction supervision.	(b) Grant Authorization.		

6C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Security Supporting Assistance funds.

A. GENERAL CRITERIA FOR COUNTRY

1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in consistent pattern of gross violations of internationally recognized human rights?	Yes. The project is designed to benefit and assist the rural poor and the small scale farmer.
2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?	No.
3. FAA Sec. 620(a). Does recipient country furnish assistance to Cuba or fail to take appropriate steps to prevent ships or aircraft under its flag from carrying cargoes to or from Cuba?	No.
4. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?	The determination has been made.
5. FAA Sec. 620(c). If assistance is to government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?	We are not aware of GOI liability in this connection.
6. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	No, not since the Sukarno administration in 1964-65.

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7.	FAA Sec. 620(f); App. Sec. 108. Is recipient country a Communist country? Will assistance be provided to the Democratic Republic of Vietnam (North Vietnam), South Vietnam, Cambodia or Laos?	No.
8.	FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?	No.
9.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?	No.
10.	FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?	Indonesia has instituted an investment guaranty program.
11.	FAA Sec. 620(o); Fishermen's Protective Act, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters, a. has any deduction required by Fisherman's Protective Act been made? b. has complete denial of assistance been considered by AID Administrator?	No.
12.	FAA Sec. 620(q); App. Sec. 504. (a) Is the government of the recipient country in default on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds, unless debt was earlier disputed, or appropriate steps taken to cure default?	No
13.	FAA Sec. 620(s). What percentage of country budget is for military expenditures? How much of foreign exchange resources spent on military equipment? How much spent for the purchase of sophisticated weapons systems? (Consideration of these points is to be coordinated with the Bureau for Program and Policy Coordination, Regional Coordinators and Military Assistance Staff (PPC/RC).)	Fifteen percent of FY 77/78 budget was for defense. Import of military equipment in FY 76/77 were .03% - .06% of total imports. GOI is not importing sophisticated weapons systems.

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14. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	No.
15. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?	Indonesia is on a current basis with her U.N. dues.
16. FAA Sec. 620A. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?	No.
17. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?	No.
18. FAA Sec. 669. Has the country delivered or received nuclear reprocessing or enrichment equipment, materials or technology, without specified arrangements on safeguards, etc.?	No.
19. FAA Sec. 901. Has the country denied its citizens the right or opportunity to emigrate?	No.

B. FUNDING CRITERIA FOR COUNTRY

1. Development Assistance Country Criteria	Yes.
a. FAA Sec. 102(c), (d). Have criteria been established and taken into account, to assess commitment and progress of country in effectively involving the poor in development, on such indexes as: (1) small-farm labor intensive agriculture, (2) reduced infant mortality, (3) population growth, (4) equality of income distribution, and (5) unemployment.	
b. FAA Sec. 201(b)(5), (7) & (8); Sec. 208; 211(a)(4), (7). Describe extent to which country is:	
(1) Making appropriate efforts to increase food production and improve means for food storage and distribution.	Indonesia is giving priority attention to projects which aim at increasing food production, particularly rice.
(2) Creating a favorable climate for foreign and domestic private enterprise and investment.	The GOI enacted a comprehensive law with built-in incentives for encouraging foreign capital investment.

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(3) Increasing the public's role in the developmental process.	The GOI is encouraging private domestic investment.
(4) (a) Allocating available budgetary resources to development.	The GOI continues to devote substantial amounts of its resources to development.
(b) Diverting such resources for unnecessary military expenditure and intervention in affairs of other free and independent nations.	Outside of the recent military action in Timor, the GOI has not engaged in intervention affairs.
(5) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements, and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.	Major economic reforms were instituted with donor assistance.
(6) Otherwise responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.	By several self-help projects and government budget programs in Health, Family Planning, Housing, etc.
c. FAA Sec. 201(b), 211(a). Is the country among the 20 countries in which development assistance loans may be made in this fiscal year, or among the 40 in which development assistance grants (other than for self-help projects) may be made?	Yes, development loans will be made this fiscal year.
d. FAA Sec. 115. Will country be furnished, in same fiscal year, either security supporting assistance, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs?	No.
2. Security Supporting Assistance Country Criteria	
a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights? Is program in accordance with policy of this Section?	NA.
b. FAA Sec. 531. Is the Assistance to be furnished to a friendly country, organization, or body eligible to receive assistance?	
c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	

6C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

   (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

   By special notification process to both committees on appropriations.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

   Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

   No.

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

   Not a water or water related project.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

   Yes.

A.

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?

No.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

As a co-operative rural power generation and distribution enterprise the Project will contribute to Sections (b), (c) and (e).

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

The project will purchase U.S. technology through consultants, advisors and electric power generation and distribution equipment.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

The GOI is contributing U.S. $21 million in equivalent local currency.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

No.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

Through the project's rural setting, co-operative approach, technical components and labor requirements, it is responsive to all of these concerns.

B1

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable par graph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

Project will increase farm income by permitting powered irrigation of farm land, electric milling and night work in cottage and handicraft industries.

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

NA.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

NA.

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

NA.

(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

B1

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.	NA.
c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?	Yes, by budget allocation.
d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?	Yes.
e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.	The electric co-operatives will be a rural society institution. It will directly provide training to over a hundred workers. It will assist in the development of light industry and communications.
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	The project responds to the rural communities expressed desire for electric service. Co-operative institutions will be expanded and new ones created that will utilize intellectual resources in the country.

B1

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

Yes to all questions.

Budget Allocation

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

Loan provides for the selection of U.S. goods and services.

[illegible] cooperatives will be a society [illegible]. It will only involve training to over [illegible] and women. It will assist in the [illegible] of light industry and [illegible]cations.

2. Development Assistance Project Criteria (Loans only)

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

Other Bilateral Donors are expected to contribute to this project.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

The country has the capacity to repay the loan which will be made on AID's most concessional terms.

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

Yes. [illegible] project is [illegible] by the [illegible] [illegible] expressed desire for [illegible] [illegible] [illegible] administrative [illegible] [illegible] and not [illegible] [illegible] [illegible] bilateral resources [illegible] [illegible]

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

Yes.

B2

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

Approximately $22.0 million for U.S. commodities.

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

No.

3. Project Criteria Solely for Security Supporting Assistance

FAA Sec. 531. How will this assistance support promote economic or political stability?

NA.

4. Additional Criteria for Alliance for Progress

NA.

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

6C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Arrangements will be made in subsequent procurement documents.
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	No. AID Geographic Code 941 and Indonesia procurement will also be made.
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	Yes.
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	NA.
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes, to the extent possible.
6. MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	This provision will be in the Loan Agreement.
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized,	Yes. Federal Agencies will not be used.

A7

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	
B. International Air Transport. Fair Competitive Practices Act, 1974	
If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?	Yes.
C. Construction	
1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?	Yes.
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	Yes.
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	Yes, it will not exceed $100 million.
D. Other Restrictions	
1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	Yes.
2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?	NA.
3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?	Project Agreement will contain standard provision on Non-Code 935 project assistance.
4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?	Project Agreement will contain standard provision for use of U.S. manufactured vehicles.

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? — Only eligible goods and services will be financed under the loan. This is not an eligible good or service.

b. FAA Sec. 620(c). to compensate owners for expropriated nationalized property? — "

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? — "

d. FAA Sec. 662. for CIA activities? — "

e. App. Sec. 103. to pay pensions, etc., for military personnel? — "

f. App. Sec. 106. to pay U.N. assessments? — "

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). — "

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? — "

5. Will arrangements preclude use of financing:

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? — Only eligible goods and services will be financed under the loan. This is not an eligible good or service.

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? — "

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? — "

d. FAA Sec. 662. for CIA activities? — "

e. App. Sec. 103. to pay pensions, etc., for military personnel? — "

f. App. Sec. 106. to pay U.N. assessments? — "

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). — "

It will not exceed $10C million.

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? — "

Agreement will contain standard ... on bona-fide ... project ...

Agreement will contain standard ... of U.S. manufactured ...

ANNEX C

Rural Electrification Project

Certification Pursuant to Section 611 (e) of the
Foreign Assistance Act of 1961, as amended

I, S.J. Littlefield, the acting principal officer of the Agency for International Development in Indonesia, am acquainted with and have taken into account, among other things the performance, the development attitude and budgetary planning of the Government of Indonesia and its implementing agencies in connection with prior projects financed by AID in the electric Power Generation and Distribution Sector. Based on these factors and observations, I consider that the Government of Indonesia has the capability to adequately use the AID assistance to be provided for the development of this Project.

Accordingly, I do hereby, certify that in my judgement the Government of Indonesia, Perusahaan Umum Listrik Negara, the Directorate General of Cooperatives and the Bank Rakyat Indonesia have the financial and human resource capability to effectively utilize and maintain the Rural Electrification Project.

S.J. Littlefield
Acting Director

Date: Aug. 8, 1977

Clearances:
MGT:RLBerrett KB
PRO:LMarshall ---
PTE:DCWoody DCW

ANHEX D

REPUBLIC OF INDONESIA
NATIONAL DEVELOPMENT PLANNING AGENCY
JAKARTA, INDONESIA

No.: 1793/D.I/8/77.

August 12, 1977.

Miss Sarah J. Littlefield
Acting Director,
US-AID Mission to Indonesia
c/o American Embassy
Jakarta.

Dear Miss Littlefield,

Subject: Rural Electrification Project

The Government of Indonesia requests from the US-AID a loan of up to forty two million US dollars ($42,000,000) and a grant of up to six million US dollars ($6,000,000) to finance the foreign exchange and part of the local currency costs for the first phase of the Rural Electrification Project.

The Government desires to expand electric service to the rural areas and with this service bring the benefits of electrification to its rural poor through low cost systems in the efforts to raise the standards of living, increase production and reduce unemployment.

The plan which has evolved includes two institutional models. Part of the proposed project will help the Directorate General of Cooperative to design, build and staff an initial three rural electric cooperatives on the outer island of Sumatra, Sulawesi and Lombok where they would serve transmigration settlements and surrounding areas, and training program for all phases and skills needed. The project will also help the national electric power company (PLN) with design and implementation of seven rural electrification systems on the island of Java. Training program and technical assistance for the PLN rural electrification systems will be tailored to the PLN's existing staff and skills.

It is envisioned that the distribution systems and policies of the two approaches will be roughly similar, i.e., both will consist of local distribution utility systems designed to provide household lighting to a majority of the inhabitants and the commercial and industrial power needs of the service areas.

Thank you for your kind cooperation.

Sincerely yours,

BADAN PERENCANAAN PEMBANGUNAN NASIONAL

Saleh Afiff
Deputy Chairman

ANNEX E

DRAFT LOAN AUTHORIZATION

Name of Country: INDONESIA

Project: RURAL ELECTRIFICATION

Pursuant to Part 1, Chapter I, Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a loan to the Government of Indonesia, the "Borrower," of not to exceed forty-two million United States Dollars ($42,000,000) the ("Authorized Amount") to help in financing certain foreign exchange and up to a maximum of ten million United States Dollars ($10,000,000) in local currency costs of goods and services required for the Project.

The Project assists the Borrower in providing the social and economic benefits of electric service to selected rural areas on Java and several Outer Island locations, inhabited by a poor and small-scale farmer population through the establishment of a rural electrification system with trained personnel and electric generation and distribution facilities. The entire amount of the A.I.D. financing herein authorized for the Project will be obligated when the Loan Agreement is executed.

I hereby authorize the initiation of negotiation and execution of the Loan Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Interest Rate and Terms of Repayment

The Borrower shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. The Borrower shall pay to A.I.D. in United States Dollars interest from the date of first disbursement of the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services

Except for Ocean Shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in Indonesia or countries included in A.I.D.

Geographic Code 941 except as A.I.D. may otherwise agree in writing. Ocean Shipping financed under the Loan shall be procured in any eligible source country except in the country of the Borrower.

c. Conditions Precedent

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, Borrower shall furnish in form and substance satisfactory to A.I.D.:

1. The Minister of Justice's legal opinion on the Project Loan Agreement.

2. A list, with signatures of the Borrower's authorized loan representatives.

3. Assurances that required rupiah financing will be available on a timely basis.

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement to finance the Perusahan Umum Listrik Negara (PLN) implemented Project activities, Borrower shall furnish in form and substance satisfactory to A.I.D.:

1. An AID approved, signed and valid sub-loan agreement relending (reloan) a portion of the A.I.D. loan from the Borrower on the same terms and interest rates as the A.I.D. loan.

2. An A.I.D. approved implementation plan which will include:

   i. A time-phased schedule of proposed Project actions,

   ii. An organizational plan for Project design, construction and operation,

   iii. A personnel training plan, and

   iv. A planned program to encourage the use of electricity in the PLN Project service area.

3. A letter of agreement between PLN and USAID covering all costs to the customers which would affect the ability of people in the project area to pay for the service.

Prior to any disbursements, or the issuance of any commitment under the Project Agreement to finance the Directorate General of Cooperatives (DGC) implemented Project activities, Borrower shall furnish in form and substance satisfactory to A.I.D.:

1. An A.I.D. approved, signed and valid sub-loan agreement relending (reloan) a portion of the A.I.D. loan from the Borrower to Bank Rakyat Indonesia (BRI)

on the same terms and interest rates as the A.I.D. loan.

2. An A.I.D. approved, signed and valid sub-loan agreement on-lending a portion of the reloan from BRI to eligible cooperatives on the same terms and interest rates as the A.I.D. loan and reloan.

3. An A.I.D. approved implementation plan which will include:

i. A time-phased schedule of proposed Project actions,

ii. An organizational plan for Project design, construction and operation,

iii. A personnel training plan, and

iv. A planned program to encourage the use of electricity in the DGC Project service area.

d. Covenants

Borrower shall covenant that:

1. Project service areas for both the PLN and DGC projects shall be selected by a procedure acceptable to A.I.D. and shall be verified as being financially viable, and economical, socially and environmentally feasible pursuant to studies approved by A.I.D.

2. The GOI shall take appropriate action on a timely basis to assure the availability, at reasonable cost, of all land and right in land necessary for construction and operation of the Project.

3. Recommendations of an environmental assessment to be performed by A.I.D. in cooperation with PLN and DGC will be incorporated into the Project design where feasible except as A.I.D. may otherwise agree.

4. i. PLN charges to the rural electric customers financed under the Project shall not be at a rate higher than regular PLN tariff charges except as agreed to in writing by A.I.D.

ii. PLN shall maintain separate cost accounting records for each of the service areas included in this Project.

iii. PLN shall encourage use of electricity by rural residents in the Project service areas by reducing connection charges and by funding a plan to finance payment for both connection charges and house wiring costs.

iv. PLN shall reduce construction costs per customer to a minimum.

5. i. The DGC shall assure that the Project Development Office and the cooperatives are provided with qualified personnel who are properly trained to implement the Project.

ii. The BRI shall provide their banking service on a timely basis as not to delay the implementation of the Project.

Clearances: A.
B.
C.
D.
E.
F.

_____

_____
Typed Name of Authorizing Officer

A/AID

ANNEX F-1

GRANT PROJECT AUTHORIZATION

Name of Country: Indonesia

Rural Electrification
Grant Project No. 497-0267

Pursuant to Part 1, Chapter I, Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Grant to the Government of Indonesia, the "Cooperating Country", of not to exceed one and one half million United States Dollars ($1,500,000) the ("Authorized Amount") to help in financing certain foreign exchange and local currency costs of goods and services required for the Project. The Project consists of the provision of professional services by an Architectural & Engineering team to design, procure commodities for and supervise the construction of a rural electrification system; and an Organizational, Management and Technical advisory group, (National Rural Electrification Cooperative Assoc.) to organize, train and establish cooperatives in the system's service area (hereinafter referred to as the "Project").

I approve the total level of A.I.D. appropriated funding planned for this Project of not to exceed six million United States Dollars ($6,000,000), which will be all Grant funded including the funding authorized above, during the period FY 1977 through FY 80. I approve further increments during that period of Grant funding up to $1,500,000, subject to the availability of funds in accordance with A.I.D. allotment procedures.

I hereby authorize the initiation of negotiation and execution of the Project Agreement by the Officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services

Except for ocean shipping, goods and services financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States or in countries included in A.I.D. Geographic Code 941 except as A.I.D. may otherwise agree in writing. Ocean shipping financed under the Grant shall be procured in any eligible source country except the Cooperating Country.

b. Conditions Precedent

Prior to any disbursement, or the issuance of any commitment documents under the Project Agreement, Grantee shall furnish in form and substance satisfactory to A.I.D.

1. A statement of the name of the person holding or acting in the office of the Grantee specified in Section 8.3., and of any additional representatives, together with a specimen signature of each person specified in such statement.

2. Evidence that there has been established, through the Director General of Cooperatives, three Rural Electrification Cooperatives with appropriate authority to generate, buy and sell electric power; to borrow and lend money; to contract for insure against liability; to employ and discharge personnel and engage in such other activities as is consistent with conducting a cooperative operated electric utility.

3. Evidence that an official Supervisory Group to monitor the Rural Electric Cooperatives has been established.

4. Evidence that an Official Project Development Office to supervise project implementation has been established.

c. Covenants

Grantee shall covenant that appropriate action will be taken on a timely basis to assure the availability of local currency funds and facilities supplied in kind as support to the Architectural and Engineering team and the Organizational, Management and Technical advisory group.

d. Services - selection and contracting

1. Mission's request for non-competitive selection of NRECA as the Technical, Organizational and Management advisory group and,

2. Direct AID contracting for Architectural and Engineering and the NRECA services is herewith approved.

Clearances:
A.
B.
C.
D.
E.
F.

Signature: _____

_____
Type Name of
Authorizing Officer

_____
Office Symbol

ANNEX F-2

A.I.D. Project No. _____

Project Grant Agreement

Dated , 19___

Between Government of Indonesia

And

The United States of America, acting through the Agency for International Development ("A.I.D.")

Article 1: The Agreement

The purpose of this Agreement is to set out the understandings of the parties named above ("Parties") with respect to the undertaking by the Grantee of the Project described below, and with respect to the financing of the Project by the Parties.

Article 2: The Project

SECTION 2.1. Definition of Project. The Project, which is further described in Annex 1, will consist of:

(a) an architectural and engineering consulting team that will assist the GOI in designing a rural electrification system for Central Java and several outer island locations; determine specifications for and procure necessary equipment and materials; and supervise construction and installation.

(b) A rural electrification advisory team from the National Rural Electrification Cooperative Association (U.S.) to assist the GOI in Rural Electrification Cooperative organization planning, personnel training and establishment of local cooperatives in the Rural Electric System Service Areas.

Annex 1, attached, amplifies the above definition of the Project. Within the limits of the above definition of the Project, elements of the amplified description stated in Annex 1 may be changed by written agreement of the auhtorized representatives of the Parties named in Section 8.3, without formal amendment of this Agreement.

SECTION 2.2. Incremental Nature of Project

(a) A.I.D.'s contribution to the Project will be provided in increments, the initial one being made available in accordance with Section 3.1 of this Agreement. Subsequent increments will be subject to availability of funds to A.I.D. for this purpose, and to the mutual agreement of the Parties, at the time of a subsequent increment, to proceed.

(b) Within the overall Project Assistance Completion Date stated in this Agreement, A.I.D., based upon consultation with the Grantee, may specify in Project Implementation Letters appropriate time periods for the utilization of funds granted by A.I.D. under an individual increment of assistance.

Article 3: Financing

SECTION 3.1. The Grant. To assist the Grantee to meet the costs of carrying out the Project, A.I.D., pursuant to the Foreign Assistance Act of 1961, as amended, agrees to grant the Grantee under the terms of this Agreement not to exceed six million United States ("U.S.") Dollars ($6,000,000) ("Grant").

The Grant may be used to finance foreign exchange costs, as defined in Section 6.1, and local currency costs, as defined in Section 6.2, of goods and services required for the Project, except that, unless the parties otherwise agree in writing, Local Currency Costs financed under the Grant will not exceed the equivalent of _____ U.S. Dollars ($ _____).

SECTION 3.2. Grantee Resources for the Project

(a) The Grantee agrees to provide or cause to be provided for the Project all funds, in addition to the Grant, and all other resources required to carry out the Project effectively and in a timely manner.

(b) The resources provided by Grantee for the Project will be not less than the equivalent of U.S.$ _____, including costs borne on a "inkind" basis.

SECTION 3.3. Project Assistance Completion Date

(a) The "Project Assistance Completion Date" (PACD), which is September 30, 1982 or such other date as the Parties may agree to in writing, is the date by which the Parties estimate that all services

financed under the Grant will have been performed and all goods financed under the Grant will have been furnished for the Project as contemplated in this Agreement.

(b) Except as A.I.D. may otherwise agree in writing, A.I.D. will not issue or approve documentation which would authorize disbursement of the Grant for services performed subsequent to the PACD or for goods furnished for the project, as contemplated in this Agreement, subsequent to the PACD.

(c) Requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters are to be received by A.I.D. or any bank described in Section 7.1 no later than nine (9) months following the PACD, or such other period as A.I.D. agrees to in writing. After such period, A.I.D., giving notice in writing to the Grantee, may at any time or times reduce the amount of the Grant by all or any part thereof for which requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters, were not received before the expiration of said period.

Article 4: Conditions Precedent to Disbursement

SECTION 4.1. First Disbursement. Prior to the first disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) A statement of the name of the person holding or acting in the office of the Grantee specified in Section 8.3, and of any additional representatives; together with a specimen signature of each person specified in such statement.

(b) Evidence that there has been established, through the Director General of Cooperatives, three Rural Electrification Cooperatives with appropriate authority to generate, buy and sell electric power; to borrow and lend money; to contract for commodities and construct electric service facilities; to insure against liability; to employ and discharge personnel and engage in such other activities as is consistent with conducting a cooperative operated electtic utility.

(c) Evidence that an official Supervisory Group to monitor the Rural Electric Cooperatives has been established.

(d) Evidence that an Official Project Development Office to supervise project implementation has been established.

SECTION 4.2. Notification. When A.I.D. has determined that the conditions precedent specified in Section 4.1 have been met, it will promptly notify the Grantee.

SECTION 4.3. Terminal Dates for Conditions Precedent.

(a) If all of the conditions specified in Section 4.1 have not been met within 90 days from the date of this Agreement, or such later date as A.I.D. may agree to in writing, A.I.D., at its option, may terminate this Agreement by written notice to Grantee.

Article 5: Special Covenants

SECTION 5.1. Project Evaluation. The Parties agree to establish an evaluation program as part of the Project. Except as the Parties otherwise agree in writing, the program will include, during the implementation of the Project at one or more points thereafter:

(a) evaluatio of progress toward attainment of the objectives of the Project;

(b) identification and evaluation of problem areas of constraints which may inhibit such attainment;

(c) assessment of how such information may be used to help overcome such problems; and

(d) evaluation, to the degree feasible, of the overall development impact of the Project.

Article 6: Procurement Source

SECTION 6.1. Foreign Exchange Costs. Disbursements pursuant to Section 7.1 will be used exclusively to finance the costs of goods and services required for the Project having their source and origin in countries included in Code 941 of the AID Geographic Code Book as in effect at the time orders are placed or contracts entered into for such goods or services ("Foreign Exchange Costs"), except as A.I.D. may otherwise agree in writing, and except as provided in the Project Grant Standard Provisions Annex, Section C.1(b) with respect to marine insurance.

SECTION 6.2. Local Currency Costs. Disbursements pursuant to Section 7.2 will be used exclusively to finance the costs of goods and services required for the Project having their source and except as A.I.D. may otherwise agree in writing, their origin in Indonesia.

Article 7: Disbursement

SECTION 7.1. Disbursement for Foreign Exchange Costs

(a) After satisfaction of conditions precedent, the Grantee may obtain disbursements of funds under the Grant for the Foreign Exchange Costs of goods or services required for the Project in accordance with the terms of this Agreement, by such of the following methods as may be mutually agreed upon:

(1) by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, (A) requests for reimbursement for such goods or services, or, (B) requests for A.I.D. to procure commodities or services in Grantee's behalf for the Project; or,

(2) by requesting A.I.D. to issue Letters of Commitment for specified amounts (A) to one or more U.S. banks, satisfactory to A.I.D., committing A.I.D. to reimburse such bank or banks for payments made by them to contractors or suppliers, under Letters of Credit or otherwise, for such goods or services, or (B) directly to one or more contractors or suppliers, committing A.I.D. to pay such contractors or suppliers for such goods or services.

(b) Banking charges incurred by Grantee in connection with Letters of Commitment and Letters of Credit will be financed under the Grant unless Grantee instructs A.I.D. to the contrary. Such other charges as the Parties may agree to may also be financed under the Grant.

SECTION 7.2. Disbursement for Local Currency Costs

(a) After satisfaction of conditions precedent, the Grantee may obtain disbursements of funds under the Grant for Local Currency Costs required for the Project in accordance with the terms of this Agreement, bu submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, requests to finance such costs.

(b) The local currency needed for such disbursements may be obtained:

(1) by acquisition by A.I.D. with U.S. Dollars by purchase; or

(2) from local currency already owned by the U.S. Government; or

(3) by A.I.D. requesting the Grantee to make available the local currency for such costs, and thereafter reimbursing an amount of U.S. Dollars equal to the amount of local currency made available by the Grantee.

The U.S. dollar equivalen of the local currency made available hereunder will be, in the case of subsection (b)(1) above, the amount of U.S. dollars required by A.I.D. to obtain the local currency.

SECTION 7.3. Other Forms of Disbursement. Disbursements of the Grant may also be made through such other means as the Parties may agree to in writing.

SECTION 7.4. Rate of Exchange. Except as may be more specifically provided under Section 7.2, if funds provided under the Grant are introduced into Indonesia by A.I.D. or any public or private agency for purposes of carrying out obligations of A.I.D. hereunder, the Grantee will make such arrangements as may be necessary so that such funds may be converted into currency of Indonesia at the highest rate of exchange which, at the time the conversion is made, that is not unlawful in Indonesia.

Article 8: Miscellaneous

SECTION 8.1. Communications. Any notice, request, document, or other communication submitted by either Party to the other under this Agreement will be in writing or by telegram or cable, and will be deemed duly given or sent when delivered to such party at the following addresses:

To the Grantee:

Mail Address: Departemen Luar Negeri
Taman Pejambon No. 6
Jakarta Pusat, Indonesia

Alternate address for cables:

To A.I.D.:

Mail Address: United States Agency for International Development
American Embassy
Jakarta, Indonesia

Alternate address for cables:

USAID AMEMB JAKARTA

All such communications will be in English, unless the Parties otherwise agree in writing. Other addresses may be substituted for the above upon the giving of notice.

SECTION 8.3. Representatives. For all purposes relevant to this Agreement, the Grantee will be represented by the individual holding or acting in the office of Chairman or Vice-Chairman, National Development Planning Agency ("BAPPENAS") and A.I.D. will be represented by the individual holding or acting in the office of Mission Director USAID Mission to Indonesia, each of whom, by written notice, may designate additional representatives for all purposes other than exercising the power under Section 2.1 to revise elements of the amplified description in Annex 1. The names of the representatives of the Grantee, with specimen signatures, will be provided to A.I.D., which may accept as duly authorized any instruments signed by such representatives in implementation of this Agreement, until receipt of written notice of revocation of their authority.

SECTION 8.4. Standard Provisions Annex. A "Project Grant Standard Provisions Annex" (Annex 2) is attached to and forms part of this Agreement.

IN WITNESS WHEREOF, the Grantee and the United States of America, each acting through its duly authorized representative, have caused this Agreement to be signed in their names and delivered as of the day and year first above written.

INDONESIA

By: _____

Title: _____

UNITED STATES OF AMERICA

By: _____

Title: _____

HOUSEWIRING PROGRAM

A. Background

One of the fundamental concepts of the proposed rural electrification project is areawide coverage. The objective of this approach is to connect up a majority of the inhabitants in the selected service areas by the end of the fourth year from date of commencement of construction. It is estimated that 85-90% of the people living in these areas are "poor people" by World Bank definition. It is further estimated that 50-60% of these people have no significant cash reserves and therefore would not be able to connect up if there was any initial financial requirement above Rp. 2,000. However, preliminary results of the social/economic studies now being conducted by the Agriculture Institute of Bogor (IPB) indicate that the majority of the people in the selected service areas both can afford and desire electric service if the total monthly cash outlay does not exceed Rp. 1,200. This is approximately what they are presently paying on the average for kerosene and batteries. This means that given a monthly minimum bill of Rp. 900* roughly Rp. 300 would be available to finance housewiring.

Both the NRECA team and PLN have done independent research on the costs of a basic housewiring package consisting of three lights and one convenience outlet. PLN in central Java during June of 1977 actually constructed a typical bamboo, three room Javanese house and wired it according to their specifications with materials purchased on the local market in Semarang. The materials excluding a fused disconnect switch, entrance wire and fuse (Rp. 2,458) cost only Rp. 6,756. The labor charge was estimated at Rp. 1,750 based upon the actual installation time of 2 hrs 45 min by a two man crew. These costs plus allowances for PLN's overhead and losses due to breakage and wastage of unusable material amount to approximately Rp. 15,000/connection. The NRECA team costed out the materials and labor charges in Jakarta for a typical basic housewiring job similar to what is currently being installed in the rural areas of the Philippines. Their estimate which includes projected cost increases for the next 4 years is Rp. 16,625/connection. Both the PLN and NRECA cost estimates plus a typical housewiring plan are attached.

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* This minimum bill is based upon the PLN BI rate at 350 VA plus a special rural electrification and on of Rp. 36/KWH which is required to make the systems financially viable. This means that there will be a demand charge of Rp. 168/month plus an energy usage charge of Rp. 49/KWH up to 70 KWH per month which drops to Rp. 20/KWH month thereafter. Under this tariff structure all customers will pay a minimum bill equal to Rp. 168+15 KWHxRp. 49 = Rp. 900.-

The point of their analyses is to show that with a Rp. 2,000 down-payment to cover the costs of labor, the materials and overhead for wiring a basic installation for a typical house can be financed for the poor people in these area for as little as Rp. 257/month for 60 months at 6% interest based on the PLN estimates or Rp. 290/month based on the NRECA estimate.

In addition to meeting the basic housewiring requirements of very poor people, both PLN and the Coops will want to encourage the use of electricity, particularly productive usage. Within the selected service areas will be found significant numbers of customers who can afford the basic package but who desire increased numbers of lights, outlets or heavy duty outlets (for engines, welders etc.) and who can afford the monthly bill associated with the extra load involved, but who cannot afford the materials and installation costs of this more elaborate package. It would be very expensive, inefficient and counterproductive to give these customers only the basic housewiring package. Therefore a special financing plan should be designed to provide the necessary low interest credit for this purpose.

The goal of the housewiring program is to insure that a majority of the houses in each service area are wired in a timely basis to meet PLN technical standards. For the large systems this will mean wiring up to 25,000 dwellings within four years, beginning concurrently with the commencement of construction of the primary distribution system. A suggested time schedule by year to meet this goal is 2,500, 8,000, 8,000 and 6,500 houses/year. This is a large and important undertaking, critical to the succes of the entire project. To meet this goal will require careful planning, good organization, some technical ability and lots of hard work. While there will be some variations at each site, the proposed program as presently conceptualized is described below.

B. The Program

The initial capital for this program will be provided through USAID Loan Funds. Housewiring materials will be procured by USAID under bulk purchase orders and shipped to the coop/PLN locations. This may be in four shipments of materials, following the planned yearly installation schedule, with the coop/PLN accepting these shipments at the nearest port. At the time of receipt the coop/utility will be charged for these materials by the BRI/PLN on a loan basis with terms the same as the AID loan.

The cooperative/PLN will provide personnel for program implementation, coordination and control. Approximately eight employees will be on the coop/PLN payroll for this purpose. Their salaries and coop/PLN overhead associated with this member/customer service program shall be paid from the revolving fund generated by the sale of the materials.

Contract-electricians will be trained and utilized for the actual wiring installations. It is estimated that thirty to thirty-five electricians will be required at each site during this 4 year period. They shall be paid on a per-outlet-intalled basis - 70% at the time of installation and the balance after satisfactory inspection of the job.

A down-payment for the housewiring installation must be made, at the time of installation, the amount of which must equal the average costs for the electrician's labor (per installation). This is estimated to be Rp.2,000.

Two separate housewiring packages would be offered. The first being a basic package of two lights (a choice of florescent or incandescent) and one convenience outlet to be installed upon the payment of Rp.2,000 down to cover estimated labor costs. The balance would be repaid monthly at an annual interest rate of 6% for 5 years. This package would be offered to anyone living in a bamboo house or a wooden house with dirt floor.

The second package would be a loan of materials of up to Rp. 20,000 for anyone living in less than a concrete brick wall house who agrees to pay cash for 30% of the total cost of the desired installation. This loan would be repaid monthly at an annual interest rate of 8% for 3 years. (This would amount to payments of Rp. 800/month for three years for the maximum loan).

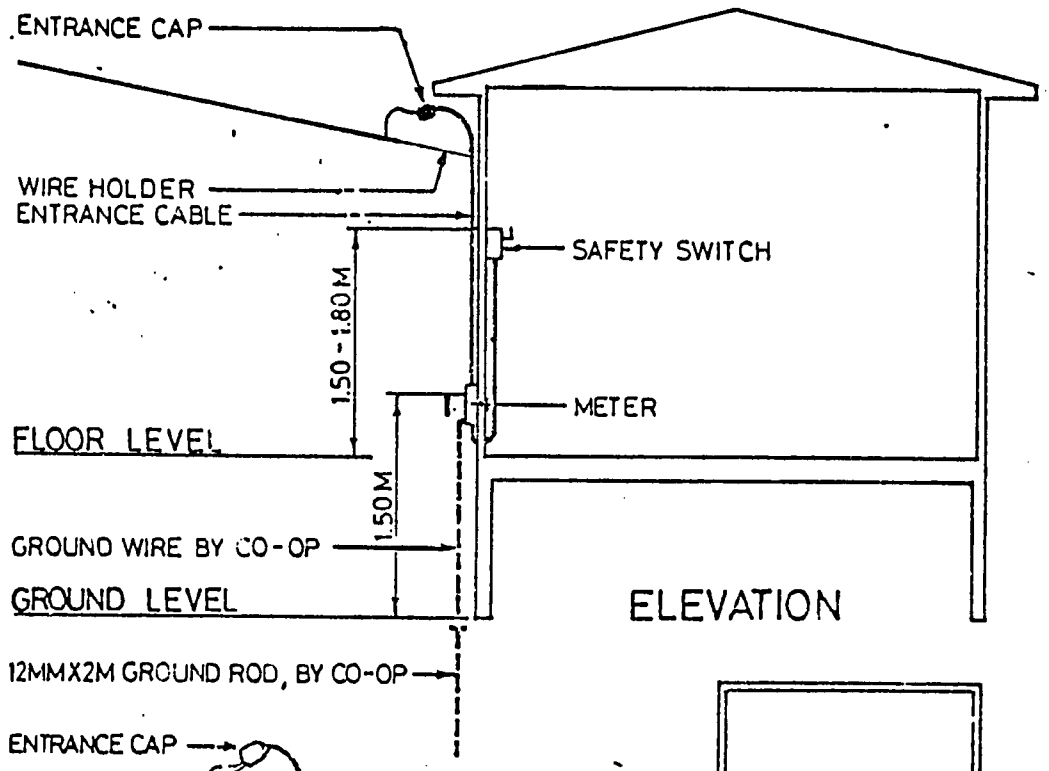
The monies repaid to the Coops/utilities by the members/customers would be used as a revolving fund to replenish the stocks of housewiring materials and to encourage productive usage of electricity. For example, Central Java is facing an acute shortage of charcoal and firewood. It has been suggested that after the housewiring program in Central Java is pretty well completed that the PLN utilities might use this fund to introduce coils for heating water, hot plates and rice cookers. All uses of the fund outside of the basic housewiring program would require prior approval from Jakarta. Eventually this fund would be used for capital improvement to the system.

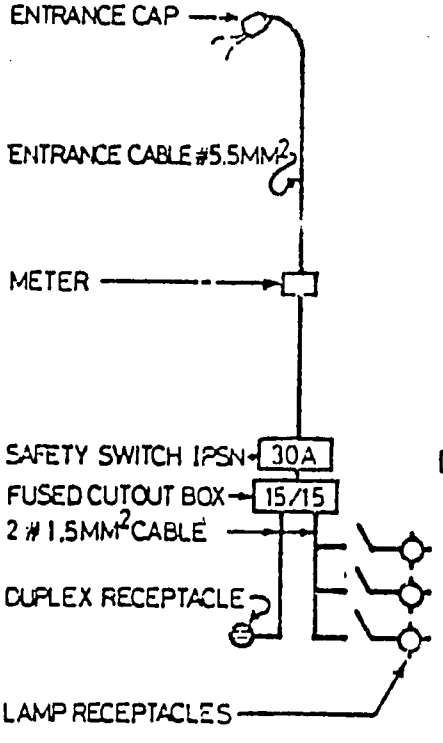
The total cost of materials for the large sites having an estimated 25,000 customers at the end of the 4th year from commencement of construction is Rp. 197 million (US$ 474,000). This is based upon an estimate that 75% of the customers will obtain their materials through the Coop/utility under the H.W. loan program. The projected demand for loan funds for a typical system, is as follows:

Year	1	2	3	4	Total
#houses	2,500	8,000	8,000	6,500	25,000
#loans	1,875	6,000	6,000	4,875	18,750
#Rp(000's)	26,250	84,000	84,000	68,250	262,500
#US$	63,353	202,410	202,410	164,458	632,531
less repay US$	0	12,650	53,132	93,614	159,396
required	63,253	189,760	149,278	70,844	473,135

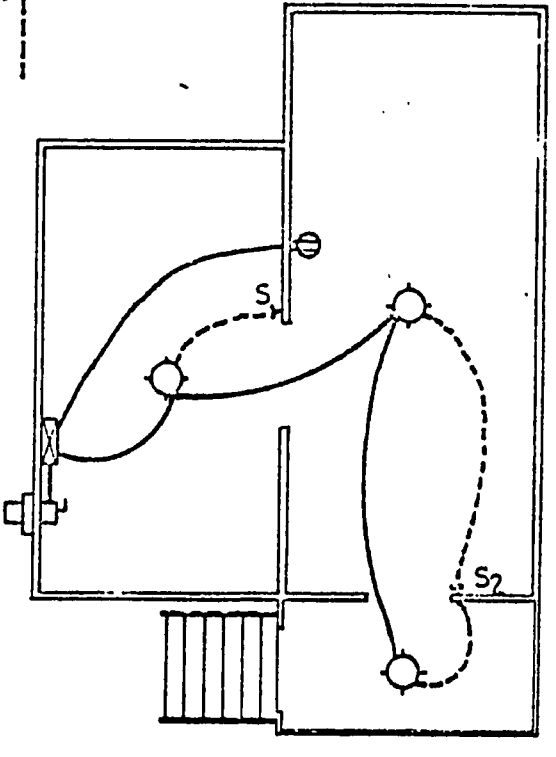
It is estimated that the total cost of the H.W. program for the 7 sites in Central Java will be Rp. 1.02 billion (US$ 2.46 million). For the Outer Island subprojects the total costs are estimated to be Rp. 511 million (US$ 1.23 million).

TYPICAL HOUSE WIRING PLAN





RISER DIAGRAM



FLOOR PLAN

SUKONO '77.

NRECA ESTIMATE

HOUSE - WIRING - MATERIALS
BASIC - HOUSE - WIRING - INSTALLATION

Item	Market Price	Estimated Whole Sale Price	Quantity Required	Extend Cost
1. Entrance wire, KWH meter to disconnect switch 2# 2.5/mm (25 AMP)	190/m	125/m	5.5/m	Rp. 688
2. Fused disconnect switch, 25 AMP rating	2,250	1650	1	1,650
3. Fuse holder	200	150	1	150
4. 10 AMP fuse	50	35	2	70
5. Wire, from disconnect switch to fixtures and switches - 2# 1.5/mm (19 AMP)	140/m	90/m	55/m	4,950
6. Ceiling mount, surface, incandecent lamp socket	100	75	3	225
7. Convenience outlet, surface mount	550	400	1	400
8. Snap switch, surface mount	350	250	3	750
9. Junction Box, 2¼", PVC, with cover	25	20	2	40
10. Staples 3/8", metal with nails	3	2	350	700
11. Wood screw #6-3/4"	1.5	1	12	12
12. Electrician tape	9/m	6/m	2	12
		F.O.B. JAKARTA PRICE		Rp. 9,647
		F.O.B. COOP-1978 - EST. PRICE		Rp.11,500

NRECA ESTIMATE

Attachment to House Wiring Member Service Program Study

PART I

A. The direct labor costs for coop/utility employees working in the wiring program for a 4 years period Rp. 14,920,000 (rounded to Rp. 15 million). Rp. 15 million : 25,000 = Rp. 600 per installation.

B. The overhead costs for the coops/utilities related to the wiring program is estimated at 33 1/3% of direct labor = Rp. 5 million. Rp. 5 million : 25,000 = Rp. 200 per installation.

C. The contract electrician payments estimated at Rp. 1,750 per installation escalating to Rp. 2,000 by the end of the 4 years period equals an average of Rp. 1,825 per installation.

PART II

A.	Average direct labor per installation	Rp. 600
B.	Average o/H per installation	Rp. 200
C.	Average electrician payments per ins.	Rp. 1,875
	Labor and o/H per installation - total	Rp. 2,675

The required down-payment per installation = Rp. 2,000. The balance of the overhead and materials cost will be paid over 60 months at 6% simple annual interest.

PART III

A. The cost of original orders for material needed for 4 years period, 25,000 installations = Rp. 300 million.
Rp. 300 million : 25,000 = Rp. 12,000 per installation.

B. The cost of replacement orders for material needed due to loss, breakage, waste and unusable items for the 25,000 installation = Rp. 30 million. Rp. 30 million : 25,000 = Rp. 1,200 per installation.

C. The interest costs to the coop/utility for the original loan extended for material procurement (based on 3% P.A.) = Rp. 11 million. Rp. 11 million : 25,000 = Rp. 440 per installation.

D. The reserve for uncollectables and perpetuation of the wiring program beyond the 7th operating year is Rp. 360 per installation.

PART IV

A.	Average per installation, material cost	Rp. 12,000
B.	Average per installation replacement cost	Rp. 1,200
C.	Average per installation (GOI-to COOP) interest cost	Rp. 440
D.	Reserve for uncollectables and program continuation	Rp. 360
	Total material cost per installation	Rp. 14,000

Summary

Total installation cost	
Labor and o/H	Rp. 2,675
material	Rp. 14,000
Average wiring installation cost	Rp. 16,675

Therefore: Minimum down payment per installation = Rp. 2,000
balance = Rp. 14,675

PLN - Basic Housewiring Installation

		Detail Market Price per Unit	Total
30 M	NYM cable 2 x 2.5 mm sq.	160	4,800
3 pce	6 Amp Snap Switch	250	750
1 pce	Double outlet (15 Amp)	450	450
3 pce	Ceiling mounted incandescent lamp socket	110	330
3 pce	Wood for lamp socket base	10	30
5 pce	Junction box (paralon 5/8")	30	150
1/4 kg	Nail 1½"	400	100
100 pces	Staples 3/8"	1	100
14 pces	Wooden screw 1½" x 6 mm	4	56
20 pces		1	20
			6,756
Labor cost 1 day/2hrs, 45 min 2 men			1,750
Other expenses/small tools 10%			675.60
		Total	9,181.60
Profit 10%			918.16
		Total	10,099.76
MPO 5%			504.98
		Total	10,604.74
		Rounded Rp.	10,600.-
		Stamp Rp.	10

This estimate does not include entrance wire, fused disconnect switch, fuse holder and 10 amp fuse which if included would raise the PLN estimate by Rp. 2,458

Revised PLN estimate = Rp. 13,058

RURAL ELECTRIFICATION

ORGANIZATION MANAGEMENT AND TECHNICAL ADVISORY SERVICES

SCOPE OF WORK

I. Introduction

The Government of Indonesia (GOI) has initiated a demonstration rural electrification program which is planned to provide areawide electric power distribution in ten specified areas within the next 4 or 5 years. The objective of this program is to demonstrate conclusively that reliable electric service and the social and economic benefits that accure therefrom can be made available to the very poor people at a price they are able to pay.

Three of the electrical distribution systems will be located on separate islands outside of Java and will be implemented through rural electric cooperatives organized by the Directorate General of Cooperatives (DGC). Since there are no rural electric cooperatives in Indonesia, there is need for a wide range of management advisory services extending over several years.

The National Electric Power Agency (PLN) operates an extensive electric system in Central Java. It has adopted the 20 KV grounded neutral design for new distribution line construction and has established standards for materials and construction. An international firm has assisted PLN in establishing a uniform accounting system on a country-wide basis.

The DGC and PLN will have the primary responsibility to organize the systems, make feasibility studies, design the systems, procure materials and construct the systems.

Representatives from the DGC and PLN have visited the Philippines and have become familiar with the accounting, operation, maintenance and load building practices used by the cooperative rural electrical distribution systems there. Accordingly, PLN desires to modify its accounting system, develop a load building program and introduce a training program for operating and maintenance (O&M) employees on the seven proposed rural electric systems in Central Java. Since PLN has experience in operating a large electric system, the training required to accomplish its goals is less extensive than that required by the DGC cooperatives.

The U.S. Agency for International Development (AID) will assist the GOI in its demonstration program by making available AID loan funds to procure the materials and construct the systems and grant funds to provide technical advisory and architect and engineering services. The architect and engineering services will be provided by a qualified U.S. firm (hereinafter called the A&E team). The organizational, management and technical advisory services will be provided by a qualified U.S. agency (hereinafter referred to as the OMT team) with demonstrated capability and experience in assisting rural electric cooperatives. The OMT team may consist of U.S. citizens and eligible third country nationals. The firm will enter into a direct contract with AID.

II. Scope of Services

The OMT team will work with two separate agencies which will implement the project, the DGC and PLN. Because of the different organization management, training and experience of these two agencies, the services provided by the OMT team will be different in scope and location. The DGC has no experience in rural electrification and is forming a special Project Development Office (PDO) which will perform most aspects of project implementation including organizing the three cooperatives (tentatively in Lampung, South Sumatra, Luwu, South Sulawesi and East Lombok). Each cooperative will own and operate a diesel generating plant. The specific services required, include but are not limited to the following:

1. For Rural Electric Cooperatives

   a. Assist the Board of Directors in preparing a job description for and selecting a general manager.

   b. Attend periodic meetings of the Board of Directors as it may desire to discuss and advise on overall cooperative planning and problems as may normally be the responsibility of this group.

   c. Advise and assist the cooperative general manager in:

      1) Establishing a staffing pattern for the cooperative.

      2) Preparing job descriptions for each position.

      3) Staff selection.

      4) Establishing personnel policies and procedures.

5) Selecting office equipment.

6) Designing forms necessary to fulfill the overall requirements of the cooperative.

7) Establishing bookkeeping system.

8) Establishing records for all types of equipment such meters, oil circuit reclosers, transformers, etc.

9) Establishing procedure for material procurement.

10) Establishing procedure for warehouse management including:

a) receipt of inspection of materials.
b) issuance of materials.
c) documentation for accounting section.

11) Selecting and procuring vehicles, tools and equipment for operation, maintenance and force account construction.

12) Establishing vehicle maintenance and repair schedules and procedures.

13) Establishing facilties and procedures for testing, maintenance and repair of all electrical equipment.

14) Establishing meter reading, billing and collecting schedules and procedures.

15) Establishing procedures for maintaining and operating the electric distribution system.

16) Establishing procedures for staking lines, force account construction and inspection.

17) Establishing procedure for work orders (investment and retirement).

18) Establishing in cooperation with the generating plant supplier, operating and maintenance procedures for the diesel generating plant and substation.

19) Establishing monthly operating reports for all systems activities and identify the details to be included.

20) Establishing consumer education and load building program.

21) Establishing training programs for:

a) Cooperative office employees.
b) Linemen.
c) House wiring inspectors.

22) Establishing a safety training program on a continuing basis.

23) Establishing training program for house wiring contractors.

Minimum qualifications for Cooperative Resident Advisor.

Personnel selected for this position should have completed at least five years of successfully managing a rural electric cooperative. He should have the ability to personally implement a large portion of the work described in II.1 above including participating as instructor in many of the training classes.

Assistance will be available from the A&E personnel serving the cooperative and also from consultants as necessary to render the assistance needed for successful operation of the cooperative.

2. For PLN Central Java Systems

a. Cost Accounting:

Advise and assist the PLN in setting up its accounting system so that costs for individual system operations can be determined and analyzed. This will include examining existing forms and methods and the possible preparation of new forms. It will include the introduction of any additional procedures necessary to generate the detailed data used in cost accounting. It will also include modifying the system books as necessary to accommodate the added information available from the above activities. A scheme should be devised to effectively highlight the data generated for use and guidance of the project management.

b. O&M Methods and Training:

Review the O&M procedures in use by PLN. Assess the efficiency and effectiveness of these activities and recommend any changes

which may improve the operation as it applies to the new electric systems. Upon reaching agreement with PLN on the O&M practices to be used on the 7 new systems, advise and assist PLN in identifying the areas in which training is required. Assist in preparing training courses. It is expected that the O&M advisor will be qualified to act as instructor on much of the recommended training.

c. Load Building:

Advise and assist PLN in preparing for and implementing an electrical load building program suitable for use on the 7 new electrical systems. This will include selection of methods and media to use and frequency of use. It should also include a procedure by which PLN can gauge the cost effectiveness of any promotional activity. Assist in preparing job description and training personnel to carry out the promotional activity.

3. Training

The TOM advisors in Central Java will not only advise the PLN managers about the O&M training that may be needed but will be expected to act as instructors in implementing a large part of this work. In addition the TOM team may call upon the A&E team members stationed in Central Java to teach certain skills for which they are uniquely qualified. If additional skills are required, they will be provided through the use of short term consultants.

4. Coordination

The USAID/Jakarta Project Office will be the direct supervisors of the TOM team. The team will work directly with and report to the Directorate General of Cooperatives and the PLN staffs as instructed by the USAID Project Officer. Close coordination with the A&E team will be essential during all phases of the project.

III. Composition of the Team

Based on the project schedule shown in Part VII below, the following composition of the OMT team is suggested. The proposal of the TOM firm should include the OMT management's assessment of the required team staffing considering the magnitude of the work, the schedule and the availability of qualified personnel. The proposal should include bio data of all personnel proposed for the job. Personnel must be approved by AID and the Indonesian counterpart agency, DGC or PLN.

Team Members	Months Required
Chief of Party	48
Training Advisor	36
Cooperative Resident Advisor (3)	48 each
Financial Analyst	24
PLN Advisor (Semarang)	42
PLN Advisors (Central Java) (2)	24 each
Consultants	30
Total	372

IV. Support to be Provided by AID

AID support will be limited to the provision of certain facilities such as commissary and the American Club. No APO privileges or medical facilities will be available through AID.

V. Support to be Provided by Others

The GOI will provide, in addition to counterpart staff, the following facilities: land transportation outside Jakarta, office space, furnishing and supplies, administrative assistance in obtaining housing, air travel, supplies, etc.

VI. Support to be Included in the OMT Contract

The OMT firm is expected to obtain the following facilities and services which will be reimbursed out of the contract:

1. Housing and furnishings.

2. Dependent children's education in country.

3. Transportation of household effects.

4. International transportation to and from post for team members and dependents including per diem.

5. Home leave travel, emergency travel etc. for team members and dependents.

6. Travel of home office supervision to the site and in country travel costs including per diem when away from permanent station.

7. Internal air travel and per diem away from permanent station.

VII. Schedule

The project schedule calls for signing the OMT contract in October, 1977, assisting the cooperatives in organizing in November of 1977, start training program in December, 1977. Training power system operators should begin in early 1979 as the initial system energization is planned for the second quarter, 1979. Although system backbone construction is scheduled for completion in 1980, force account construction, particularly the addition of customer services, will continue through 1982. Training activities should continue on a declining basis until the end of 1981.

VIII. Reports

The team shall issue a monthly report giving status of contract implementation, project progress, problems and, when relevant, suggestions for their solution. This report must be submitted not later than 15 days after the close of the reporting period. A final report shall be issued within one month of the contract completion.

RURAL ELECTRIFICATION
ARCHITECT & ENGINEERING SERVICES

SCOPE OF WORK

I. Introduction

The Government of Indonesia (GOI) has initiated a demonstration rural electrification program which is planned to provide areawide electric power distribution in approximately ten specified areas within the next three or four years. The objective of this program is to demonstrate conclusively that reliable electric service and the social and economic benefits that accrue therefrom can be made available to the very poor people at a price they are able to pay.

Three of the electrical distribution systems will be located on separate islands outside of Java and will be implemented through rural electric cooperatives organized by the Directorate General of Cooperatives (DGC). Seven systems will be located in the Province of Central Java and will be implemented through the National Electric Power Agency (PLN). These agencies will finance the systems and will also have the primary responsibility to organize the systems, make feasibility studies, design the systems, procure materials and construct the systems.

The U.S. Agency for International Development (AID) will assist the GOI in its demonstration program by making available AID loan funds to procure materials and construct the systems and grant funds to provide technical advisory and architect and engineering services. The technical organizational and management advisory services will be provided by the National Rural Electric Cooperative Association (NRECA) and the National Electrification Administration of the Philippines (NEA). An advance team from the NRECA is currently at work in Indonesia preparing feasibility studies for the ten systems. The architect and engineering services will be as described in this Scope of Work.

The services described herein will be provided by the interested qualified US firm (hereafter called the A&E team) which submits the most acceptable proposal including work plan and qualified personnel. The A&E team may consist of US citizens and eligible third country nationals. In connection with the implementation of the cooperative portion of the demonstration program AID desires that an Indonesian A&E

capability in rural electric distribution systems be developed. The proposal and plan shall include subcontract services of an Indonesian consulting firm which will provide Indonesian personnel to assist the A&E team.

Firms interested in making a proposal for the services described herein may visit the project area, including the sites of the three cooperatives and the seven PLN systems, become familiar with transportation facilities, living conditions for employees and the capability of Indonesian consulting engineering firms at their own option. The US firm whose proposal is accepted will enter into a direct contract with AID.

II. Scope of Services

The A&E team will work with the two separate agencies which will implement the Project, DGC and PLN. Because of the different organization management, training and experience of these two agencies, the services provided by the A&E team will be different in type, scope and location. The DGC has no experience in rural electrification and is forming a special Project Development Office (PDO) which will perform most aspects of project implementation including organizing three cooperatives (tentatively in Sumatra, Sulawesi and Lombok). Power sources for each of the cooperatives will be by diesel plants furnished and installed by others. The PLN systems will be in the Province of Central Java where the population density is high and adequate power sources are available at the standard distribution voltage (20 KV).

The specific services required are:

1. Design for DGC

The A&E team will be responsible for all phases of the design of three areawide rural electric distribution systems including maps, field surveys, design, material and equipment specifications, sectionalizing studies, preparation of Invitations for Bid (IFB's) and field layout. PLN standard 20 KV specifications and drawings will be used and made available to the A&E team. The cooperatives are being organized but will have no system detail maps available for A&E use. While the specific villages to be served have been identified, the membership sign-up will not be completed when system design begins. In order to expedite the project schedule it is necessary to make an initial field investigation promptly

in sufficient detail to permit a reasonably accurate design for ordering materials. The IFB's should be prepared at the earliest possible time and provide for an adjustment of quantities (plus or minus) to accommodate the refined design requirements. The IFB's for all cooperative material shall be included in one set of documents with provision for shipment of designated quantities of material to the respective ports of entry for each cooperative. The individual systems will be of area coverage type providing for 5,000-20,000 connections in an area of from 1,000 to 5,000 square kilometers each. Included in each system will be a headquarters complex consisting of a storage yard, warehouse, office space and training facilities. The design team will be headquartered in Jakarta with travel to the sites as required. The feasibility studies prepared by the NRECA team will be available for use by the A&E team.

2. Design for PLN

The A&E team will assist the PLN operations staff located in Semarang, Central Java, in all phases of the design of seven areawide rural electric distribution systems. PLN is presently mapping the project areas and it is anticipated that adequate data will be available for design purposes when the A&E team arrives. The assistance will consist of among other things, circuit routing, phasing, conductor sizing, sectionalizing, estimating material requirements and preparation of the IFB's. The materials for all seven systems will be ordered simultaneously and delivered to the port of Semarang. PLN standard specifications and drawings for 20 KV system will be the basis for design. PLN desires to expedite the project schedule and expects to complete the design in sufficient detail for material ordering promptly. The IFB's will carry a proviso that quantities of material can be adjusted (plus or minus) when the designs are refined.

The feasibility studies prepared by the NRECA team will be available for use by the A&E team. Each system will cover approximately 1,000 square kilometers and will serve approximately 30,000 customers. A complete headquarters site will be required for each system. All systems will receive power from existing 20 KV takeoff points.

3. Procurement for DGC and PLN

Procurement of the equipment and material required for both the DGC and PLN systems will include the following steps:

a) prequalification of bidders, b) issuance of IFB's, c) bid analysis and recommendation for purchase, d) issuance of purchase orders, e) receipt, inspection and warehousing of material and f) (for PLN systems only) distribution of materials and billing to the separate systems. Shipments of material for each cooperative will be direct from the overseas source to the nearest port of entry.

Materials will be procured within Indonesia with local currency from the GOI budget and imported from Code 941 countries using the AID project loan fund. The A&E team shall identify material available locally and shall procure from the optimum source considering quality, timely availability, price and availability of funds.

PLN will provide personnel for the inspection, warehousing and distribution of the material under the guidance of the A&E team.

DGC cooperatives will each provide personnel for receiving, inspecting and delivering materials to the warehouse. The A&E resident engineer will assist in inspecting the materials, preparing receiving reports and reports covering loss and breakage, and will advise cooperatives personnel in the proper handling and storage of materials to prevent deterioration of the inventory.

4. Field Layout for DGC

As soon as the system design is approved the A&E will initiate field operations including advising each cooperative concerning location of easements required and right of way to be cleared, as well as identifying structure locations. He will prepare and make available in adequate copies staking sheets for the entire system including consumer services and detail maps for use by the DGC, cooperatives and contractor in a timely manner.

5. Construction Supervision

Construction of PLN systems will be by force account and by local construction contractors. Construction of DGC systems will be by Indonesian contractors. While PLN crews have some previous experience, local contractors will generally be inexperienced.

For contractor construction supervision will include a) prequalification of bidders, b) preparation and issuance

of IFB's, c) bid analysis and recommendations of award, d) inspection during construction for quantitites of work, schedule and payments and e) inspection for quality. For DGC systems this will include inspection of all services constructed by cooperative personnel. Assistance in implementing items a) to c) inclusive will be by the A&E team office personnel or by the resident engineer. Assistance in implementing items d) and e) will be provided by A&E construction supervisors headquartered near the construction sites whether the systems are constructed by contract or force account.

6. Final Inventory and Contract Closeout - DGC Only

The A&E will be responsible for:

a. Maintaining a cumulative inventory of construction units installed and accepted.

b. Correcting all key and detail maps and staking sheets as construction progresses.

c. Completing the final inventory, maps and related data within 30 days after the contractor completes work on the distribution system.

7. Training

The A&E team will be assigned counterparts by the DGC and the PLN who will assist in all of the functions described. These counterparts and the subcontractor personnel identified in Section VII should be given an opportunity to participate in the various engineering activities that occur. For example, each design engineer should gain experience in making voltage regulation studies, sectionalizing studies, material takeoffs, preparing IFB's, etc. Staking party chiefs should receive sufficient training and experience so that they can undertake future project work with minimum supervision. Training for other counterpart personnel should be reasonably broad and thorough.

Each cooperative will have a need for an extensive training program for its personnel. This will be the primary responsibility of the OMT team. However, there will be need from time to time for special training which the A&E team will be best qualified to undertake. The cooperatives will call on the A&E to prepare data and act as instructors as these special needs arise.

8. Coordination

The USAID/Jakarta Project Office will be the direct supervisors of the A&E team. The team will work directly with andreport to the Directorate General of Cooperatives and the PLN staffs as instructed by the USAID Project Officer. Close coordination with the OMT Technical Advisory Team will be essential during all phases of the project.

III. Composition of the Team

Based on the schedule which calls for beginning design work in January 1978, start of construction in the third quarter 1978, energizing in early 1979 and final completion of systems starting in 1980, the following composition of the A&E is suggested. The proposal of the A&E firm should include the A&E management's assessment of the required team staffing considering the magnitude of the work, the schedule and availability of qualified personnel.

Team Members	Months Required
Team Leader	42
Administrative Officer	30
Principal Design Engineer DGC	36
Principal Design Engineer PLN	36
Design Engineer PLN	18
Materials Supervisor PLN	24
Resident Engineer (3)	42 each
Construction Supervisors DGC (3)	24 each
Construction Supervisors PLN (3)	30 each
Consultants as Required	30
Total Months	504

IV. Support to be Provided by AID

AID support will be limited to the provision of certain facilities such as commissary, and the American Club. No APO privileges or medical facilities will be available through AID.

V. Support to be Provided by Others

The GOI will provide, in addition to counterpart staff, the following facilities:

Office space, furnishings and supplies.

Land transportation vehicles.

Administrative assistance in obtaining housing, air travel, supplies, etc.

VI. Support to be Included in the A&E Contract

The A&E firm is expected to obtain the following facilities and services which will be reimbursed out of the contract:

Housing and furnishings.

Dependent children's education in-country.

Transportation of household effects.

International transportation to and from post for team members and dependents including per diem.

Home leave travel, emergency travel, etc., for team members and dependents.

Travel of home office supervision to the site and in-country travel costs including per diem when away from permanent station.

Internal air travel and per diem away from permanent station.

VII. Subcontractor

The A&E firm shall enter into a subcontract arrangement with an Indonesian consulting firm to provide qualified personnel to assist in performing its duties as described above. Composition of the Indonesian consultant team shall be as negotiated among the A&E firm, the consultant, the GOI and AID but shall include the following capabilities:

Field surveyors
Design engineers
Draftsmen
Staking Party Chiefs
Procurement specialists
Construction supervisors

VIII. Subcontractor Support

Payment for costs of the subcontractor shall be in Indonesian Rupiahs provided by the cooperatives and they will be cosigners of the contract. Office support for the subcontractor shall be provided in kind by the GOI and the cooperatives and personal support shall be included in the contract as reimbursable items.

IX. Schedule

The Project Schedule calls for signing of the A&E contract in December 1977, beginning of field surveys and design in January 1978 and issuance of material IFB's in the First Quarter 1978. Actual construction will start in the Third Quarter 1978 and the systems should be energized as soon as possible in early 1979. System completion will begin in early 1980.

X. Reports

The A&E team shall issue a monthly report giving status of contract implementation, project progress, problems, etc. This report must be submitted not later than 15 days after the close of the reporting period. A final report shall be issued within one month of the contract completion.

Site Selection In Central Java

At the PRP Stage it was contemplated that the Java program would entail two demonstration projects in each of the three provinces. However, at a meeting with the President/Director of PLN on April 29, 1977, the USAID Director was told that PLN would like to concentrate all of their subprojects under the proposed AID Loan in Central Java. His reasons were (1) that most of the PLN grid in Central Java is AID financed so the systems would be compatible (2) Central Java has not received as much investment by PLN recently as the other two provinces and (3) that other donors were interested in the other provinces. He gave USAID the following list of fourteen potential areas in Central Java that he wanted the NRECA Team to screen.

1. Blora	6. Klaten	11. Kebumen
2. Demak	7. Salatiga	12. Bumiayu
3. Grobogan	8. Purworejo	13. Pemalang
4. Pati	9. Banjarnegara	14. Wonogiri
5. Sragen	10. Wonosobo	

Later discussions at the staff level revealed that these sites had been selected by PLN in conjunction with the Governor's staff and the Planning Department of Central Java. Their selection criteria was tecnical (near to the existing grid) economic (complementary to the provincial development plan) and political (the areas whose local leaders have been the most vocal in their demands for electric service).

Between June 2 and June 23, 1977 a USAID/NRECA Team worked in Central Java with PLN to assist in the selection of the presently proposed list of sites. At an initial meeting with the principal officers of PLN and the Governor's Representative, the program was explained in detail with stress placed upon the concept of area coverage. The following general procedures were agreed to be used in defining the areas.

(a) Inspect a map of the Central Java grid including substations to be completed by 1979. Choose Kabupatens which are conveniently located to these available substations provided of course, that these stations are large enough to handle their planned loads plus the anticipated load from the RE system for about 5 years. (It was explained that loan funds could be used to expand substations, add new ones if necessary or build short transmission lines.)

(b) Have the governor's office rank order the Kabupatens on a preference basis.

(c) Visit each of the Kabupatens and have the District Chief assist in deciding which area within the Kabupaten should be selected for the system. (Note that Kabupatens in Central Java average about 1,000 Km^2 and 800,000 or more residents, so only about one fourth of a Kabupaten could be included in an area coverage subproject of 20,000 or so connections within 5 years.) Also it was agreed that the areas could include parts of two Kabupatens.

(d) Visit the subdistricts selected by the District Chief in each area to explain the program to the local leadership and begin the detailed data acquisition.

Going through steps a & b above the PLN group with the help of the Governor's Representative drew up the following priority list:

Kabupaten	Area Km^2	Population (000)	Substation
1. Klaten	697	1000	16 MW
2. Pemalang/Pekalongan	1046/875	842/597	16 MW
3. Wonogiri/Sukoharjo	1921/485	940/534	2-16 MW plus 12 MW hydro
4. Magelang	1176	858	16 MW
5. Kebumen	1367	970	20 MW plus 2 MW hydro
6. Semarang (not city)	1000	750	100 MW in city 2-16 MW
1. Wates/Bantul	500	400	2-16 MW

Note that Wates/Bantul districts are not administratively part of Central Java so this area was ranked separately.

A joint field trip by PLN, the Governor's Representative, USAID and NRECA was made to Pekalongan/Pemalang between June 6 and 7. Both District Chiefs and some 15 subdistrict chiefs were visited but the team concluded that too many false expectations were being created by such a massive canvass.

Instead it was decided to take advantage of an already scheduled District Chief's meeting on June 11. The Governor's Representative assumed responsibility for meeting with the District Chiefs on that occasion, explaining the program to them and getting them to select the final areas.

The results of this meeting were plotted on a map and shown to PLN, USAID and the NRECA team on June 13 and to the Governor of Central Java on June 14.

Since the area around Klaten was the number one priority area, USAID/NRECA suggested a visit to meet the District Chief and together lay out a preliminary system design which would serve as a model for the rest of the areas. This was done the next day, June 15. After carefully explaining the program and the concept of area coverage the District Chief was asked to first select an area and then select specific villages within the area which would have a total of 50,000 houses. The District Chief thereupon selected some 98 villages in a rural, rice/sugarcane area just north of the city. See map and site descriptions in Annex J.

After laying out the proposed Klaten service area and holding further discussions with PLN Semarang, it was decided to visit Yogyakarta on June 17 and call in the planning chiefs of five other districts to Semarang on June 21 to select specific villages and make lay out maps similar to the Klaten model. These preliminary areas were as follows:

Area	No. Customers
1. Klaten	25,000
2. Pekalongan/Pemalang	25,000
3. Wates/Bantul	20,000
4. Wonogiri	20,000
5. Magelang	15,000
6. Kebumen	20,000
7. Sragen	15,000
Total	130,000

At a final wrap-up meeting in Semarang between PLN Central, PLN Semarang (Distribution and Construction) USAID and NRECA it was decided to alter the proposed list slightly based upon technical considerations and the desires of the Governor. It was agreed that feasibility studies would be conducted for the following areas.

Area	No.Villages	No. Customers
1. Klaten	98	25,000
2. Pemalang/Pekalongan	102	20,000
3. Wonogiri	54	15,000
4. Magelang	83	20,000
5. Sragen	47	15,000
6. Banyumas/Cilacap	35	15,000
7. Wates/Bantul	21	20,000
Total	440	130,000

Site selection in the Outer Islands

Prior to the arrival of the NRECA team, the staff of the Directorate General of Cooperatives (DGC) drew up a list of 10 Districts (Kabupatens) in ten provinces scattered throughout the Outer Islands which they thought had potential for a rural electrification project. The criteria stated as used in determining this list was (a) population density (b) development potential (c) strong local political support (d) the availability of nearby sources of power and (e) that the area contains a transmigration site. The DGC staff emphasized in their initial discussions with USAID and the NRECA team that assistance to the transmigration program is a strong element in its leverage with the Government to permit it to begin the development of rural electric cooperatives.

The DGC, USAID and the NRECA team each divided their staffs to form three joint survey teams. The ten provinces were visited between March 31 and April 21, 1977 by these joint teams but in the process the list of possible sites was expanded to 16 because of the requests of governors and suggestions of local PLN managers.

During the next six weeks the NRECA team, with support from the DGC and USAID, prepared a preliminary system design and a financial analysis for each area. Identical project assumptions such as connection percentages were factored into every study in order that the results would be comparable.

A brief summary of this findings and analysis for each site is listed below.

1. South Minahasa District, North Sulawesi Province

This is a rich rice farming area located just south of Lake Tondano. PLN presently has approximately 6 MW of excess capacity of mixed diesel and hydro generators in the Minahasa area and has fairly firm plans to increase its generation (ADB financing) so that by 1982 they should have an estimated 20 MW of excess power. PLN's plans for distribution of this power is confined to the northern part of the district where the urban/industrial load is concentrated. An ideal Rural Electric Cooperative could be formed by taping into an existing 30 KV line which extends south along the lake from the 8 MW hydro station and building a distribution system which would serve seven subdistricts (Kecamatans) which have a combined population of 130,000 people. The population density of this area is sufficient ( ) and both the present economic base as well as the development potential are excellent. The only problem is that as a matter of policy PLN has not yet agreed to sell bulk power to the proposed cooperative. At the end of the 5th year of operations the coop could have the following characteristics.

Investment in system	US$15,692,000
Connections	28,000
Investment/connections	203
Total km of Primary	216
TIER in 11th year	4.52

2. Lampung Tengah - Lampung Province, Sumatra

This is a densely populated, but still relatively rich diversified farming area which has been largerly colonized over the past 40 years by transmigrants from Java. Since it is only a 30 minute flight and a 45 minute drive over excellent roads from Jakarta to the proposed headquarters site, and the conditions are so similar to those found on Java, this proposed project area will make an outstanding demonstration of rural electrification through coops. There is also an excellent nearby port which will make it comparatively easy to build, operate and maintain the system. The economics of the area is based upon diversified farming of good agricultural lands. The irrigated rice lands are supplemented by sugar, jute, cassava and several palm oil estates which provide employment as do large numbers of food processing, lumber and other agricultural oriented small industries. At the end of the 5th year of operations the proposed coop could have the following characteristics:

Investment in system	$11,782,000
Connections	29,000
Investment/connection (including generation)	$ 405
Kilometers of Primary line	277
TIER in 11th year	3.76

3. Lampung Selatan - Lampung Province, Sumatra

This is another excellent location for a coop which has nearly the same characteristics of site No. 2 above, However, since these two sites are adjacent, it would lessen the demonstration effect of the entire project to built them both in the same phase. Preferably the three initial projects should be built on three widely scattered islands. They will be the leaders, generating interest and creating demands for additional electric systems. This site will be a prime area for a follow on project. The characteristics at the end of the fifth year of operations should be as follows:

Investment in system	$12,359,000
Connections	26,600
Investment/connection (including generation)	$455
Total kilometers	258
TIER in 11th year	3.01

4. Lombok Timur - North Section

While the southern part of the island of Lombok suffers from occasional drought, the combination of good soil and adequate rainfall make this area a rice bowl for the rest of the island. Sugar and coconuts are the principal cash crops. Since the district capital is served by PLN

(installed capacity 760 KVA, 500 customers) it is recommended that the headquarters site be located at Aikmel, which is centrally located and only a 1 hour and 15 minutes drive from the Province capital on an excellent road. From here it would also be possibly to electrify part of the islands underpopulated North Coast which might attract in-Province Transmigration from the drought prone south. At the end of the 5th year of operation the proposed Coop might have the following characteristics:

Investment in system	$10,246,000
Connections	34,400
Investment/connection (including generation)	$ 298
Total kilometers of primary	176
TIER in 11th year	3.54

5. Lombok Timur - South Section

This area is north of the drought prone area of the island and can be best described as a good average rural Indonesian area. Physically and economically it would appear to meet all the requirements for a model Coop except it is adjacent to site No. 4 above so again the spread effect and demonstration purpose would be lost if both Coops were organized and constructed in the first phase of the program. Since the economic base appears to be less then in the northern section and there is no potential for transmigration development it is recommended that this area be included in the next phase. The characteristics of the Coop in the 5th year of operations might be as follows:

Investment in system	$8,949,000
Connections	21,400
Investment/connection (including generation)	$ 418
Total kilometers of primary	128
TIER	2.25

6. Luwu, South Sulawesi

Luwu is a narrow plain of relatively underdeveloped land between a mountain range and the Bay of Bone. It is one of the GOI's primary transmigration areas and as such it is a developing "Frontier" the areas 250,000 residents are located in numerous small villages, principally along the main trunk road which stretches about 176 Km from the District Capital, Palopo on the west, to a nickel mining town, Malili to the east. The average farm size in Luwu is 1.7 hectares or almost three times as large as the average for Central Java.But many of the farms are only semi-cleared and irrigation infrastructure is still undeveloped, so that the economy is still characterized as "subsistance". The population growth rate in recent years has been over 4%, significantly higher than the national average and reflecting the steady influx of transmigrants. The

entire area is due to get an economic boost from a US$43 million joint USAID/GOI Integrated Area Development project which involves (1) rehabilitation of the main trunk road, (2) rehabilitation and extension of irrigation works and (3) creation of Farm Service Centers. It is recommended that the headquarters site be located at Bone Bone and that the first phase project extend east and west along the trunk road from Sabang to Mangutana. There are approximately 40,000 households in the proposed service area at the present time. The proposed coop might have the following characteristics at the 5th year of operations:

Investment in system
Connections
Investment/connection (including generation)
Total kilometers of primary
TIER

7. Bilitung Area, Oku District, South Sumatra

The Bilitung Area is a well developed, apparently prosperous transmigration area comprising three subdistricts, 155 villages and approximately 305,000 people with a population dnesity of about 113/Km2. Most of the people have been transmigrated here from Java over the past 40 years. A two lane asphalt road connects 47 villages with the provincial capital and sea port about 6 hrs drive (200 Km) from the proposed headquarters site. The rest of the villages can be reached by dirt, village roads. A gravity flow irrigation system, constructed by the Dutch, serves most of the farms and permits two and three rice crops a year. It was estimated by the local subdistrict chiefs that 90% of the people are rice and secondary crop farmers, 5% are merchants and 3% are engaged in cottage industries. These local leaders indicated that the people are very desirous of having electricity and many 10-20 member electric coops are already being formed using 3 of Japanese diesel generators. They estimated that 60% of the farmers would connect up if they were charged Rp. 1,000-2,000/month. The area is also within 70 Km of a vast coal mining operation that is expected to begin production within three to five years. There are some tentative plans to build a rather large mine-mouth generator at the coal mine. However the design of the proposed system should include self generation and take transmission supply when available. The proposed coop might have the following characteristics at the end of the fifth year of operations.

Investment in system	$9,960,000
Connections	11,920
Investment/connection	$936
Total kilometers of primary	350
TIER at 11th year	2.29

8. Kotamobagu, Bolaang Mongondow District, North Sulawesi

This area is a plateau in the center of North Sulawesi which is surrounded by mountains and bisected by a two lane, winding asphalt road stretching 200 Km from Manado. Most of the estimated 90,000 people live along this road and a house count made by the survey team showed 66-90 houses/Km. There are about 8,000 "official" transmigrants in the area but many more people have settled here on their own over the past 25 years. The economy is based on rice farming although the irrigation system is not well developed. There might be a potential for pump irrigation here if electricity was provided. Other cash crops include, sugar, coconuts, coffee and cloves. In the center of the area lies the district capital, Kotamobagu (pop. about 40,000). It is served by PLN (two 275 KVA generatos which operate 16 hrs/day and serve 485 customers).

The coop, without the city of Kotamobagu, might have the following characteristics at the end of the 5th year of operation.

Investment in system	$8,654,000
Connections	8,395
Investment/connection (including generation	
Total Km of primary	234
TIER at the end of the 11th year	2.14

9. Sitiung Transmigration Area, West Sumatra

This is a new transmigration area (less than a year old) which has received a great deal of high level attention primarily because the people are coming from the President's home area, south of Wonogiri in Central Java. The area is reached by a 5 hour drive (150 Km) from the province capital (Padang) along an excellent asphalt highway. To date about 2,000 families, comprising 10,000 people have been moved into the area. The present plan is to move 10-14,000 transmigrant families there within the next three years.

There are already about 40,000 people who live in the immediate surrounding area of approximately 40 Km long by 10 or 15 Km wide so the total population should swell to about 100,000 people by 1980. Driving on the back roads gives the feeling that the area is sparsely populated and poor. However, the people have been given liberal transmigration benefits and the local subdistrict chief (Camat) expressed great confidence that every family would want and could afford electricity at Rp. 1,000/month. Our recommendation is to postpone this coop until after all the transmigrants have settled in and the initial development projects are completed. Given the projected population figures a rural

electric coop in Sitiung might have the following characteristics at the end of the 5th year of operations:

Alt. # 1.	Distribution and Generating Plant plus Transmission*	
	Gross investment	$5,155,000
	# Connection	12,307
	Investment/connection	420
Alt. # 2.	Distribution plus Generating Plant plus Diesel Gen.	
	Gross Investment	$6,414,000
	Investment/connection	521

10. Indragiri Hilir, Riau, Sumatra

This is a relatively rich but isolated area of Sumatra containing some 300,000 people who live along the Indragiri river and its network of delta branches. The area is surrounded by dense jungle and access is by a 4 hour boat trip from Rengat which in turn is served by a Merpati Twin Otter flight 3 times a week from Pakanbaru, the province capital. The entire journey by boat to Pakanbaru takes 20 hrs vs only six to Singapore. There is essentially zero infrastucture in the area. There are no roads, no airfield and only 400 KW of electricity in the district capital of Tambilahan. There are two active transmigration projects 50 Km upstream from the mouth of the river. The economy is based upon copra and rubber and the area is apparently very prosperous because of the. The 100,000 plus hectares of coconuts produce over 200,000 tons of copra annually which selling at Rp. 140 per kilo means about Rp. 30 billion ($75 million) per year coming to the small holders. This is Rp. 100,000 per capita. The district is also a net exporter of rice, fish, cashews, rubber and cooking oil. There are a large number of rice hulling mills and some 21 coconut oil plants which use about 3 MW of electric power (self generated). In summary, there is a sizeable industrial electric load already established, the population is sufficiently dense and income levels appear high enough to support a coop. Construction costs would be higher than in other areas because of the lack of roads and the soil, but boat transport is easy. This would be an extremely interesting area for a system. If selected it might have the following characteristics at the end of the 5th year of operation:

Investment in system	$15,822,000
# Connections	16,700
Investment/connection	$946
Total Km of primary lines	454
TIER at the end of the 11th year	.73

11. Pulau We (Sabang), Aceh, Sumatra

The island of We, located about 18 Km off the north tip of Sumatra, is blessed with one of the finest natural harbors in the world. It is further inhanced by a natural lake so that many ships stop here for bunkering and water. In 1963 Sabang harbor was declared a free port and a large investment was made in the island's basic infrastructure so that it would compete with Penang and Singapore. There is a 900 ton cold storage facility at the port and an active tuna fleet which does a booming business with Japan. The island's agriculture is based upon coconuts and cloves, both lucrative cash crops. In short the income received from commercial activities, fishing and agriculture make the approximate 30,000 residents comparatively wealthy by Indonesian standards and leaves no doubt, but that they could afford electricity. Presently there are two old Russian generators and an WW II vintage distribution system which serves 4-500 customers in the harbor area. However, the Port Authority has recently installed two Siemens 500 KVA Diesel generators at a new plant overlooking the harbor. All they need is a distribution system which would serve the rural areas. The proposed coop might have the following characteristics at the end of the 5th year of operations.

Investment in distribution	$1,200,000
#Connection	3,266
Investment/connection	$367
Total kilometers of primary lines	50
Total kilometers of secondary lines	5
TIER	

12. Tanah Laut, South Kalimantan

Although almost every public official, at both the local and central government level, was enthusiastic over the prospects of electrification for this area and the many benefits that would flow from it, the basis for a viable system, i.e. sufficient population and/or industry just does not presently exist.

The roads in the area are satisfactory for a significant distance south beyond Banjarmasin, the province capital, but decrease, in quality and regularity of maintenance after Banjar Baru. There is a marked absence of vehicle traffic on the road below this point and this does not change until one enters the environs of Pleihari. Even here, however, with the exception of market days, the town is not a beehive of actitivy. While Pleihari is not totally a backwater of the province capital, development in the area has been slow and limited. Agriculture in the area produces rubber, clove, cassava and peanuts, much of which comes from the

older (20 years) transmigration site near Takisung. The other transmigration site of Tampang is much younger and accordingly less developed.

Pleihari has a 50 KVA diesel generator that was put into operation in 1975. Service is provided to 100 users (residence, commercial, street lighting, etc.) from 6 p.m. to 12 midnight. There is not any industry of consequence in the area.

Perhaps several years from now when the newer transmigration site at Tampang is more settled and agricultural production has increased, it would be a promising site for another rural electrification system. At that time the feasibility of transmitting some of the bulk hydro power from Martapura to the area should be studied. Currently 9 MW of the 20 MW plant is considered excess.

The proposed coop might have the following characteristics at the end of the 5th year of operations:

Investment in system	$9,790,000
#Connection	11,317
Investment/connection (including generation	$865
Total Km of primary	520
TIER 11th year	0.70

The other four sites proposed for possible rural,electric coops were (1) Simalungun Labuhan Batu at North Sumatra (2) Bireun at Aceh (3) Muara Dua at South Sumatra and (4) Lahat at South Sumatra. However,the necessary data to make a preliminary analysis of these areas had not been received in Jakarta by the time a threshold decision had to be made.

On June 3 a meeting was held at the GOI's Planning Department (BAPPENAS). Attending the meeting was the Vice Chairman of BAPPENAS, the Director General of Coops and their key staffs, the USAID Director and his Chief Engineer and the NRECA team leader. See Memcon. In Summary, after considerable discussion of the parameters of the program, the relative merits of six sites vs three and the findings of the joint survey teams, the following three sites were selected for the initial phase; Lombok Timur, North Section, Lampung Tengah and Luwu. It was also agreed that feasibility studies would be done on three additional sites.

SITE SELECTION MATRIX

Region	Population Density	Economic Base: Agricultural				Commercial Industrial			Development Potential			Local Support 3/		Financial Feasibility TIER 2/
		Cash Crops	Diversified	Grain	Subsistence	Handicraft	Small Industry	Large Users (estates, etc.	Complementary Infrastructure (roads, water, etc.)	Transmigration 1/	Irrigation Pump Potential	L	M	
1) Minahasa	79/sqkm	V					V		V	a		L2	M1	4.52
2) Kotamobagu	36/sqkm			V			V		V	b,c	V	L1	M1	3.10
3) Lampung Teng.	421/sqkm		V			V	V	V	V	b	V	L1	M1	3.76
4) Lampung Sel.	387/sqkm		V			V	V		V	b	V	L2	M1	3.01
5) Lombok Tim. N	414/sqkm		V			V	V		V	c	V	L1	M1	3.54
6) Lombok Tim. S	417/sqkm		V			V	V		V	a	V	L1	M1	2.25
7) OKU/Bilitung, Sumatra				V			V			b				2.29
8) Luwu	74/sqkm				V	V	V	V	V	b,c	V	L1	M1	3.12
9) Lahat, South Sumatra		V				V	V	V	V	b	V			-
10) Tanah Laut	15/sqkm				V		V		V	b		L2	M1	1.67
11) Sitiung	14/sqkm				V				V	b,c		L2	M1	1.51
12) Riau	29/sqkm				V					b		L2	M1	.73
13) Simalungun/ Labuhan Batu	27/sqkm		V			V		V	V	a	V	L3	M1	-
14) Pulau We, Aceh	146/sqkm	V					V	V	V	a.		L3	M1	-
15) OKU, Muara Dua		V				V	V	V	V	b		-	-	-

1/ a = no potential, b = existing transmigration area, c = potential transmigration area
2/ TIER represents a times interest earned ratio.
3/ Local leadership: L_1 = Good, L_2 = Medium, L_3 = Low
Willingness to coop: M_1 = Good, M_2 = Medium, M_3 = Low

Site Descriptions

1. Klaten

Klaten, a rich agriculture area situated at the base of Mt. Merapi, midway between the two old sultanates of Surakarta and Yogyakarta is one of the most densely populated rural areas in Central Java and probably the world.* As such it is PLN's priority area.

The proposed rural electrification project will be constructed to serve some 98 villages to the north of the city of Klaten. This area is entirely rural. None of the villages have more than a thousand houses and the average is five hundred. The population of this area is 245,105 people consisting of 51,073 families. These villages are connected by a network of roads much of which is asphalt in excellent condition. The area presently is devoid of electricity.

Under the area wide concept of this project, the plan will be to connect up at least 50% of this target group within 5 years. Various estimates based upon social economic surveys and polls of local leaders indicate that greater than 60% of the area's inhabitants can afford and will desire to connect up. It is estimated that 87% of the population are farmers or farm laborers, 7% own or are employed in cottage industries, 13% are construction laborers, 1% are merchants, 1% are government employees and .2% are pensioners. They live in 41,078 permanent houses and 9,508 semi permanent houses. They shop at some 1,627 stores. There are 777 known cottage industries in the proposed service are which collectively employ 4,479 laborers. By general classification 70% of these industries are agriculture processing, 3% are textile fabrication and weaving, 9% are metal works, 4% are wood carving and saw mills, 1% are Tobacco/cigarette and 12% are listed as "others".

However, the economy is based upon agriculture, particularly rice, sugar, tobacco, coconuts and cassava. Peanuts, cloves and and coffee are also grown. An estimated 50% of the total land area is irrigated pady rice and sugarcane field. The extensive irrigation system is generally gravity flow but there are also some

* The IPB data shows 2003 people/km^2 in the proposed service area.

23 water-pumps in operation and little water is wasted as most farms produce two or three crops a year. There are 29 rice storage warehouses, 89 ricemills, 15 agriculture cooperatives and 96 credit agencies to serve these farmers.

These 98 villages have 95 offices, 63 meeting halls, and 11 clinics staffed with 11 doctors, 67 nurses, and 14 midwives. There are also 180 other more traditional practisers of medicine working in the area. Educationally there are 303 schools with 2,215 teachers and 46,223 pupils. There are also 414 mosques and churches and one 800 seat theater.

The people own 4,530 radios and 769 television sets, which are run by batteries or from small generators. The present kerosene consumption within the proposed service area is estimated to be 1,200,091 liters/month.

2. Pemalang/Pekalongan

This area as its name implies covers a significant portion of the rural populated areas of two districts which lie on the north coastal plain of Central Java about 90 km west of Semarang. Economically it is a rice and sugarbowl but it is also famous for colorful handprinted batik and bamboo handicrafts.

The proposed rural electrification will be constructed to serve 109 villages, midway between the two districts each with an average of 336 total houses. The population of this discrete area is 242,120 people, consisting of 52,176 families. The population density is 1141 people/sq.km. These villages are connected by serviceable dirt roads and are without electricity except for the village of Kajen which has a 50 KV generator supplied by the Province Government.

Estimates based upon social economic surveys and polls of the village leaders indicate that 60% of the families in this area can afford electricity and will desire to connect up. The people in this service area live in 8,787 permanent houses and 27,848 semi permanent houses. They shop at 972 stores. It is estimated that 62% are farmers, 30% are farm laborers, 3% are construction

laborers, 1% are industry laborers, 2.5% are merchants, 1.5% are government employees and 1% are pensioners. There are 252 cottage industries which collectively employ 1,252 laborers. By general classification 23% of these industries are agriculture processing, 22% are textile fabrication and weaving industry, 15% are metal industry, 23% are wood processing and wood carving industry, 0.5% are chemical industry, and 9.8% are considered as "other".

An estimated 38% of the total land area is irrigated pady/rice and sugarcane fields. The irrigation system is under-developed and generally gravity flow, but there are also 81 water pumps in operation and some farms produce two or three crops a year. It is felt that the provision of electricity to this area would cause a significant increase in the numbers of irrigation pumps. There are 67 rice storage houses, 47 rice mills, 16 agriculture cooperatives and 52 credit agencies to serve the area's farmers. The principal agriculture crops are rice, sugarcane, maize, peanuts and cassava.

The rural electrification service area has 92 village offices, 73 meeting halls and 8 clinics staffed with 6 doctors, 41 nurses, and 14 midwives. There are also 242 traditional local practicers of medicine. Besides that, there are 238 schools staffed with 1,253 teachers who instruct 36,859 pupils. It is estimated that 27% of the population have graduated from elementary school, 4% from Jr. high school and 2% from high school. There are also 344 mosques and churches in this proposed service area.

The Ministry of Interior data show that the people own 3,637 radios and 340 television sets, which are run by batteries or from small generators. The present kerosene consumption in this service area is estimated to be 902,946 litres/month.

3. Magelang

Magelang is located in the center of Central Java. It lies in a valley between Mount Sumbing and Mount Merbabu and alongside the busy trunk road which winds its way through the mountains from Semarang to Yogyakarta. Magelang is wellknown because of the

existence in the area of a number of Hindu Temples dating from the 9th Century which attract a lot of tourists. It is also the home of the Indonesian Military Academy and was an anti-colonist stronghold during the revolution against the Dutch.

The proposed rural electrification project will be constructed to serve some 84 villages to the east of the city of Magelang. This area is entirely rural as the average total houses in each village is 366. The population of this area is 175,630 people consisting of 29.437 families. Population density is 1002 people/sq.km. The villages are connected by an excellent road network but the area is presently devoid of electricity.

Estimates based upon social economic surveys and polls of the village leaders indicate that 56% of the inhabitants in this area can afford electricity and will desire to connect up. The people in this proposed service area live in 2,310 permanent houses and 27,961 semi permanent houses. It is estimated that 70% are farmers, 17% are farm laborers, 3% are construction laboreres, 1% are merchants, 0.5% are government employees and 9.5% are pensioners. There are 108 cottage industries which collectively employ 628 laborers. By general classification 65% of these industries are agriculture processing 2.6% are textile fabrication and weaving, 9.5% are metal works, 10.4% are wood carving and wood processing industry, 0.2% are tobacco/cigarette industry and 7.8 are listed as "others."

An estimated 32% of the total land area is irrigated pady/rice and sugarcane fields. The existing irrigation system is under-developed and generally gravity flow but there are presently some 14 water pumps in operation in four villages around Grabag and some farms do produce two or three crops a year. There are 22 rice storage houses, 31 ricemills, 5 Agriculture Cooperatives and 11 credit agencies to serve the area's farmers. The principal agriculture crops are rice, maize, sugar, tobacco, cassava, soybean, Peanuts, cloves and coffee are also grown in this area.

The proposed rural electrification service area has 83 village offices, 39 meeting halls and 7 clinics staffed with 3 doctors, 13 nurses, and 5 midwives. There are also 176 traditional local practicers

of medicine. Beside the above there are 190 schools staffed with 1141 teachers who instruct 22,688 pupils. It is estimated that 20% of the population have graduated from elementary school and 3% from Junior high school. There are also 307 mosques and churches in this area.

According to GOI data the people own 2760 radios and 93 television sets, which are run by batteries or from small generators. The present kerosene consumption in this proposed service area is approximately 691,245 liters per month.

4. Yogyakarta/Bantul

Bantul District is located just to the west of Yogyakarta, and is part of a special area which is still ruled by a Sultan. Sultan Hamengkubuwono IX is also presently Vice President of the Republic of Indonesia. President Suharto was also born in this area. Bantul District produces high quality batik material, stone carvings, ceramics and other handicrafts.

The proposed electrification project will be constructed to serve 21 villages in the norhern half of Bantul District. A village in the special area of Yogyakatta is administratively larger than in other districts of Central Java. So while each village in this area has an average of 1,266 houses, the villages are really clusters of hamlets, each hamlet having 300 to 400 houses. The project will serve 60 - 80 of these hamlets. The population of this area is 169,964 people consisting of 36,840 families. These families live in 18,395 permanent houses and 8,154 semi permanent houses. They shop at 837 stores. The population density is 1403/sq.km.

The villages are connected by two asphalt roads leading out from Yogyakarta and a network of dirt village roads that are in generally good condition. There is no electricity in the area except at Godeyan there is a small private company which sells electricity to about 200 customers in four hamlets. The President's village is also electrified. Estimates based upon social economic surveys and polls of the village chiefs indicate that 59% of the families in this area can afford electricity under the program described and will desire to connect up. It is estimated that 60% are farmers, and

farm laborers, 24% are other wage laborers, 8.5% are salaried professional workers including government employees, 5.5% are merchants and 1.5% are pensioners. There are 1,104 known cottage industries within this proposed service area which collectively, employ some 7,260 laborers. The land area used for growing rice and sugarcane fields are, like the Klaten area, intensively farmed with little space or water wasted. The irrigation system is mainly gravity flow, but there are presently 117 water pumps in operation and this number will no doubt increase with electrification as there are seven separate streams which flow through Bantul District. According to a recent survey there are 72 rice storage houses, 120 ricemills, 6 Agriculture cooperatives and 33 credit agencies now in operation to serve the farmers in this area. Besides rice and sugarcane the other principal crops are coconuts, corn and soybean.

The proposed Rural Electrification service area has 107 village offices, 22 meeting halls and 5 clinics staffed with 20 doctors, 38 nurses and 16 midwives. There are also 163 traditional local practicers of medicine. Education facilities include some 181 schools staffed with 1622 teachers who instruct 33,410 pupils. There are also 136 mosques and churches in this area.

According to Ministry of Interior data the people own 7952 radios and 499 television sets, which are run by batteries or from small generators. The present kerosene consumption in this proposed service area is approximately 788,273 liters per month.

5. Wonogiri

Wonogiri lies on the southern base of the 3,265 meter bulk of Mount Lawu, approximately 30 - 40 km south of Surakarta. President Suharto grew up in a small village about 10 km further to the south.

The proposed rural electrification project will be constructed to serve 54 villages that are scattered within 3 - 4 kilometers on either side of the main highway connecting Wonogiri to Pacitan in the Province of East Java. The area is entirely rural. The average number of houses in each of these villages is 647. The population of the proposed service area is 167,081 people consisting of 29,995

families. The density is 872 persons/Km2.

The 1974 edition of Guide to Java describes the main access road as "... a punishing 30 km stretch of pot-holed road ... bearable only once." A recent PLN, NRECA, USAID field trip confirmed that all of the villages are reachable by jeep and that the area is devoid of electricity. The level of economic activity on the surface also appeared to be less than in all the other Central Java sites except Sragen.

However, estimates based upon social economic surveys and polls of the village leaders indicate that 62% of the inhabitants in this area can afford electricity under the program described and will desire to connect up. The people in this proposed service area live in 2,665 permanent houses and 32,292 semi permanent houses. They shop at 335 stores. It is estimated that 60% are farmers, 24% are farm laborers, 2% are construction laborers, 6% are industry laborers, 3% are merchants, 5% are pensioners, 1.4% are government employees and 3.6% are others. There are 384 cottage industries, which collectively employ 2,051 laborers. By general classification 22% of these industries are agriculture processing, 4.7% are textile fabrication and weaving industry, 26% are metal works, 9.4% are wood carving and saw mills, 26% are non metalic or earth industry, 8.7% are listed as "others."

An estimated 17% of the total land area is irrigated pady/rice and sugarcane fields. The irrigation system is under developed and generally gravity flow, but there are also 9 water pumps in operation in this service area. A significant increase in the numbers of irrigation pumps is expected after electrification. There are presently 34 rice storage houses, 8 agriculture cooperatives, 19 rice mills, and 10 credit agencies to serve the area's farmers. The principal agriculture crops are upland and lowland rice, sugarcane, corn and cassava.

The proposed Wonogiri service area has 48 village offices, 33 meeting halls and 7 clinics, staffed with one doctor, 12 nurses, and 8 midwives. There are also 170 local practisers of medicine. Educational facilities total 112 schools staffed with 853 teachers who instruct 27,143 pupils. It is estimated that 37% at the population

have graduated from elementary school, 4.3% from Junior high school and 2% from high school. There are also 49 mosques and churches in this area.

The Ministry of Interior data show that the people own 4072 sets of radios and 119 sets of television, which are run by batteries or from small generators. The present kerosene consumption for this area is estimated to be 688,128 liters per month.

6. Sragen

Sragen is located 20 to 30 kilometers north of Surakarta and is on the edge of the draught prone "critical area" of Central Java. However, the Bengawan Solo river and other smaller tributaries flow through the proposed service area so that electrically powered irrigation pumps could possibly turn the existing grey, dry upland rice and cassava fields into lush green rice padies.

The proposed rural electrification project will be constructed to serve 47 villages with a total population of 139,278 people consisting of 29,528 families. The population density is 872 people per square kilometer. The area is entirely rural and it is the "poorest" of the seven sites in Central Java proposed for this project.

However, the estimates based upon social economic surveys and polls of the village leaders indicate that 44% of the inhabitants in this area can afford electrification under the program described and will desire to connect up. The people in this service area live in 5,157 permanent houses and 24,570 semi permanent houses. They shop at 552 small stores. There is one 350 seat theater at the village of Gemolong which is in the center of the project area. Gemolong also has a 50 KVA diesel generator provided by the Provincial Government which provides electricity to about 75 customers. The rest of the area is devoid of electricity. It is estimated that 60% are farmers, 26% are farm laborers, 3% are cottage industry labors with 0.2% small industry owners, 2% are merchants, 6% are salaried including government employees and 2% are pensioners. There are 87 known cottage industries which collectively employ 1,526 laborers. By general classification 19% of these industries are agriculture processing, 26% are textile

weaving industry, 3% are tobacco industry, 9% are metal industry, 15% are craft/non metal industry, 12% are sawmills and wood processing, 2% are rubber plastic and chemical industry, 18% are "others."

An estimated 45% of the total land area is rainfed padi rice and sugarcane fields. The irrigation system is generally under developed and where existing, gravity flow, but there are also 191 water pumps in operation in this service area. This number will surely increase with electrification. There are 109 rice storage houses, 51 ricemills, 8 Agriculture Cooperatives, and 202 credits agencies to serve the area's farmers.

The Rural Electrification Service area has 36 village offices, 32 meeting halls and 5 clinics staffed with 3 doctors, 23 nurses, and 11 midwives. There are also 153 traditional local practisers of medicine. Educational facilities total 142 schools with 1030 teachers who instruct 21,693 pupils. It is estimated that 22% of the inhabitants of this area have graduated from elementary school, 5% from Junior high school and 3% from high school. There are also 142 mosques and churches in this service area.

According to Ministry of Interior data the people own 2524 radios and 110 televisions set which are run by batteries or from small generators. The present kerosene consumption in this service area is 640,174 litres per month.

ANNEX H-1a

Translated by: Widya:6/17/77

No.: 474/DK/A/IV/1977
Re: Rural Electrification Area

To:
President Director
PLN
Jakarta.-

As to our discussion with the Secretary General of Public Works and Electric Power dated March 12, 1977, the development of rural electrification in the form of cooperatives will be performed in the outer islands of Java in connection with the development of transmigration program.

The proposed areas for the first phase are:

1. South Sulawesi Province for Kab. Bolaang Mongondow/South Minahasa.
2. South Sulawesi Province for Kab. Luwu.
3. West Nusa Tenggara Province for Kab. Lombok Timur.
4. South Kalimantan Province for Kab. Tanah Laut.
5. South Sumatra Province for Kab. O.K.U./Belitang.
6. Lampung Province for Kab. Lampung Tengah.
7. West Sumatra Province for Kab. Sawahlunto/Sijunjung.
8. North Sumatra Province for Kab. Simalungun/Labuhan Batu.
9. Riau Province for Kab. Indragiri/Rengat.
10. Special District of Aceh for Sabang island.

The development at the first phase will be reviewed by the government before going farther to other areas.

Thank you for your cooperation.

Sincerely yours,

/s/

Ir. Ibnoe Soedjono
Director General of Cooperatives

cc:
Minister of Manpower, Transmigration and Cooperatives.
Minister of Public Works and Electric Power.

ANNEX H-16

DEPARTEMEN TENAGA KERJA, TRANSMIGRASI DAN KOPERASI
DIREKTORAT JENDERAL KOPERASI
Jl. Let. Jen. Haryono M.T. Telepon 82213—81905. Tromol Pos 384.
JAKARTA

Nomor : 474/DK/A/IV/1977.
Lampiran : -
Perihal : Daerah Listrik Pedesaan.

Jakarta, 25 April 1977.-

KEPADA YTH. :
SAUDARA DIREKTUR UTAMA
PERUSAHAAN LISTRIK NEGARA
DI- JAKARTA.-

Sesuai dengan pembicaraan kita dengan Saudara Sekretaris - Jendaral Departemen Pekerjaan Umum dan Tenaga Listrik pada tanggal 12 Maret 1977 yang lalu, pengembangan listrik pedesaan dalam bentuk Koperasi akan dimulai dilaksanakan di luar Jawa yang dikaitkan dengan pengembangan program transmigrasi. Untuk tingkat permulaan kami ajukan daerah-daerah sebagai berikut :

1. Propinsi Sulawesi Utara untuk Kabupaten Bolaang Mangondow/Minahasa Selatan.
2. Propinsi Sulawesi Selatan untuk Kabupaten Luwu.
3. Propinsi Nusa Tenggara Barat untuk Kabupaten Lombok Timur.
4. Propinsi Kalimantan Selatan untuk Kabupaten Tanah Laut.
5. Propinsi Sumatera Selatan untuk Kabupaten O.K.U./Belitang.
6. Propinsi Lampung untuk Kabupaten Lampung Tengah.
7. Propinsi Sumatera Barat untuk Kabupaten Sawahlunto/Sijunjung.
8. Propinsi Sumatera Utara untuk Kabupaten Simalungun/Labunan - Batu.
9. Propinsi Riau untuk Kabupaten Indragiri/Rengat.
10. Propinsi Daerah Istimewa Aceh untuk Pulau Sabang.

Perlu dikemukakan bahwa pengembangan pada tingkat permulaan tersebut setelah dinilai Pemerintah dapat dilanjutkan akan disusul daerah-daerah lainnya.

Demikian, harap dapat dipergunakan sebagaimana mestinya.

DIREKTUR JENDERAL KOPERASI,

(Ir. IBNOE SOEDJONO)
NIP. I 6000104 65

TEMBUSAN kepada :

ANNEX H-2a

Translated by: PTE:Widya:6/20/77

No.: M.3538/DIR/77.
Re.: Rural Electrification Area

To:
Director General of Cooperatives
Department of Manpower, Transmigration
and Cooperatives
Jakarta.-

Dear Sir:

In response to your letter No. 474/DK/A/IV/1977, dated April 25, 1977 regarding rural electrification in the form of cooperatives for the 10 areas in connection with the development of transmigration program, we hereby agree, except for Sabang island. Because PLN will perform electrification there shortly.

As to the arrangement of material specifications or the usage of connections, please consult with us. This is needed for the possibility of expanding electrification in the future.

Sincerely yours,

/s/

Prof. Ir. Suryono
President Director

cc:
Minister of Manpower, Transmigration and Cooperatives.
Minister of Public Works and Electric Power.

ANNEX H-2

REPUBLIK INDONESIA
DEPARTEMEN PEKERJAAN UMUM DAN TENAGA LISTRIK
PERUSAHAAN UMUM LISTRIK NEGARA
ALAMAT KAWAT : PLNPST JAKARTA. TELP. : 70301-70305; 75184-75189; 776795-776797. TELEX: 011-46186
JALAN TRUNOJOYO BLOK M I/135 KOTAK POS 7/KBB KEBAYORAN BARU
JAKARTA SELATAN

No. : M.3538/Dir/77.

Surat Sdr. No. :

Lampiran :

Perihal : DAERAH LISTRIK PEDESAAN.

Jakarta, 17 Mei 1977.

Kepada Yth.
Direktur Jenderal Koperasi
Departemen Tenaga Kerja
Transmigrasi & Koperasi
di
J a k a r t a.

Dengan hormat,

Menanggapi surat Saudara no.474/DK/A/IV/1977, tertanggal 25 April 1977 mengenai pengusahaan listrik pedesaan dalam bentuk Koperasi untuk 10 daerah yang ada hubungannya dengan pengembangan program transmigrasi, maka dengan ini diberitahukan bahwa kami dapat menyetujuinya kecuali untuk Pulau Sabang. Dalam waktu dekat, PLN akan melaksanakan elektrifikasi di Pulau Sabang ini.
Adapun dalam rangka penyusunan spesifikasi peralatan maupun pemakaian tegangan, Saudara diminta untuk berkonsultasi terlebih dahulu dengan kami. Hal ini sangat diperlukan dalam hubungannya dengan kemungkinan perluasan kelistrikan dikemudian hari.

Demikian, harap maklum.

Hormat kami,
PERUSAHAAN UMUM LISTRIK NEGARA

Prof. Ir. Suryono
Direktur Utama

Tembusan kepada :

1. Bp. Menteri Tenaga Kerja, Transmigrasi dan Koperasi.
2. " " Pekerjaan Umum dan Tenaga Listrik.

ANNEX H-4a PTE

E-19

Letter No. II/1393
July 29, 1977

Ir. Ibnoe Soedjono
Director General of Cooperatives
Jl. Lat. Jen. Haryono M.T.
Cikoko, Cawang
Jakarta

Dear Ir. Soedjono:

USAID is currently in the process of writing the final Project Paper which is necessary to get AID/Washington authorization of the loan and grant funds for the Rural Electrification Project. The Project Paper will describe treatment of the major project issues in sufficient detail so that the objectives of the project are fully understood. Later, the Project Agreements to be signed by the GOI and AID will contain conditions and covenants covering the resolution of these issues.

We have had a number of discussions with officials of the DGC, BAPPENAS, the Bank Rakyat Indonesia and PLN on the major issues of the proposed loan from both the GOI and AID viewpoints. In order to assure that there are no misunderstandings when the loan is authorized, we propose to have the following wording to be used in the draft Loan Agreement to cover these issues.

1. The AID loan will be used to pay for all of the foreign exchange capitalized costs and part of the local capitalized costs of the rural electric distribution systems to be built under the Project. The remainder of the capitalized costs will be paid from the GOI provided local currency which will be provided through the Indonesian banking system.
2. Both the AID loan and the local currency used to pay capitalized costs will be reloaned to the Rural Electric Cooperatives to be set up under this Project at the same terms of repayment and interest rate as the AID loan.
3. Banking charges for handling of the reloans to the Cooperatives shall be paid on the basis of services rendered and shall be funded from GOI budget funds from the DGC.
4. The Ministry of Manpower, Transmigration and Cooperatives shall form a Supervisory Group to monitor the Rural Electric Cooperatives through the life of the Project. The Supervisory Group will be chaired by the Director General of Cooperatives and will consist of the Chairman

plus representatives from the four other GOI agencies, the Department of Finance, Department of Home Affairs, Department of Public Works and Electric Power (PLN) and BAPPENAS. The Supervisory Group will supervise the Cooperatives, appraise implementation and operation, issue instructions to the Bank for credit and advise the GOI on the progress and development of rural electrification.

5. The DGC will form a Project Development Office (PDO) consisting of a full time manager and staff to supervise the implementation of the Project. The manager will report directly to the Director General of Cooperatives and will be advised by the Supervisory Group described in 4 above. The specific functions the PDO will be as follows:

a. Charter (license of franchise) the Rural Electric Cooperatives.

b. Train the Cooperative management, operation, technical, financial and other personnal and the Cooperative members and Board of Directors.

c. Call for bids for materials and contracts.

d. Approve contracts.

e. Perform audits of the Cooperatives.

f. Perform feasibility studies.

g. Manage the Cooperatives in the absence of permanent managers.

6. Both the Supervisory Group and the Project Development Office will be financed by GOI budgeted local currency to the Directorate General of Cooperatives.

7. The Rural Electric Cooperatives will be chartered (licensed or franchised) to operate as separate public utilities with legal powers to generate and buy and sell electricity, to borrow money to cover the cost of construction, maintaining and operating its system, to advance money to its members to pay for house wiring and electric devices, to buy materials and construct facilities necessary to provide electric services, to insure themselves against liability, to elect a board of directors with powers to hire and fire personnel and other authorities necessary to own and operate an electric utility.

8. The GOI will agree that the price the Cooperatives will pay for diesel oil will be on the same basis as PLN.

Please signify your approval of the above by signing one copy and returning to the sender.

Sincerely yours,

/s/

S.J. Littlefield
Acting Director

cc: PTE-2, A/DIR, C&R-3

PTE:DCWoody:lwl:7/29/77

OFFICIAL FILE

ANNEX H-4b

267.

RECEIVED
AUG 9 1977

MINISTRY OF MANPOWER TRANSMIGRATION AND CO-OPERATIVES
DIRECTORATE GENERAL FOR CO-OPERATIVES

Jalan Let. Jen. Haryono M. T. Post Box 384
JAKARTA SELATAN
INDONESIA

PHONE : 82213, 81905
TELEX : 44183 Dijenkop Jkt.
CABLE ADDRESS : Dijenkop Jkt.

		✓ 3
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VHP		
P. T&EV	✓	
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JAO/ADM		
PER		
GSO		
M Pool		
MGT/C&R		

ACTION COPY
DATE DUE 8-19
ACTION TAKEN
DATE
BY:
RETURN TO C & R

NO. : 909/DK/A/VIII/1977.
OUR REF :
YOUR REF :

August 8, 1977.

Miss S.J. Littlefield
Acting Director USAID
American Embassy
J a k a r t a.

Dear Miss S.J. Littlefield :

In regard to your letter dated July 29, 1977, I agree with all of the statements made on the discussions of the rural electrification project and will attempt to have all of the conditions accepted by the Government.

However, in our discussions of these conditions with BAPPENAS, they have advised that the decision on items 2 and 3 be posponed until they have reviewed the results of the feasibility studies.

They have advised that if the feasibility studies show the concessionary terms of the AID loan are necessary for the cooperative projects to be financially viable, they will approve leveling the funds to the cooperatives at these terms.

Also, we have not been able to confirm that the cooperatives can buy diesel oil on the same basis as PLN but we hope to have their approval in the next few weeks.

Sincerely yours,

Ir. IBNOE SOEDJONO
Director General of Cooperatives

C.C. :
1. Minister of Manpower, Transmigration and Cooperatives.
2. BAPPENAS / Mr. Saleh Afif.

ANNEX H-5

ESTABLISHMENT ACT

RURAL ELECTRIFICATION COOPERATIVE

.....

IN

REGENCY .....

The undersigned : ----------

1. Name : .....
   Surname : .....
   Residence : .....
   Profession : .....

2. Name : .....
   Surname : .....
   Residence : .....
   Profession : .....

3. Name : .....
   Surname : .....
   Residence : .....
   Profession : .....

4. Name : .....
   Surname : .....
   Residence : .....
   Profession : .....

5. Name : .....
   Surname : .....
   Residence : .....
   Profession : .....

under the authority of establishment meeting held on ..... herewith declare to establish Rural Electrification Cooperative with the following Statutes :

STATUTES

CHAPTER I

NAME, LOCATION AND WORKING AREA

Article 1.

1. This Electrification Cooperative is called Rural Electrification Cooperative with its brief name ..... and it is subsequently called in this Statutes Rural Electrification Cooperative .....

2. This Rural Electrification Cooperative is located in Regency/Municipality ....., Province/Special District ....

3. This Rural Electrification Cooperative has one working area comprising Kecamatans of : ----------

   1. .....
   2. .....
   3. .....
   4. .....
   5. .....
   6. .....
   7. .....
   8. .....
   9. .....
   10. .....
   11. .....
   12. .....

   and villages : ----------

   1. .....
   2. .....
   3. .....

4. .....

5. .....

6. .....

7. .....

8. .....

9. .....

10. .....

11. .....

12. .....

13. .....

14. .....

15. .....

16. .....

17. .....

18. .....

19. .....

20. .....

CHAPTER II

PRINCIPLES AND AIMS

Article 2.

1. The Rural Electrification Cooperative adopts family and mutual Cooperation (gotong royong) system.

2. This Rural Electrification Cooperative is aimed at developing the welfare of its members in particular and the progress of its working area in general in the framework of creating a just and prosperous society based on Pancasila.

3. Specifically, the Rural Electrification Cooperative has the following aims :

1. To provide even distribution of electricity to rural people, either for the purpose of lighting or for commercial purposes.

2. To help boost the production and productivity of rural areas through agricultural intensification, expansion of trade and development of agro-industry.

3. To open up a wider opportunity by shifting industries in major cities to the rural areas.

4. To provide more extensive learning opportunity by establishing vocational schools in the evening and at night.

5. To help upgrade sanitation and health of rural community, among others by drinking water purification, constructing the rural lavatory and sport centers which could be used at night.

6. To help disseminate information on development programs, such as: family planning, Regreening, Bimas, etc through information and intensification held at night.

7. To help step up the development and use of recreation facilities in rural areas.

8. To help upgrade the security in rural areas.

CHAPTER III.

EFFORT

Article 3.

In order to achieve the aims, the Rural Electrification Cooperative makes the following efforts :

1. Main efforts :

   1. To construct facilities of generators, transmission and distribution of electricity(for the Rural Electrification Cooperative which generates its own electricity).

   2. To buy electricity, to construct facilities of transmission, distribution(for the Rural Electrification Cooperative which buys electricity from State Electricity Enterprise).

   3. To carry out house wiring.

   4. To give electricity service to rural community.

   5. To attempt additional electric capacity in order to intensify productive and commercial activity.

2. Development efforts :

To open up new economic activities which could upgrade the production (production boosting), to increase employment opportunity and to evenly distribute the result of development to all members of society.

3. Supporting efforts :

These efforts are emphasized on the cultivation of the electrification progran in rural community, cooperation in Cooperative, development of rural community and regional development through information, intensification and consultation.

CHAPTER IV.

MEMBERSHIP REQUIREMENTS

Article 4.

Accepted to be members of this Rural Electrification Cooperative are R.I. citizens with the following requirements :

1. Having full capability of conducting lawful act (adult, nature, not in the guardianship).
2. Residing in .....
3. Having fully paid the main saving as mentioned in Article 37 of this Statutes.
4. Having agreed the content of this Statutes and the valid regulations on Rural Electrification Cooperative.
5. Everyone requiring electricity, eitner for lighting or commercial purposes owned (saw mill, hulling, etc).

Article 5.

1. The begining and termination of membership of the Rural Electrification are proved with the record in the Book of Members' List.
2. Anyone who wants to be a member of this Rural Electrification Cooperative should submit a letter of request to the Managing Board. Within a certain period of time, the Board gives a reply whether the letter is accepted or rejected.
3. If the Board rejects the request, the applicant could ask for consideration in the next members' meeting.
4. The request to resign should be writtenly submitted to the Board.
5. Anyone dismissed by the Board could ask for consideration in the next members' meeting.

Article 6.

Membership of Rural Electrification Cooperative is terminated, if the member :

1. Dies.
2. Resigns at his own will.
3. Dismissed by the Board because he does not meet the membership requirements anymore.
4. Dismissed by the Board, because he does not obey his duties as a member, particularly in financial matters, or because he commits something harmful to the Rural Electrification Cooperative.

CHAPTER V.

RIGHTS AND OBLIGATIONS OF MEMBERS

Article 7.

1. The membership could not be transferred to anyone with whatsoever means.
2. Every member should abide by the provision in the Statutes, Household Budget, special regulation and decision of members' meeting.

Article 8.

Every member has the right to :

1. To talk about the things discussed in the members' meeting.
2. To elect and to be elected.
3. To examine the accounting of the Rural Electrification Cooperative during office hours.
4. To give proposals for the improvement of the Rural Electrification Cooperative.

Article 9.

Every member is obliged to pay every payment for the electrity used and for all the credits received from the Rural Electrification Cooperative with the valid regulations on it.

CHAPTER VI.

MANAGING BOARD.

Article 10.

1. The Managing Board of Rural Electrification Cooperative is elected from and by members' meeting.

2. Under extraordinary circumstances, the members' meeting could appoint people from the third party to become Managing Board with the maximum not exceeding one-third of the toral Bf the Board.

3. Eligible to be elected as Managing Board are those who meet the following requirements :

   1. Honest and possessing working skills.

   2. Having good knowledge and interpretation on Rural Electrification Cooperative.

   3. Having good knowledge on electrification program in particular and development of rural community in general.

   4. Before assuming the duties, the Board must first take oath in accordan with decision of members' meeting.

Article 11.

1. The Board is elected for a period of .... (.....) years.

2. Members' Meeting could dismiss the Board at any time if the Board :

   1. Commits deviation which is harmful to the Rural Electrification Cooperative.

   2. Disobeys the Cooperative Act and the implementing regulations.

   3. Either in its attitude or action, creates controversy in the Cooperative movement.

3. The Board which has expired its term, could be re-elected.

4. If there is a member in the Board who resigns before his term expires, meeting of other members of the Board could appoint the successor, but this replacement should be ratified by the next members' meeting.

Article 12.

1. The Board comprises at least 3 persons.

2. For the third party, the ones who are recorded in the List of Managing Board are valid.

CHAPTER VII.

RIGHTS AND OBLIGATIONS OF THE BOARD.

Article 13.

1. The Board has the following functions :

   1. To manage organisation of the Rural Electrification Cooperative on the whole.

   2. To conduct all lawful actions for and on behalf of the Rural Electrification Cooperative.

   3. To represent the Rural Electrification Cooperative before and outside the law court.

   4. To conclude an agreement with the third party and to sign credit contracts with the third party.

2. At its own risk, the Board could give authority to someone or several people to act as daily management board in the business of the Rural Electrification Cooperative and act for and on behalf of the Board as well as representing it in matters pertaining to daily business of the Rural Electrification Cooperative

3. Duties of each member of the Board are decided in a separate regulation ratified by members' meeting.

Article 14.

- The Board does not receive salaries, but is given honorarium in accordance with the decision of members' meeting.

Article 15.

1. The Board should immediately make note of entry and resignation of members in the Book of Members' List.

2. The Board should immediately make note of the starting and ending of Board's profession.

3. The Board should make efforts in order that the recording in the Book of Members' List is known to all members.

4. Each member of the Board should render help to Official and auditor in carrying out their duties and he should give information obliged or required and show all financial books, supply of goods and inventory of the Rural Electrification Cooperative.

5. Each member of the Board should try in order that each auditting as mentioned in paragraph 4 above is not impeded, either deliberately or

indeliberately by other members of the Board or by the employees.

Article 16.

The Board is obliged to record all important events which could affect the life of the Rural Electrification Cooperative and is obliged to inform such an event to all members.

Article 17.

1. The Board is obliged to prepare a report to the official on the situation and development of organisation as well as the business of the Rural Electrification Cooperative, at least six times in a year.

2. The Board is obliged to make efforts in order that all auditting reports on the Rural Electrification Cooperative be known to each member and the Official.

3. The Board is obliged to make efforts in order that all regulations in the Statutes, Household Budget, special regulation and decision of members' meeting be known to all members and be understood by all members.

4. The Board is obliged to maintain good relation among members and prevent all things which could create misunderstanding.

5. The Board should practise all the provisions in the Statutes, Household Budget, special regulation and decision of members' meeting, particularly annual members' meeting.

Article 18.

1. Each member of the Board bears the loss of the Rural Electrification Cooperative caused by carelessness in carrying out their respective duties.

2. If the loss incurred as a result of carelessness to a work of several members of the Board, they all bear the loss. But a person or some persons/members of the Board are exempted from the loss, if he could prove that the loss is not caused by his fault as well as he has tried immediately to prevent such a carelessness.

Article 19.

- Member of Board of the Rrual Electrification Cooperative is not allowed to be Board of other Cooperatives, except the Central, Combined or Main Rural Electrification Cooperative.

CHAPTER VIII

AUDITTING BODY

Article 20.

1. Without minimizing what has been stipulated in Article 28 of this Statutes, the Rural Electrification Cooperative has the obligation to conduct self-examination.

2. The auditting is conducted by a Auditting Body comprising at least three members of the Rural Electrification Cooperative who are not members of the Board, member of Credit Committee, member of the Committee for Development of Members, Manager and employee and is elected by members' meeting for a period of ..... (.....) years.

3. Eligible to be elected as Auditting Body are those who have met the following requirements :

   1. Honest and having leadership quality.

   2. Having thorough knowledge on the Rural Electrification Cooperative.

   3. Having thorough knowledge on electrification program in particular and rural development in general.

   4. Having knowledge and skill in the accounting and auditting.

4. The auditting conducted by Auditting Body at least should cover :

   1. The implementation of policy adopted by members' meeting on organisation, management, administration and business of the Rural Electtification Cooperative.

   2. The correct accounting of the Cooperative.

   3. Finance, valuable papers, supply of goods, inventory and property of the Rural Electrification Cooperative.

   4. Personnel and administration of personnel.

5. Results and methods of auditting conducted by the Auditting Body should be reported in written form to members and its copies should be sent to the Official.

CHAPTER IX

CREDIT COMMITTEE

Article 21.

1. In order to safeguard and use the credit given to members, either in the framework of implementing the Main Business or the Development Business, the Rural Electrification Cooperative is obliged to have Credit Committee.

2. The Committee is appointed from and by members' meeting with the minimum total of 3 persons and chaired by Chairman of the Board.

2. The term of office of Credit Committee is ..... (.....) years.

3. Member of the Credit Committee is not allowed to act as the Board, Auditting Body, Committee for Development of Members, Manager and employees of the Rural Electrification Cooperative.

4. Eligible to be elected as members of the Credit Committee are those who have met the following requirements. :

   1. Honest and having good dedication to the Rural Electrification Cooperative.

   2. Having adequate knowledge and skill on credit affairs.

   3. Having thorough knowledge on business of the Rural Electtification Cooperative.

5. Main duties of the Credit Committee :

   1. To evaluate, condider, to agree or to reject the credit requested by member of the Rural Electrification Cooperative.

   2. To conduct evaluation on the use of credit and to report the result of evaluation in written form to members' meeting and to send the copy to Official.

CHAPTER X

COMMITTEE FOR DEVELOPMENT OF MEMBERS

Article 20.

1. In order to achieve an economic and efficient level of business, it is necessary to have continuous and consistent addition of members. Therefore, the Rural Electtification Cooperative is obliged to have a Committee for Development of Members.

2. This Committee is appointed by members' meeting with the maximum total of 3 persons and chaired by the Board Chairman.

3. Under extraordinary circumstances, the members' meeting could appoint part of the members of the Committee from the third party, who are not the members of the Rural Electtification Cooperative.

4. The term of office of the Committee is .... (....) years.

5. Member of this Committee is not allowed to act as the Board, Auditting Body, Credit Committee, Manager or employees of the relevant Rural Electtification Cooperative.

6. Eligible to be elected as members of this Committee are those who have met the following requirements :

   1. Honest and having good dedication to the Rural Electrification Cooperative.

2. Having adequate knowledge and skill on methods of intensification , information and mass education.

3. Having thorough knowledge on electrification program in particular and rural development in general.

7. Main duties of the Committee :

1. To plan and to carry out information, intensification, education, as well as consultation in order to encourage members of the society to become members of the Rural Electrification Cooperative.

2. To increase the awareness of member of the significance of cooperation in Cooperative.

3. To increase participation of members in using electricity in particular and rural development in general.

CHAPTER XI.

MANAGER

Article 23.

1. In order to achieve efficient level of processing, the Rural Electrification Cooperative is obliged to have a professional manager given full mandate by the Board to manage all activities of the Rural Electrification Cooperative.

2. The Manager is elected, appointed and dismissed by the Board with approval of the Official.

3. The Manager is responsible to the Board.

4. In the event that the Board is not yet capable of appointing a manger who meets the requirements fixed, the Official could appoint the manager.

5. Eligible to be elected as Manager of the Rural Electrification Cooperative are those who have met the following requirements :

1. Having good mental attitude, honest and healthy physically and spiritually.

2. Having thorough knowledge on ideals of the Rural Electrification Cooperative, electrification program and rural community development program.

3. Having spirit to work, spirit of enterpreunership and spirit of leadership.

4. Having knowledge and skill in electricity business and able to cooperate with other parties.

5. At least possessing degree of electricity, accountancy or business economy and 2 years' experience in the relevant field, or at least possessing a bachelor degree in electricity, accountancy or business economy with at least 5 years' experience in the relevant field.

6. At the time of appointment, the candidate should not exceed 35 years old.

7. To declare to be abce to work full time and does not work in otheb places of employment, either inside or outside the Rural Electrification Cooperative.

8. Able to sign working contract at least for five years with the Rural Electrification Cooperative.

9. Passed in the selected test conducted by the Board or by the Official and prepared to obey all regulations valid in the Ru al Electrification Cooperative.

6. The task of the Manager of the Rural Electrification Cooperative is to implement the mandate received from the Board regarding the management of the Rural Electrification Cooperative. The duty at least covers the following matters :

1. Planning section :

a. To coordinate the plans for business, cost, supervision and evaluation and to arrange the plans into a program of the Rural Electbification Cooperative which is integrated.

b. To submit the program to the Board and to help the Board prepare it in order that it could be immediately presented in members' meeting. If requested, the manager should also help the Board explain the plan in the members' meeting.

2. Implementation Section :

a. To lead and coordinate all sections in carrying their respective programs.

b. To lead and to coordinate the administration.

c. To carry out special duties assigned by the Board, such as signing agreements, to conclude agreements on business of the Rural Electrification Cooperative with the third party, etc.

d. To prepare written and periodical report on all processes and progress made to the Board.

3. Supervision Section :

a. To exercise continuous internal and external supervision over all processes by collecting information, direct examination,

evaluation on available reports, etc.

b. To try to prevent deviations which are harmful to the business in particular and good reputation of the Rural Electrification Cooperative in general.

c. To prepare a written and periodical report on all processes and the progress achieved to the Board.

4. Evaluation Section :

a. To conduct periodical evaluation on all the results achieved under his management.

b. To prepare written and periodical report to the Board on all processes and the result of evaluation and to submit proposals of improvements to the Board.

CHAPTER XII

EMPLOYEES

Article 24.

1. In order to run the Cooperative well, in addition to the Manager, employees are needed either permanent or non-permanent.

2. Employees of the Rural Electrification Cooperative are elected, appointed and dismissed by the Manager. In order to prevent harmful events, so in the election, appointment and dismissal of employees, the Manager is obliged to have consultations with the Board first.

3. Employees are responsible to the Manager.

4. For the sake of election, appointment and dismissal of employees, the Rural Electrification Cooperative is obliged to have special provision on the requirements which have to be met by each would-be employee. This provision is made by the Manager and is seen by the Board.

5. In order to guarantee harmonious cooperation among employees, the Rural Electrification Cooperative is obliged to have job descriptions for each employee. This job description is made by the Manager and seen by the Board.

CHAPTER XIII

FINANCIAL ADMINISTRATION OF RURAL ELECTRIFICATION COOPERATIVE

Article 25.

1. The financial year of the Rural Electrification Cooperative starts from the first of January up to 31st December.

2. The Rural Electrification Cooperative is obliged to conduct financial administration in accordance with the available sample or approved by the Official.

3. On each end of month and each end of financial year, the Rural Electrification Cooperative is obliged to conduct financial calculation, balance and account of loss & profit ; all of them should be compared to the situation of last month and with the situation of the same month of the previous year and should be accompanied with enough explanation on all changes and differences.

4. Result of financial calculation, balance and account of loss & profit are signed by the Manager and the Board and its copies are submitted to the Board and the Official.

CHAPTER XIV

CONDITION OF RURAL ELECTRIFICATION COOPERATIVE NOT KEPT SECRET

Article 26.

At the time of establishment of the Rural Electrificatipn Cooperative, the Board should give opportunity to :

1. Everybody to examine on the spot without cost, The Act of Establishment, Act of Innovation and to get copies or quotation by paying the necessary cost.

2. Each member, Official, Official-approved agencies to examine on the spot without cost, List of Members, List of the Board, financial calculation, balance account of loss & profit, auditting report, and to get its copies or quotation by paying the necessary cost.

CHAPTER XV

APPOINTMENT OF LAWYER/LEGAL ADVISOR AND PUBLIC ACCOUNTANT

Article 27.

1. In order to defend/promote the interest of the Rural Electrification Cooperative, in special matters requiring judicial settlement, the Board at its own risk, has the right to appoint a Lawyer or several Lawyers/Legal Advisors.

2. In order to prevent the possibility of deviations which are harmful to the Electrification Cooperative financially, so without minimizing the significance of Article 28 of this Statutes, the Auditting Body, at its own risk, has the right to appoint one Public Accountant or several Public Accountants assigned to conduct full auditting on the Rural Electrification Cooperative.

3. All processes and results of work of Lawyer/Legal Adbisor and

Public Accountant should be reported in written form by the Board and the Auditting Body to members and its copies are submitted to the Official.

CHAPTER XVI

GUIDANCE AND SUPERVISION

Article 28.

- The Rural Electrification Cooperative is under the supervision and guidance of the Government through the Official.

Article 29.

1. The Official has the right to attend and speak in members' meeting and Board's Meeting.
2. If it is necessary, the Official has the right to hold such meetings, to fix the program and have discussion.

Article 30.

The Official has the right to investigate the situation of the Rural Electrification Cooperative:

1. At any time based on consideration.
2. At the request of over half of Board's members.
3. At the request of at least one-tenth of the total members.

Article 31.

To the third party, those who conduct supervision and/or examination on the Rural Electrification Cooperative, are obliged to keep secret all matters on member and business of the Rural Electrification Cooperative obtained from supervision and/or examination mentioned above.

CHAPTER XVII

MEMBERS' MEETING

Article 32.

1. Members' Meeting is the highest power in the Rural Electrification Cooperative.
2. In the meeting one member has one vote.

3. The meeting is held at least once in a year.

4. The meeting is held :

   1. At the request of the Official.

   2. At the written request of one-tenth of total members.

   3. At the request of the Board.

5. The day, date, hour, place and program of the meeting should be informed in written form to members and the Official, at least seven days prior to the meeting and the Board should try in order that the notice really reaches to those who have the right to receive it.

Article 33.

1. The meeting is considered to be legal if attended over half of the total members.

2. If the meeting could not be held because it does not meet the requirements as mentioned in paragraph 1, the meeting is postponed for a maximum period of seven days.

   During the postponement period, the Board is obliged to try in order that the next meeting could be attended by more members, so that the meeting could really be held.

3. If in the second meeting the requirements are still not met, so the requirements for the meeting under extraordinary circumstances are valid.

4. Under extraordinary circumstances, the meeting is considered legal, if attended by at least 20% of the total members.

5. The extraordinary circumstances mentioned in paragraph 4 of this article means :

   1. If the cost of the meeting could not be borned or the cost of the meeting will create a big burden to the Rural Electrification Cooperative, or

   2. If it is meant to amend the Statutes in view of the provision in the regulation or law , or

   3. If there is a condition which could endanger the life of the Rural Electrification Cooperative, or

   4. If most of the members could not leave their job, so that they could not attend the meeting, or

   5. If the state of government makes it impossible, or

   6. If the regulation or provision of the authority, either central or local, make it impossible to hold the meeting.

6. All decisions taken in the meeting under extraordinary circumstances are considered legal, if the decisions are advantageous to members and/or save the life of the Rural Electrification Cooperative.

7. The decision of the meeting is taken on the basis of agreement. If no agreement is reached, the decision is taken on the basis of major votes of the members who are attending the meeting.

8. The members who are absent in the meeting, could not represent their votes to other people.

Article 34.

1. In order to amend the Statutes, a special members' meeting should be held, which is attended by at least two-thirds of the total members and the decision taken in the meeting should be agreed by the majority of those present.

2. In order to dissolve the Rural Electrification Cooperative, a special members' meeting should be held, which is attended by at least three-fourths of the total members and the decision taken in the the meeting should be agreed by at least two-thirds of the total members who are present at the meeting.

Article 35.

All decisions of the members' meeting should be recorded in the form of minute and signed by the Chairman and Secretary of the meeting.

Article 36.

1. Annual members' meeting should be held at the latest 3 months after the closing of financial year.

2. The items of the annual members' meeting should among others include :

   1. Opening.
   2. The reading of minute of previous meeting.
   3. Board's report on organisation and business of the Rural Electrification Cooperative in the previous financial year completed with balance, account on profit & loss and the evidences required.
   4. The reading of examination results.
   5. Review on budget of the Rural Electrification Cooperative for the financial year in operation.
   6. Review on the working plan for the next financial year.
   7. Determination on remain of business result

8. Election of the Board, Auditting Body, Credit Committee and the Committee for Development of Members.

9. Interviews and reception of opinions and proposals.

10. Closing.

Article 37.

In case that the meeting could bot be held, since there are many members creating problems on place, equipments, transport, communicatio , etc, so without minimizing the significance of members' rights and obligations, the meeting could decide the system and procedure for the next meeting.

CHAPTER XVIII

CAPITAL OF RURAL ELECTRIFICATION COOPERATIVE

Article 38.

1. The capital of the Rural Electrification Cooperative comprises main saving, compulsory saving, voluntary saving in the form of deposit and/or giro, loan and other capitals legally obtained.

2. By heeding the short-term financial obligation, plan and volume of business, the total maximum cash supplied as cash money, is decided by members' meeting.

   The extra of the cash money should be kept on behalf of the Rural Electrification Cooperative in its central cooperative, Cooperative Public Bank, Government Bank or other banks approved by the Official.

3. The extra money kept could only be returned with the receipt signed by at least two members of the Board or by the Manager and one member of the Board.

4. All properties of the Rural Electfification Cooperative which could be insured, should be insured to the insurance company appointed by the Official.

CHAPTER XIX

MEMBERS' SAVINGS

Article 39.

1. Each member is obliged to save on his behalf in the Rural Electrification Cooperative, the main saving totalling Rp. .... (.....).

2. The main saving should be once fully paid, but the Board could allow the poor members to pay in installments, which should be completed at the latest 3 months.

   The member's preparedness to pay the main saving in installments, should be stated in written form and all violations on requirements for install-

ment payment, should be settled on the basis of the provisions in the Household Budget or special regulation made to the effect.

3. The main saving could not be returned as long as members do not yet resign as members of the Rural Electrification Cooperative. At the termination of membership, the main saving is the debt of member on the Rural Electrification Cooperative totalling the above amount and , if necessary, deducted with share of loss.

4. Each member is obliged to pay the main saving on his own behalf to the Rural Electrification Cooperative with the method and total decided in the Household Budget/special regulation.

5. Each member is activated to have voluntary saving on his own behalf to the Rural Electrification Cooperative at his own will.

6. The voluntary saving could be in the form of deposit and/or giro with the interest fixed in the Household Budget / special regulation.

7. All savings of the members should be recorded in the Members' Saving Book and Members' Saving Cards, both of which are signed by the Board. The recording should include the total amount and the changes on the total, including the specification of interest received by the relevant member.

8. The Members' Saving Card are made in two. The original card is kept by the relevant member, while the copy is kept at the Office of Rural Electrification Cooperative.

9. The compulsory saving could be returned in accordance with the regulation decided by members' meeting. The saving could be in the form of deposit, which could be taken on the basis of the provision in the Household Budget/ special regulation or agreement, while those in the form of giro could be returned at any time.

CHAPTER XX

CAPTTAL OF RURAL ELECTRIFICATION COOPERATIVE ORIGINATING FROM GOVERNMENT CREDIT

Article 40.

1. For the interest of the Rural Electrification Cooperative as mentioned in the article 13 of this Statutes, the Rural Electrification Cooperative could obtain credits from the Government under the requirements stipulated by the Government and approved by members' meeting of the Rural Electrification Cooperative.

2. The amount of the credit is adjusted to the need of the Rural Electrification Cooperative, the Government's capability, agreement of the members' meeting of the Rural Electrification Cooperative.

3. The credit could be liquified in the form of cash and could also be in the form of capital goods.

Article 41.

1. The Government credit to the Rural Electrification Cooperative is used for the Main Effort, Development Effort and Supporting Effort. The credit used for each of the efforts, is not allowed to be used for other types of efforts.

2. Main Effort Credit is used for :

   1. Preparation of establishment for Rural Electrification Cooperative.

   2. Purchase of land, arrangement of land-scaping, making of fence and construction of buildings.

   3. Purchase of office facilities and transportation means.

   4. Recruitment and salary of employees and payment of honorarium.

   5. Purchase of electricity generators, transmission and distribution, including the purchase of electricity from the third party(for the Rural Electrification Cooperative which buys electricity from PLN).

   6. House wiring credit for members.

   7. Increase of electric capacity owned by the Rural Electrification Cooperative.

   8. Other purposes pertaining to the items from no. 1 to no 7 mentioned above.

Article 42.

1. The period of credit return for Main Effort is determined .... (....) years with .....% (..... per cent) per year for ..... (.....) first year and ... % (..... per cent) per year for ..... (.....) the following year.

2. Credit of main effort could be paid in annual installments with the grace period of installment at the maximum of .... (.....) years.

3. The Credit for Main Effort is channelized through the bank appointed by the Government. In the case of credit in the form of capital goods, the Government appoints the special supplier for it.

4. In order to carry out this credit, the Government as well as the Rural Electrification Cooperative sign a credit contract which is specifically made for it.

Article 43.

1. The period of returning the credit for Development Effo t is stipulated ..... (.....) years with the interest ....% (..... per cent) per year for ..... (.....) first year and ....% (.... per cent) per year for the following year.

2. The repayment of credit for Development Effort could be conducted in annual installments with the grace period of ..... (....) years.

3. The credit for Development Effort is channelized through the bank appointed by the Government. In the case of credit in the form of capital goods, the Government will appoint the supplier specifically for that purpose.

4. For the implementation of Development Effort Credit, the Government as well as the Rural Electrification Cooperative sign credit contract specifically made for the purpose.

Article 44.

1. The credit for Suppo ting Effort is used for humantarian investment. Therefore, the requirements for the credit will be in principle very soft.

2. The period of repayment of the credit is stipulated ....(.....) years at the interest of ..... % per year for the first year and .....% per year for the following year.

3. The credit could be repaid in annual installments with the grace period of ....(.....) years.

4. The credit is channelized through the bank appointed by the Government. In the case of credit in the form of capital goods, the Government appoints special, supplier for that purpose.

5. In order to implement the credit, the Government as well as the Rural Electrification Cooperative should sign a credit contract specifically made for that purpose.

CHAPTER XXI

ELECTRICITY SERVICE TO MEMBERS

Article 45.

1. All members who have met the requirements , have the right to obtain electricity service from the Rural Electrification Cooperative.

2. The minimum requirements which have to be met :

   1. Having fully paid the main saving and having fully paid the compulsory saving as mentioned in Article 39 paragraph 4 of this Statutes.

   2. Agreeing with rating grouping and system of billing stipulated by the Rural Electrification Cooperative.

   3. Able and prepared to pay monthly electricity bill in accordance with the electricity used (mentioned in the bill).

   4. Prepared to abide by all regulations on the security and efficiency issued by the Rural Electrification Cooperative.

5. Prepared to help the Rural Electrification Cooperative in facilitating the distribution of electricity to houses/offices/factories owned/occupied by the relevant member.

6. In order to assure the supervision from both sides, so each member wishing to obtain electricity service should have the skill to read meter stand and on the basis of the meter stand, able to calculate the cost paid in each month.

   For that purpose, the Rural Electrification Cooperative is obliged to give necessary guidance to each member who wish to obtain electricity service.

CHAPTER XXII
CUSTOMERS TO THE RURAL ELECTRIFICATION COOPERATIVE

Article 46.

1. In order to achieve the aim mentioned in Article 2 paragraph 3 of this Statutes, in addition to members, the Rural Electrification Cooperative also gives electricity service to customers.

2. The word "customers" here means those who are impossible to be accepted as members, but require electricity, either for lighting or for commercial purposes.

3. Customers are classified into, among others, education institution, research institution, health institution, worshipping institution, mass organisation, professional organisation, trade organisation, industrial organisation (either agricultural or non-agricultural) and Government institution.

4. In order to prevent the possibility of making the members suffer a loss and in order to give service to its customers, the Rural Electrification Cooperative is obliged to have a special regulation ratified by members' meeting and seen by the Official.

CHAPTER XXIII

CREDIT TO MEMBERS

Article 47.

1. In order to make the Main Effort and Development Effort a success, the Rural Electrification Cooperative provides two kinds of credit for its members, namely the credit for house wiring and the credit for commercial business using electricity.

2. The amount of each credit is adjusted to the need of members, members' capability of repaying the credit and the capability of the Rural Electrification Cooperative in providing funds for that purpose.

Article 48.

1. For the purpose of lighting the houses, the house wiring credit is provided in the form of electrical appliances and the cost of installing the electrical appliances.

2. The house wiring as mentioned in paragraph 1 above, is carried out by the Rural Electrification Cooperative or by the installator appointed by the Rural Electrification Cooperative.

3. The interest of house wiring credit is stipulated at ...%(..... per cent) per month.

4. The repayment of house wiring credit could be carried out in monthly installments with the maximum period of one year.

5. For the implementation of house wiring credit, the Rural Electrification Cooperative as well as the members should sign a credit contract, which is specifically made for that purpose.

Article 49.

If the house of the member requiring house wiring credit, is also used as a place for commercial business, so the provision on house wiring credit should be governed with a special regulation made for that purpose.

Article 50.

1. In order to achieve the aim of Development Effort as mentioned in Article 3 paragraph 2 of this Statutes, the Rural Electrification Cooperative provides credit to its members.

   The amount of credit is decided on the basis of members' need, members' capability of repaying the credit and capability of the Rural Electrification Cooperative in providing funds.

2. All requirements and procedures on this credit, are governed in a special regulation made by the Rural Electrification Cooperative.

CHAPTER XXIV

BALANCE OF BUSINESS RESULT

Article 51.

1. The balance of business result is the income of the Rural Electrification Cooperative obtained in a financial year deducted by depriciation on goods and property as well as all cost spent in that financial year.

2. The balance is obtained from the balance through transaction with members and the balance from the transaction with non-members.

3. The balance obtained from the transaction with members is divided as follows :

   1. ....% (.... per cent) for reserves (at least 25%).

   2. ....% (.... " ") for members in accordance with the comparison of service in the Rural Electrification Cooperative in obtaining the balance.

   3. ....% (.... per cent) for members in accordance with the ratio of saving, with the interest not exceeding the interest of Government bank.

   4. ... % (... per cent) for Board's fund.

   5. ... % (.... " ") for employees' welfare fund.

   6. ... % (... " ") for education fund of the Rural Electrification Cooperative (at least 5%).

   7. ... % (... per cent) for fund of working area development of the Rural Electrification Cooperative.

   8. ... % (... per cent) for social fund.

4. The balance obtained from the transaction with non-members is divided as follows :

   1. ...% (... per cent) for reserves (at least 40%).

   2. ...% (.... " ") for Board's fund.

   3. .. % (... " ") for employees' welfare fund.

   4. ... % (... " ") for education fund of the Rural Electrification Cooperative (at least 10%).

   5. ... %(.... " ") for social fund.

   6. ... % (... " ") for working area development of the Rural Electrification Cooperative.

5. The use of education and working area development funds of the Rural Electrification Cooperative, could be arranged by the Directorate General of Cooperative after hearing opinions and suggestions from the Central/Regional Indonesian Cooperative Council.

Article 52.

1. The reserves is the property of the Rural Electrification Cooperative to recover the loss, so that the reserves is not allowed to be distributed to members.

2. Members' Meeting could decide to use at the maximum of 75% of the total reserves for business expansion of the Rural Electrification Cooperative.

3. At least 25% of the reserves must be kept in the form of giro at the bank appointed by the Official.

CHAPTER XXV.

MEMBERS' RISK

Article 53.

1. If the Rural Electrification Cooperative is dissolved and in its settlement it turns that all its properties are not enough to fully pay all its obligations and debts, so all members and those who resign within a period of one year preceeding the dissolution of the Rural Electrification Cooperative, are obliged to bear the loss each limited to ..... (.....) times the main saving, or at the equal amount.

2. If in reality there are members and those who resign as members within a period of one year preceeding the dissolution of the Rural Electrification Cooperative are not able to meet their obligations as mentioned in paragraph 1 of this article, so the balance is paid by other members, so that the total loss which must be paid by members and those who resign as members within a period of one year preceeding the dissolution of the Rural Electrification Cooperative, could be fulfilled.

3. All problems on the decision of action or the event which cause the loss, are settled in accordance with the valid law.

Article 54.

1. The loss incurred by the Rural Electrification Cooperative at the end of a fiscal year, is recovered by the reserves.

2. If the loss incurred by the Rural Electrification Cooperative at the end of a fiscal year could not be recovered by the reserves, so the members' meeting could decide to burden part of the loss mentioned above (total loss deducted by the available reserves) to members and to those who have resigned as members in the relevant fiscal year limited to .... (.....) times of main saving or at equal amount.

Article 55

Members who have resigned from the Rural Electrification Cooperative do not bear the loss from the business which is not decided by them.

CHAPTER XXVI.

DISPUTE

Article 56.

1. Each dispute arising from the management of the Rural Electrification Cooperative must be in principle settled by the Board, members' meeting or the Board together with the members' meeting.

2. In the case that the dispute could not be settled by the Board, members' meeting or the Board together with the members' meeting, then the Official could help settle the dispute.

3. If the dispute could nbb be settled by the Board, members' meeting, the Board together with the members' meeting as well as the Official, then the dispute must be settled through the valid law channel.

CHAPTER XXVII

DISSOLUTION AND SETTLEMENT

Article 57.

1. By heeding the article 34 paragraph 2 if this Statutes, the members' meeting (special meeting) could decided to ask for the Official to dissolve the Rural Electrification Cooperative.

2. The request could be accompanied with a minute among other things contains :

   1. The date and place of the special members' meeting.

   2. Total member and the total of members who are present.

   3. Program of the meeting.

   4. Reason for dissolving the Rural Electrification Cooperative.

   5. Total votes agreeing with the plan for the dissolution and total votes rejecting the plan for the dissolution.

Article 58.

The Official has the right to dissolve the Rural Electrification Cooperative in accordance with the procedure stipulated in the Act on Cooperative, if the examination result turns out as follows :

1. There are evidences that the Rural Electrification Cooperative does not meet the provisions in the Act on Cooperative.

2. Activities of the Rural Electrification Cooperatige are against the social security & order and/or morals.

3. The Rural Electrification Cooperative is in such a condition that its survival could not be expected any longer.

Article 59.

1. The Official appoints one or several people to settle the dispute ; they have the following rights and obligations :

   1. To conduct all lawful acts for and on behalf of the Rural Electrification Cooperative and represent it before and outside the law court.

   2. To collect all the information required.

   3. To call members or former members who resign within a period of one year prior to dissolution of the Rural Electrification Cooperative, either individually or collectively.

   4. To fix the total amount of risk which must be paid by each member and former member who resign within a period of one year prior to dissolution of the Rural Electrification Cooperative.

   5. To determine by whom and based on what ratio the cost of settlement must be paid.

   6. To use the remaining property of the Rural Electrification Cooperative in accordance with the aims of the Rural Electrification Cooperative or the decision of the last members' meeting or as mentioned in the Statutes.

   7. To determine the storing and use of all files of the Rural Electrification Cooperative.

   8. To determine the cost of settlement and other payments for debts.

   9. After the term of settlement expires as decided by the Official, so the people who settle the dispute make a minute on the settlement.

2. Payment for the cost of settlement must be first made and then it is followed by payments of other debts.

CHAPTER XXVIII

HOUSEHOLD BUDGET AND SPECIAL REGULATION

Article 60.

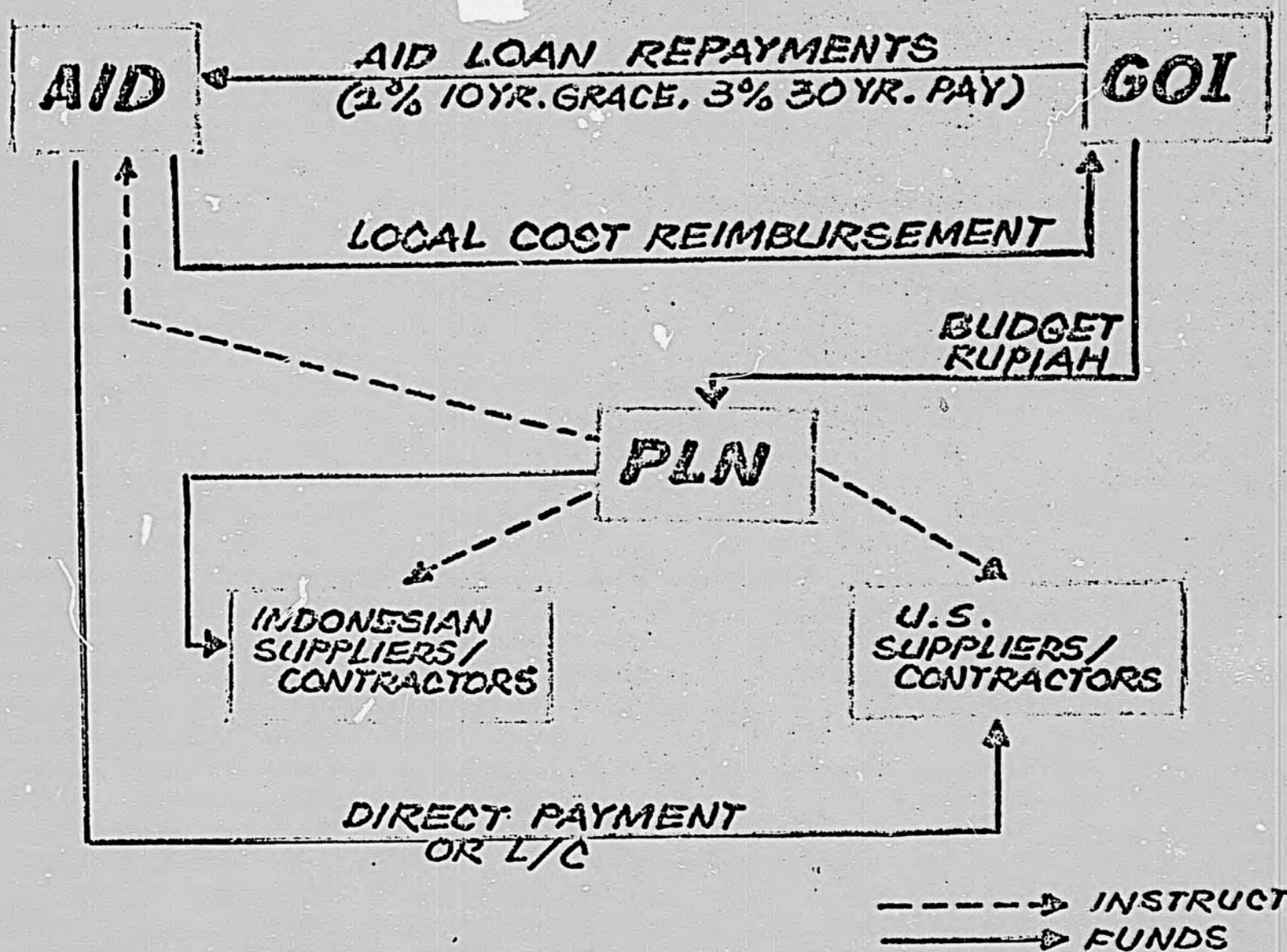
Members' meeting decides the Household Budget and/or special regulation containing implementation regulation of the provisions in this Statutes. The Household Budget and/or special regulation must be not against this Statutes. This Act is signed by us who are given authority by the meeting held on ..... in ..... .

1. ..... (.....) 2. ..... {.....}
3. ..... {.....} 4. ..... {.....}
5. ..... {.....}.

ANNEX H-6A

PLN SYSTEMS

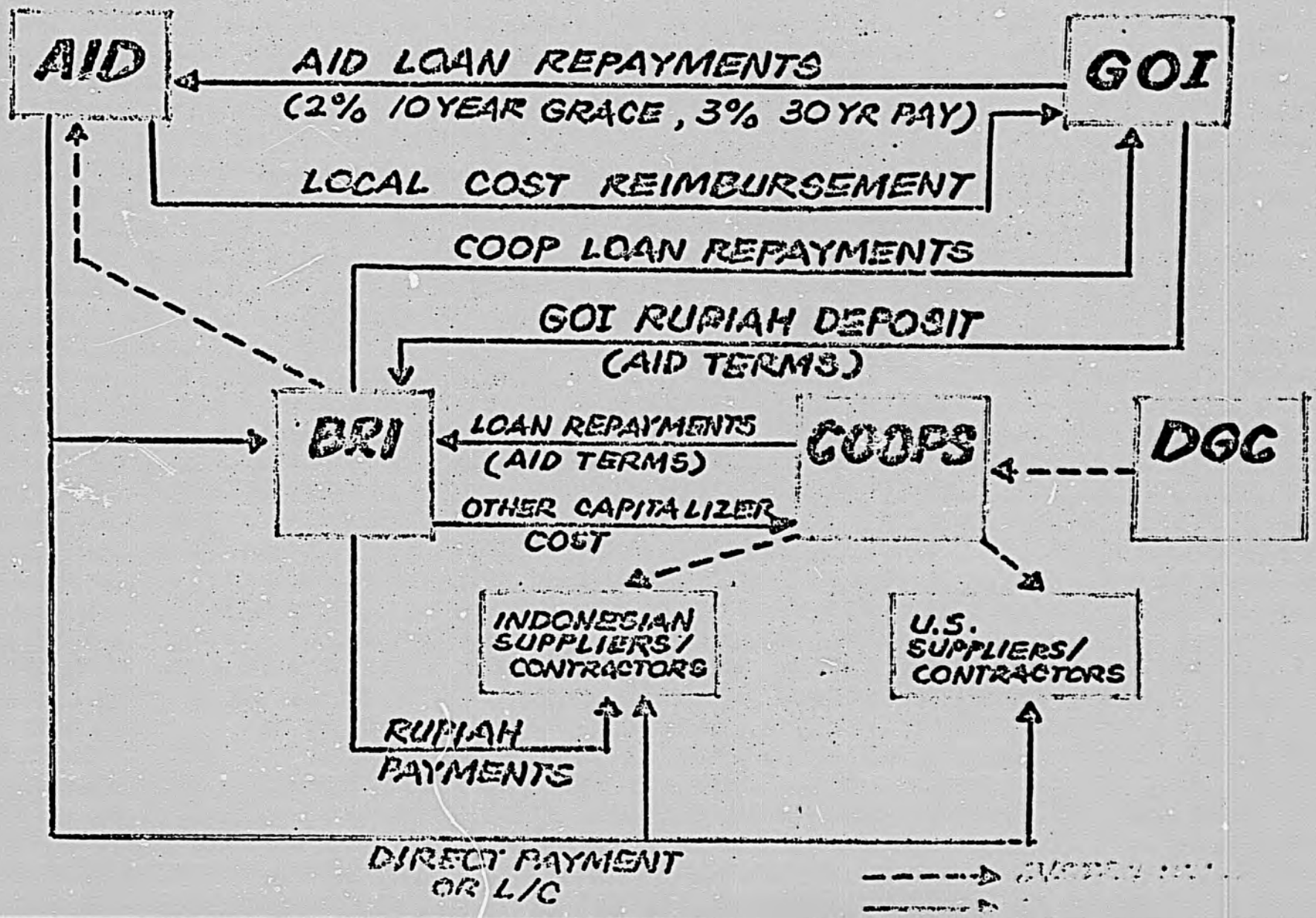
AID LOAN AND PLN BUDGET FUNDS FLOW



ANNEX H-GB

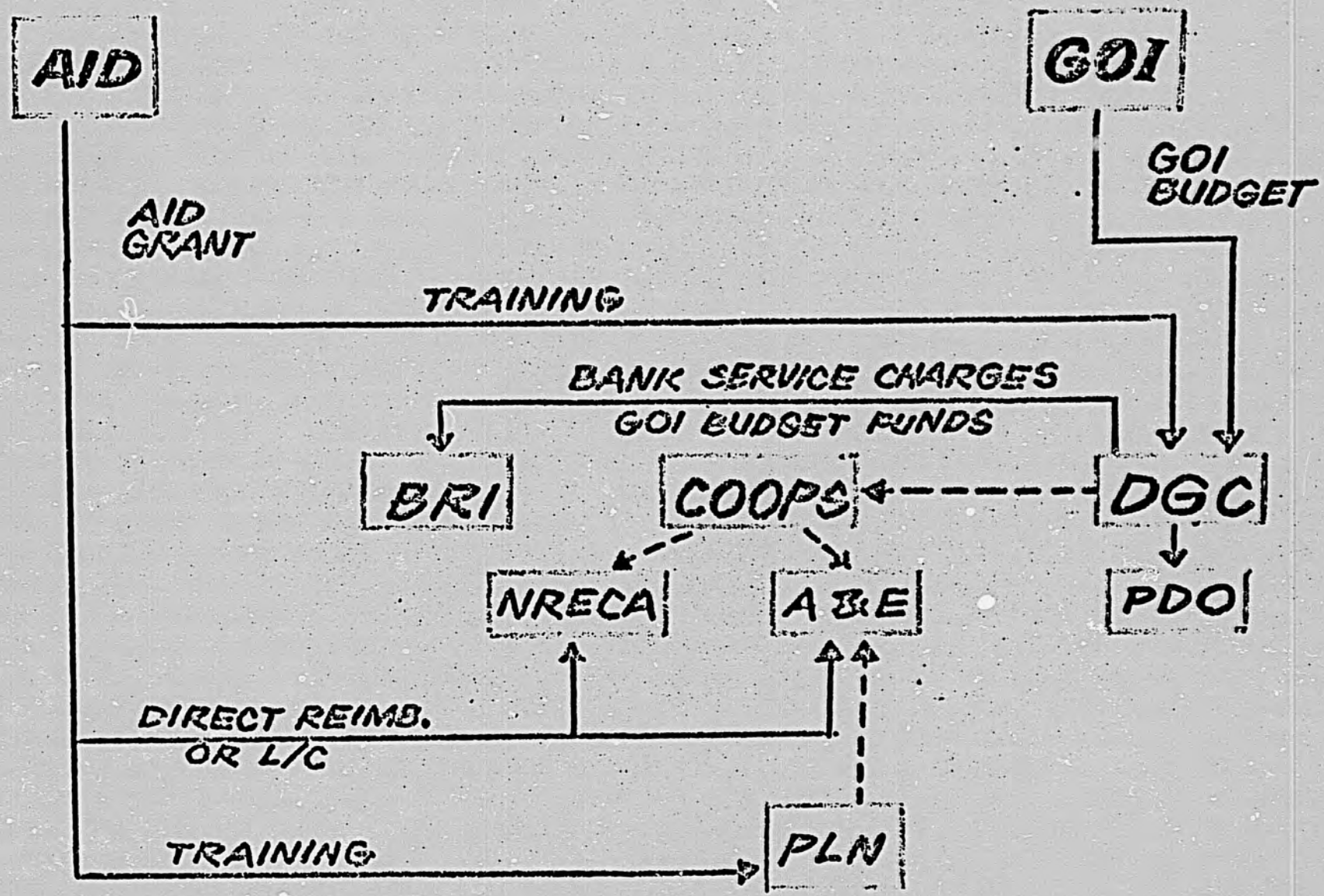
COOPERATIVE SYSTEMS

AID LOAN AND GOI DEPOSIT FUNDS FLOW



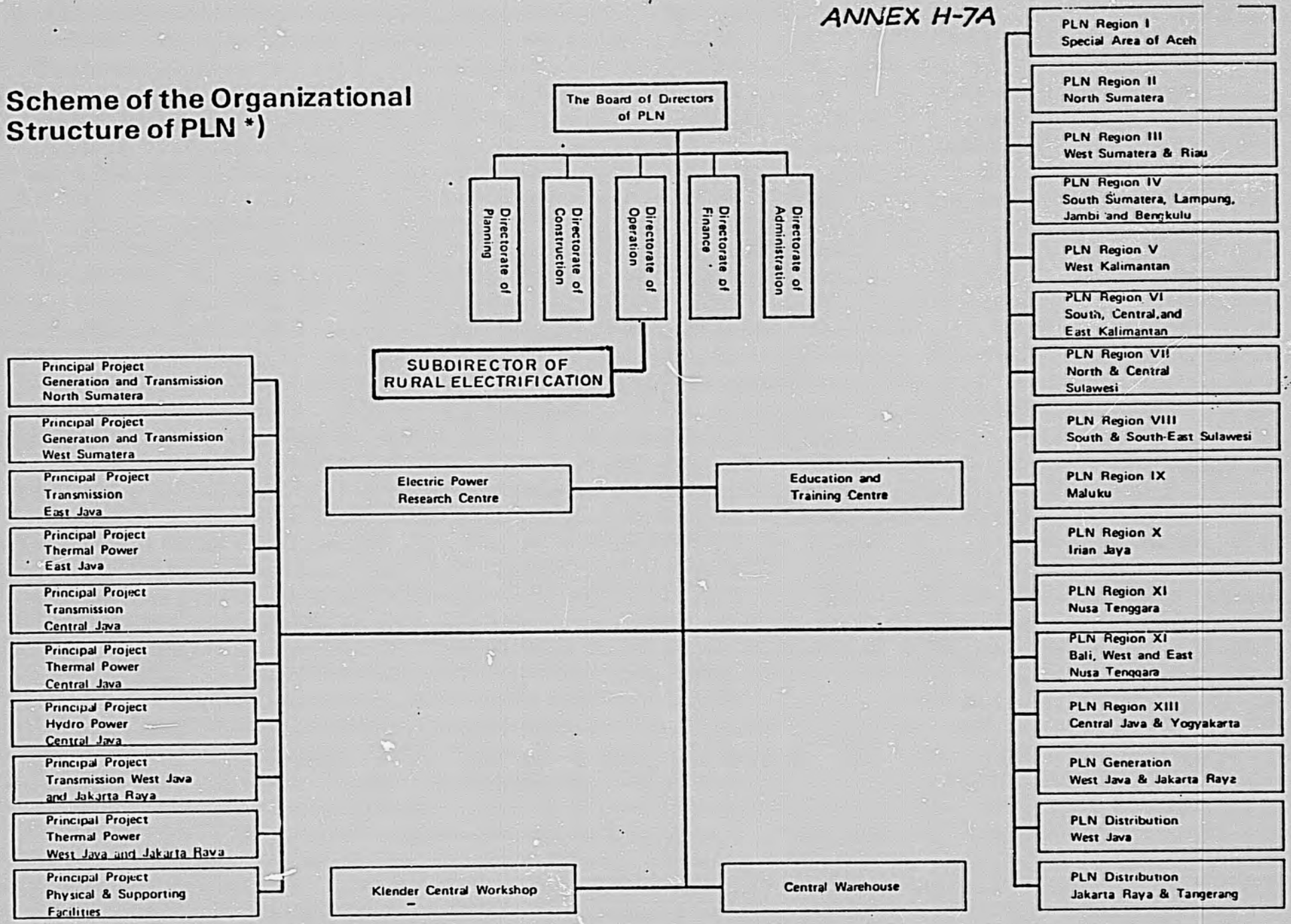
COOP AND PLN SYSTEMS

AID GRANT AND GOI BUDGET FUNDS FLOW



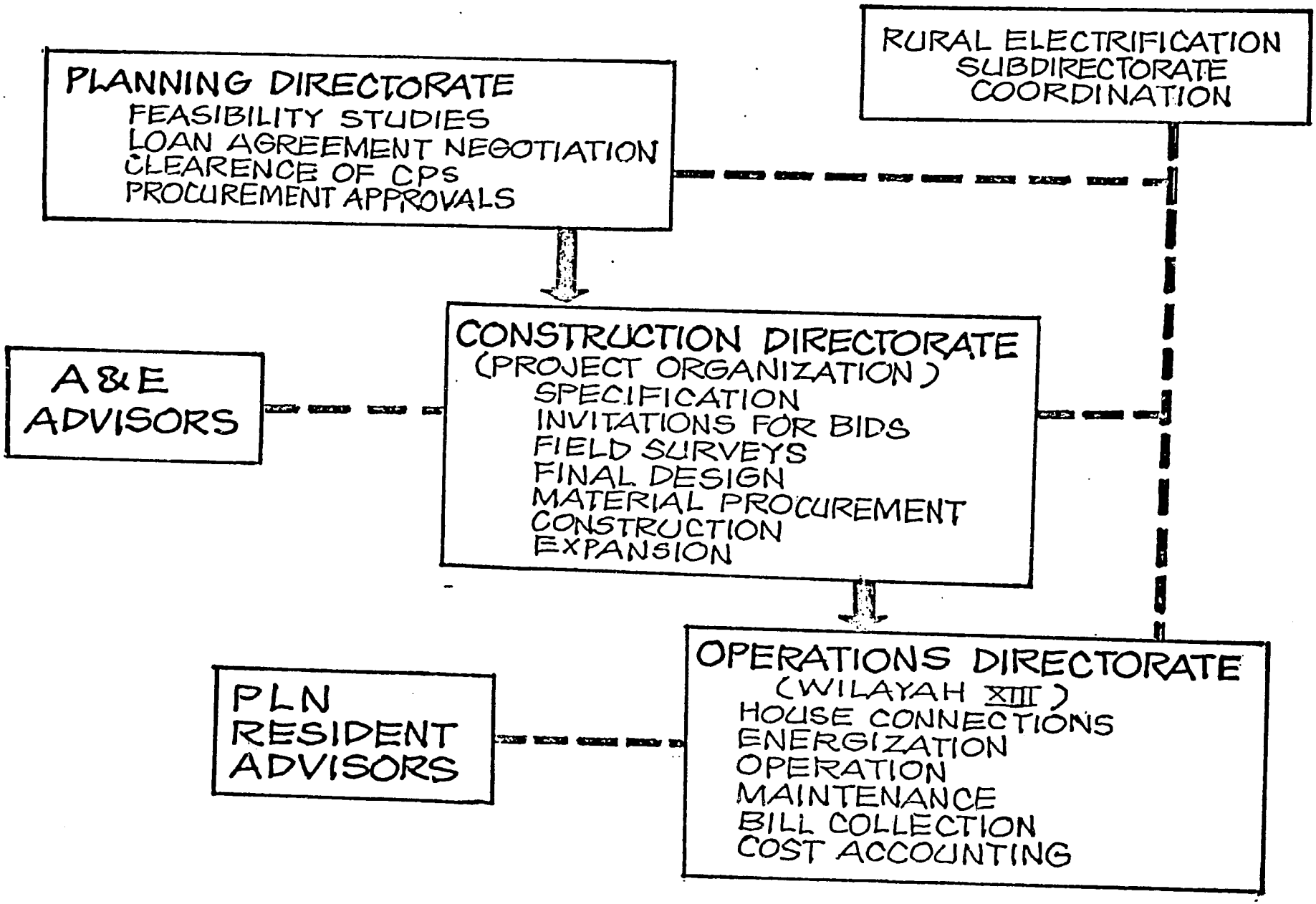
ANNEX H-7A

Scheme of the Organizational Structure of PLN *)



*) Effective since September 9, 1975 according to the Minister Regulation of Public Works and Electric Power No. 013/PRT/1975.

ADMINISTRATION OF PLN RURAL ELECTRIFICATION PROJECT



ANNEX H-8a

MINISTER OF MANPOWER, TRANSMIGRATION
AND COOPERATIVES OF R.I.

Jalan H.A. Salim 58, Jakarta

Jakarta, July 13, 1977

No. : 155/M/VII/77

Re : Membership of Supervisory Body
for Rural Electrification

To:
Chairman of BAPPENAS
Jakarta

Dear Sir:

At present the Government intends developing Rural Electrification Program in the form of Cooperatives, particularly for the areas which have not yet been reached by P.L.N.

For that purpose, at the national level, a Supervisory Body for Rural Electrification Cooperatives will be set up with the members from the agencies pertaining to rural development sector, namely: Department of P.U.T.L., Department of Home Affairs, Department of Finance, BAPPENAS and Directorate General of Cooperatives.

For that purpose, we request your preparedness to appoint a representative who will hold a post in the Supervisory Body for Rural Electrification Cooperatives mentioned above.

Thanking you very much for your attention.

MINISTER OF
MANPOWER, TRANSMIGRATION & COOPERATIVES

signed

(SUBROTO)

cc:
1. R.I. President
2. Director General for Cooperatives
3. File

NOTE:
IDENTICAL LETTERS SENT TO:
P.U.T.L. (PUBLIC WORKS)
DALAM NEGERI (HOME AFFAIRS)
KEUANGAN (FINANCE)
KOPERASI (DGC)

ANNEX H-8b

DECREE OF MINISTER OF MANPOWER, TRANSMIGRATION AND COOPERATIVES
NO.:

ON
PROJECT DEVELOPMENT OFFICE OF RURAL ELECTRIFICATION

MINISTER OF MANPOWER, TRANSMIGRATION AND COOPERATIVES

CONSIDERING: In the framework of developing Rural Electrification with credit and foreign aid project, it is deemed necessary to set up a UPPPLP (Project Development Office) to assist in plan, implementation, report-preparation and evaluation of the above-mentioned Rural Electrification Cooperatives.

IN VIEW OF:
1. Act No. 12 of 1967 on Principles of Cooperatives
2. R.I. Presidential Decree No. 44 of 1974
3. Decree of the Minister of Manpower, Transmigration and Cooperatives No. 1000 of 1975

OBSERVING: Discussion with USAID and BAPPENAS on Rural Electrification program in the form of Cooperatives.

HAVING DECIDED

STIPULATING:

Firstly:
1. To set up a Project Development Office for Credit of Rural Electrification and aid project, first phase will be started at 3 sites, later to be expanded to other places.
2. Sites selection further will be done by the Director General for Cooperatives after feasibility studies.

Secondly:
1. For that purpose the Director General for Cooperatives is responsible to the Minister of Manpower, Transmigration and Cooperatives to appoint personnel and for the realization of activity of U.P.P.P.L.P.
2. So long as the staffs for UPPPLP are not available at the Directorate General of Cooperatives, the experts could be taken from outside with the status of honorarium-staff and not a Civil Servant.

Thirdly: Duties and responsibilities of UPPLP are attached to this Decree (Attachment 2).

Fourthly: All costs for activities of UPPLP are paid by the Development Budget of the Cooperatives Directorate General.

Fifthly: Other matters pertaining to the implementation of this Decree will be governed in a separate regulation.

Sixthly: This Decree takes effect since the date of issuance and it could be revised/amended as required if in future there are mistakes/errors.

ISSUED IN: JAKARTA
ON :

MINISTER OF MANPOWER, TRANSMIGRATION AND COOPERATIVES

(SUBROTO)

cc:
1. R.I. President
2. R.I. Vice President
3. Minister for Finance/Chairman of BAPPENAS
4. Secretary General, Dept. of Manpower, Transmigration and Cooperatives
5. Director General for Cooperatives
6. Area Chief, Directorate General for Cooperatives
7. File

Attachment: Decree of
Minister of Manpower,
Transmigration and
Cooperatives

Job Description:

I. Department of Manpower, Transmigration and Cooperatives.

1. Guidance for all kinds of Cooperatives is provided by the Department of Manpower, Transmigration and Cooperatives, which is carried out by the Directorate General of Cooperatives.

2. The task of guiding the Cooperatives is carried out by the Directorate General of Cooperatives.

II. Duties of Supervisory Body:

1. To determine policy of UPPP (PDO), such as:

   1.1. Statutes and Household Budget.
   1.2. To supervise the duties of UPPP.
   1.3. To evaluate the project operations.
   1.4. To provide suggestions and opinions either requested or not requested.

2. To approve and recommend the budget for goods and routine budget covering:

   2.1. Development Budget.
   2.2. Routine Budget.
   2.3 Source of Budget from foreign countries and locally (domestically).

3. To approve and recommend the amount of credit to Bank and the period of credit return.

4. To approve and to also supervise program of UPPP.

5. To agree that credit for investment and exploitation to the Electrification should be approved by UPPP.

6. To agree that UPPP is the coordinator for the Rural Electrification Project.

7. To agree with the Cooperatives to determine the rights in:

   7.1 The amount of credit.

7.2. Methods of repaying the credit.
7.3. The amount of interest.
7.4. Grace period and the period of credit.

8. To determine the 5-year program in order that the program should be clearly stated by UPPP (PDO):

8.1. The total of electricity consumers should reach 50% of the plan totalling 50,000 houses, or 25,000 houses.
8.2. The electricity network should cover rural areas and kecamatans which in the near future could not be reached by PLN.
8.3. Payments should be more frequent and could be paid by the rural community; no cost of electricity connection and cost for installation in house are paid in installments.

9. To resolve debts which can not be paid back, such as:

9.1. For consumers who are bankrupt.
9.2. For consumers who die and there are no their heirs.
9.3. For consumers who move to another house and no new address is available.
9.4. For charity institutions, such as: mosques, churches, schools.

10. To approve the agreement and contract between PLN and Electrification Cooperatives:

10.1. Purchase contract (of goods) between PLN and Cooperatives.
10.2. Technical aid contract agreement between PLN and Cooperatives.
10.3. Contract on installation of transmission and main electricity houses.

11. To carry out the policy adopted by the Management Board or by Minister.

III. Duties of UPPP (PDO)

1. Determine concepts on statutes and household budget of the Electrification Cooperatives.
2. Submit the credit agreement to the Supervisory Body, namely:

2.1. Credit agreement between USAID and the R.I. Government.
2.2. Credit agreement between R.I. Government and the Electrification Cooperatives.

3. Approve the appointment of the manager for the Electrification Cooperatives covering:

3.1. Methods of manager election.
3.2. Requirements for becoming a manager.

4. Approve methods of administration, accounting and techniques of machine installation as well as purchase of materials for equipment of the Electrification Cooperatives.

5. UPPP (PDO) must make systems for maintenance of equipments, stationery, warehouse, technical devices and determine the men who coordinate the supervision duties.

6. Plan the total staff who will be educated, place of education and to provide experts for the section of administration, machinery, etc.

7. Approve the establishment of Electrification Cooperatives and thereafter the managers of the Electrification Cooperatives, Chairmen and the Treasurers, sign the contracts and agreements on credit.

8. Issue news on Electrification Cooperatives and the news on activities of UPPP in the form of magazines or newspapers.

9. Guide the Electrification Cooperatives in the field of organization and management in the first stage, the staff of UPPP could be placed at the Electrification Cooperatives.

10. Prepare reports, evaluation and monitoring of the activity of Electrification Cooperatives.

11. Provide guidance in the field of machinery techniques, electric network, preparation of balances and financial reports.

12. Determine credit to the Electrification Cooperatives with the Government's guaranteee.

13. Approve the prolongation of credit to the Electrification Cooperatives, as well as to approve the granting of new credit to the Electrification Cooperative.

14. Provide information to the public and regional authorities on the rural electrification program, covering:

14.1. Aims and purposes of Electrification Cooperatives.
14.2. Organization of Electrification Cooperatives.
14.3. Guidance for Electrification Cooperatives.

15. Help the Electrification Cooperatives to make tenders, purchase of office equipment, etc., covering:

15.1. To help prepare the design and engineering.
15.2. To help arrange the tender documents covering.

15.2.1. International tenders:
- Purchase and installation of Generators
- Bulk work on transmission network
- Construction of main electricity houses

15.2.2. Tender with domestic company:
- Purchase of equipment which could be produced locally (cable, lamps and fuse).

IV. Duties of Electrification Cooperatives:

1. The Managing Board approves Feasibility Study or signs credit agreement with UPPP (PDO).

2. The Managing Board has the following duties:

   2.1. To develop Cooperative's progress.
   2.2. To be responsible externally.
   2.3. To make contact with members of the Managing Board.
   2.4. To make contact with cooperative members.
   2.5. As an advisory body.
   2.6. To recommend for nomination of Manager:

      2.6.1. To place advertisement in 3 newspapers on the need for Manager.
      2.6.2. To call would-be managers who meet the requirements.
      2.6.3. To select 3 would-be managers to be forwarded to UPPP and to be appointed as manager of electrification cooperatives, it is in accordance with the Statutes of Electrification Cooperatives.

3. Duties of Manager:

   3.1. To make division of work among staffs/employees.
   3.2. To determine salaries of staffs/employees.
   3.3. To plan the costs and salaries.
   3.4. To conduct evaluation on business field.
   3.5. To prepare a report to the Managing Board either requested or not requested.

4. To conclude an architectural contract, purchase of machines and equipments with foreign or Indonesian company, which will be assisted by UPPP; for that purpose, the tender documents should be arranged and the specification.

5. To take care of the warehouse facilities for:

   5.1. Materials and machines.
   5.2. Wooden poles.
   5.3. Meter equipments.
   5.4. Transformator, etc.

6. To plan for construction of transmission and office, place for generator and warehouse in the appointed area.

7. Together with UPPP to do the administration, to maintain equipments and technique of installation for Rural Electrification with the aid from an expert team (experts from NRECA).

8. To work out the program of Generator utilization and its installation and connection to every electricity consumer.

9. To maintain and provide equipments for the need of electrification cooperatives and equipment needs for its members.

10. To conclude a contract with PLN or other companies which sell extra electricity to the Cooperatives.

ARCHITECT & ENGINEERING AND TECHNICAL, ORGANIZATIONAL AND MANAGEMENT CONTRACTS

JUSTIFICATION FOR AID DIRECT CONTRACTS

In accordance with the provisions of AIDTO Circular A-566, AID direct contracting for the A&E and TOM contracts is justified for the following reasons:

1. Most of the services of both of these technical advisory teams will be provided to the Directorate General of Cooperatives (DGC) and to the cooperatives themselves. The cooperatives have not been chartered or organized as yet and the DGC has no previous experience evaluating proposals or negotiating contracts of this type. It is therefore necessary for AID to take a direct part in defining the services, evaluating proposals, negotiating the contracts and monitoring the services.

2. Part of the services of both teams will be provided to the National Electric Power Agency (PLN), although the supervisory personnel will be more directly connected with the DGC assistance. Some of the services will overlap, such as training, financial management advise and some aspects of design and procurement. Close coordination of the teams' services is necessary and this can best be done if the contracts are directly with AID.

3. Time is of the essence on this Project. Experience in Indonesia is that over one year is required to complete contracting for consultants with host country contracting. The schedule calls for both contracts to be signed in less than three months after funds are available. Some steps, advertising and composing the short list, have already been done for the A&E contract. Non competitive procurement is requested (see justification) for the OMT contract from the NRECA. By these measures and by direct contracting the schedule can be met.

Clearances:
MGT:RLBerrett _____
PRO:LMMarshall _____
PTE:DCWoody _____

Sarah Jane Littlefield
Acting Director

JUSTIFICATION FOR NONCOMPETITIVE PROCUREMENT OF NRECA FOR TECHNICAL, ORGANIZATIONAL AND MANAGEMENT TEAM

It is recommended that AID negotiate only with the National Rural Electric Cooperative Association for the Technical, Organizational and Management (TOM) services required for the rural electric demonstration program described below:

The Government of Indonesia (GOI) through the Director General of Cooperatives (DGC) has initiated a demonstration rural electrification program in three areas outside of Java. The objective of this program is to demonstrate that using reliable cooperative type organizations, electric service and the social benefits that accrue therefrom can be made available to the very poor people at a price they are able to pay. Among these people are the transmigrants from the overcrowded island of Java who are beginning a new life under frontier conditions in the outer islands and whose welfare is the responsibility of the DGC.

Although the DGC has worked with cooperatives in several kinds of activities, it has no experience with rural electric cooperatives. In order for the demonstration program using this type of organization to succeed, the cooperatives and DGC will need constant advice and guidance over a period of several years from a cadre of specialists having a thorough background in rural electrification management and technical operation of cooperatives.

The National Rural Electrification Cooperative Association (NRECA), an organization representing approximately 1000 rural electric cooperatives in the United States has a predominant capability to provide all of the services which will be needed. It is the policy of the U.S. electric cooperatives working through the NRECA to provide services which will be needed to assist the rural people of other nations to obtain the social and economic benefits which are only available to them through the use of reliable, low cost electricity. In implementing this policy the cooperatives have made the services of many of their experienced and highly qualified personnel available through the NRECA for long and short periods of overseas service. This is a unique relationship which is not available to other organizations and no other U.S. organization has the competence to provide the required services.

The NRECA has worked at the national institution level and at the cooperative level in the Philippines continuously since 1967. It has developed a special relationship with the National Electrification Administration (NEA) of the Philippines in which NEA is willing to make a limited number of its trained personnel available to NRECA to assist other Far East neighbors in establishing rural electric cooperatives. A number of Indonesian Government officials have visited the Philippines, inspected the cooperative electric systems and became acquainted with management methods and numerous personnel responsible for the successful implementation of the program. The GOI would welcome some participation in the rural electrification program by qualified Filipinos.

The NRECA signed its first contract for overseas service in 1962. Since then it has sent teams to various countries in South America and Asia to prepare pre-feasibility and feasibility studies for rural electrification projects and has sent specialists singly or in groups to assist various organizations in solving management and technical problems. In addition NRECA has undertaken three projects on a long term basis in which it provided an increasingly broader scope of services for rural electrification projects. The first project of this type was in India in which it provided a three man team of rural electrification specialists for 3 years to assist in the successful establishment of 5 cooperatives.

The second project was in Viet Nam wherein NRECA provided a team of four broadly experienced management and technical personnel to establish 3 cooperatives and a pole treating plant. At the beginning of 1970, they were providing electricity to 90,000 people.

The third and largest undertaking is in the Philippines where it has had personnel in country since 1967. Here they produced the feasibility studies which resulted in the successful construction and operation of the two pilot projects referred to as "Moresco" and "Vresco". During the construction and early operating period the entire range of managerial, technical and training needs were furnished by three full time expers. This program was so successful that the Government of the Philippines undertook a nationwide rural electrification program and chose the NRECA to furnish management, operational and maintenance advice and training at the national institutional level and at the cooperative level. This program was eminently successful and at the present there are 77 cooperatives organized and over 50 energized. The NRECA input is diminishing rapidly there as the Filipinos have gained competence to run their own program in a modern and efficient manner. Representatives from numerous countries including Canada, Pakistan, Jordan, Thailand, Bangla Desh and Indonesia have visited the Philippines and have inspected the cooperative systems and become familiar with their management methods. As a result the Indonesians have stated a desire to obtain the services of the NRECA since their problems are of national institutional and cooperative level type.

The loan for rural electrification requested by the GOI is expected to be approved before September 30, 1977. If this occurs, the project schedule is to organize the cooperatives during November and start training personnel in December, 1977. Expressions of interest for Architectural and Engineering services were received on July 22, 1977. An engineering contract is scheduled to be signed in December. Preliminary design is to begin in January of 1978 and the IFB's for materials are to be issued a month later. Any delay in getting the cooperatives organized and in identifying the members who will receive service will delay the entire project implementation schedule. Under non-competitive procurement NRECA could have an approved contract for the management services in October and an expatriate staff in Indonesia ready to assist in organizing the cooperatives in November, 1977, as per schedule.

The National Electric Power Agency (PLN) will construct seven rural electric systems on Java. It has requested assistance in establishing a cost accounting system for the new systems, setting up a power use program and a training program for operating and maintenance personnel. The services required and identified above are such that many firms would be in a position to render them successfully. NRECA has the capability to furnish these services which will be needed during the same period that it is in Indonesia providing services to the DGC and its cooperatives. The services can be obtained more timely and efficiently from NRECA than from other sources since the same Chief of Party, Financial Advisor and Training Advisor needed for the expatriate team for the cooperatives would also administer the team rendering services for PLN. Some of the training courses will be combined for the PLN and cooperative personnel. A single contract for the TOM services will be much simpler for USAID to monitor and the resulting services will be more efficiently rendered. On the basis of NRECA providing services to both the DGC and PLN the estimated man months required would divide with DGC needing 57% and PLN 43%.

For the above reasons, USAID recommends that all of the services be furnished under a single contract with NRECA.

PRO:LMMarshall _____
MGT:RLBerrett _____
PTE:DCWoody _____

S.J. Littlefield
Acting Director

July 29, 1977

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Summary of Financial Data

Rate of Exchange: US$1 = Rp 415

1971-1973: FY Ending December 31
1974/75 onwards: FY Ending March 31

	ACTUAL					FORECAST							
	1971	1972	1973	1974/75 2/	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
I. REVALUED ASSETS													
(i) Revenue/Cost Ratio	75.0%	72.0%	72.0% 1/	84.0%	97.0%	107.0%	109.0%	104.0%	105.0%	108.0%	108.0%	107.0%	105.0%
(ii) Rate of Return on Average Net Fixed Assets in Operation	-	(7.1%)	(7.3%)	(4.1%)	(0.7%)	1.7%	2.2%	1.0%	1.2%	2.0%	2.3%	2.5%	2.7%
(iii) Increase in Average Revenues per kWh Sold	-	4.2%	23.9%	47.1%	34.4%	23.6%	17.1%	7.2%	2.2%	6.9%	5.4%	5.6%	7.1%
(iv) Net Internal Cash Generation as Percent of Capital Expenditures	-	32.0%	42.0% 1/	32.0%	32.0%	28.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
(v) Same as (iv), but Three-Year Sliding Average	-	-	-	34.0%	33.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
(vi) Debt/Equity Ratio	0/100	0/100	0/100	0/100	0/100	1/99	12/88	23/77	32/68	40/60	45/55	49/51	51/49
(vii) Times Total Debt Service Covered by Gross Internal Sources	-	-	-	-	-	-	-	-	-	39.3	12.6	5.8	3.9
II. ASSETS NOT REVALUED													
(i) Revenue/Cost Ratio	75.0%	72.0%	78.0% 1/	97.0%	111.6%	132.0%	119.0%	112.0%	112.0%	113.0%	112.0%	111.0%	110.0%
(ii) Rate of Return on Average Net Fixed Assets in Operation	-	(7.2%)	(6.3%)	(0.4%)	4.0%	9.4%	5.1%	3.1%	2.9%	3.5%	3.7%	4.2%	4.6%
(iii) Increase in Average Revenues per kWh Sold	-	4.2%	23.9%	47.1%	34.4%	23.6%	(5.1%)	(2.4%)	(7.5%)	(1.5%)	(1.4%)	-	1.5%
(iv) Net Internal Cash Generation as Percent of Capital Expenditures	-	32.0%	42.0% 1/	32.0%	32.0%	33.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
(v) Same as (iv), but Three-Year Sliding Average	-	-	-	34.0%	33.0%	32.0%	32.0%	31.0%	30.0%	30.0%	30.0%	30.0%	30.0%
(vi) Debt/Equity Ratio	0/100	0/100	0/100	0/100	0/100	2/98	14/86	26/74	37/63	46/54	53/47	58/42	62/38
(vii) Times Total Debt Service Covered by Gross Internal Sources	-	-	-	-	-	-	-	-	-	30.0	8.9	4.2	2.9

1/ Before lump sum settlement of overdue Government accounts.
2/ First quarter 1974 omitted.

ANNEX I-1a

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

REVALUED ASSETS
FUTURE PRICE ESCALATION INCLUDED

Rate of Exchange: US$1 = Rp 415

Actual and Forecast Income Statements
(in Rp billion unless otherwise indicated)

1971-1973: FY Ending December 31
1974/75 onwards: FY Ending March 31

	ACTUAL					FORECAST							
	1971	1972	1973	1974/75[1]	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Generation plus Purchases (GWh)	2,354	2,498	2,932	3,345	3,769	4,413	5,163	6,127	7,383	8,970	10,915	13,213	16,017
Losses and Plant Consumption (GWh)	(568)	(605)	(757)	(901)	(965)	(1,143)	(1,317)	(1,532)	(1,809)	(2,153)	(2,565)	(3,039)	(3,604)
Sales (GWh)	1,786	1,893	2,175	2,444	2,804	3,270	3,846	4,595	5,574	6,817	8,350	10,174	12,413
Increase of Sales (%)	11.8%	6.0%	14.9%	10.3%	14.7%	16.6%	17.6%	19.5%	21.3%	22.3%	22.5%	21.8%	22.0%
Average Revenues per kWh Sold (Rp)	8.62	8.98	11.13	16.37	22.01	27.21	31.85	34.15	34.91	37.32	39.33	41.53	44.49
Operating Revenues													
Revenues from Sales of Power	15.4	17.0	24.2	40.0	61.7	89.0	122.5	156.9	194.9	254.4	328.4	422.5	552.3
Other Operating Revenues	1.1	1.7	0.3	0.3	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.7
Total Operating Revenues	16.5	18.7	24.5	40.3	62.5	89.9	123.5	158.0	195.8	255.7	329.8	424.1	554.0
Operating Expenses													
Purchased Power	0.7	0.7	0.8	1.2	1.2	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7
Fuel	3.3	4.4	5.6	7.9	14.5	20.7	33.3	50.3	59.9	82.1	111.4	152.0	208.5
Personnel Expenses)		5.7	7.5	10.9	13.6	17.5	21.6	26.0	30.8	34.9	38.5	42.2	45.4
Material and Other Expenses for)	8.5												
Operation, Maintenance and Adm.)		4.7	6.0	9.0	10.8	13.4	17.2	21.7	26.8	32.7	40.9	48.1	61.9
Depreciation	9.6	10.5	14.1	18.8	24.1	31.5	39.4	52.2	66.7	82.9	105.1	132.8	169.3
Total Operating Expenses	22.1	26.0	34.0	47.8	64.2	84.4	113.3	151.9	186.1	234.7	298.2	377.6	487.8
Net Operating Income	(5.6)	(7.3)	(9.5)	(7.5)	(1.7)	5.5	10.2	6.1	9.7	21.0	31.6	46.5	66.2
Other Income (Net)	0.4	0.4	(0.6)	(1.4)	(0.7)	-	-	-	-	-	-	-	-
Interest	-	-	-	-	0.2	0.5	7.1	21.1	41.3	66.9	98.9	135.3	174.3
Interest During Construction	-	-	-	-	(0.2)	(0.5)	(7.1)	(21.1)	(41.3)	(64.4)	(91.4)	(115.2)	(136.5)
Interest Charged to Operation	-	-	-	-	-	-	-	-	-	2.5	7.5	20.1	37.8
Profit/Loss	(5.2)	(6.9)	(10.1)	(8.9)	(2.4)	5.5	10.2	6.1	9.7	18.5	24.1	26.4	28.4
Adjustments	0.4	0.7	6.5	0.8	-	-	-	-	-	-	-	-	-
Profit/Loss after Adjustments	(4.8)	(6.2)	(3.6)	(8.1)	(2.4)	5.5	10.2	6.1	9.7	18.5	24.1	26.4	28.4

1/ First quarter 1974 omitted.

ANNEX I-1b

REVALUED ASSETS
FUTURE PRICE ESCALATION INCLUDED

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Rate of Exchange: US$1 = Rp 415

Actual and Forecast Sources and Applications of Funds Statements
(in Rp billion)

1971-1973: FY Ending December 31
1974/75 onwards: FY Ending March 31

	ACTUAL					FORECAST							
	1971	1972	1973	1974/75 1/	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
SOURCES													
Internal													
Net Operating Income	(5.6)	(7.3)	(9.5)	(7.5)	(1.7)	5.5	10.2	6.1	9.7	21.0	31.6	46.5	66.2
Other Income (Net)	0.8	0.3	5.9	(1.4)	(0.7)	-	-	-	-	-	-	-	-
Consumers' Contributions	3.2	2.7	5.3	14.8	15.0	16.8	17.2	17.6	17.9	18.0	17.8	17.3	16.5
Depreciation	9.6	10.5	14.1	18.8	24.1	31.5	39.4	52.2	66.7	82.9	105.1	132.8	169.3
Gross Internal Sources	8.0	6.2	15.8	24.7	36.7	53.8	66.8	75.9	94.3	121.9	154.5	196.6	252.0
Less: Debt Service													
Amortization	-	-	-	-	-	-	-	-	-	0.6	4.8	13.6	26.9
Interest	-	-	-	-	-	-	-	-	-	2.5	7.5	20.1	37.8
Total Debt Service	-	-	-	-	-	-	-	-	-	3.1	12.3	33.7	64.7
Net Internal Cash Generation	8.0	6.2	15.8	24.7	36.7	53.8	66.8	75.9	94.3	118.8	142.2	162.9	187.3
External													
Government Contributions	2.2	15.0	34.1	77.1	80.6	134.1	60.5	24.6	5.4	-	-	-	-
Borrowings	-	-	-	-	0.2	9.5	104.1	163.3	232.5	288.9	358.1	386.1	439.1
Total External Sources	2.2	15.0	34.1	77.1	80.8	143.6	164.6	187.9	237.9	288.9	358.1	386.1	439.1
TOTAL SOURCES	10.2	21.2	49.9	101.8	117.5	197.4	231.4	263.8	332.2	407.7	500.3	549.0	626.4
APPLICATIONS													
Capital Expenditures	5.8	19.4	22.1	78.0	115.5	193.0	222.7	252.8	314.2	395.8	473.9	543.0	624.4
Variations in Cash and Working Capital	4.4	1.8	27.8	23.8	2.0	4.4	8.7	11.0	18.0	11.9	26.4	6.0	2.0
TOTAL APPLICATIONS	10.2	21.2	49.9	101.8	117.5	197.4	231.4	263.8	332.2	407.7	500.3	549.0	626.4

1/ First quarter 1974 omitted.

ANNEX I-1c

REVALUED ASSETS
FUTURE PRICE ESCALATION INCLUDED

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Rate of Exchange: US$1 = Rp 415

Actual and Forecast Balance Sheets
(in Rp billion)

1971-1973: FY Ending December 31 1974/75 onwards: FY Ending March 31	ACTUAL					FORECAST							
	1971	1972	1973	1974/75[1/]	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
ASSETS													
Fixed Assets													
Gross Fixed Assets in Operation	109.6	140.0	206.1	284.3	425.4	590.6	865.5	1,066.1	1,360.7	1,765.0	2,335.5	2,983.3	4,009.2
Accumulated Consumers' Contributions	(5.8)	(8.8)	(16.2)	(29.9)	(49.7)	(72.5)	(97.0)	(124.3)	(154.6)	(187.8)	(221.9)	(257.0)	(292.5)
Accumulated Depreciation	(0.6)	(20.6)	(39.6)	(68.1)	(103.1)	(147.0)	(201.1)	(253.3)	(320.0)	(402.9)	(508.0)	(640.8)	(810.1)
Net Fixed Assets in Operation	94.2	110.6	150.3	186.3	272.6	371.1	567.4	688.5	886.1	1,174.3	1,605.6	2,085.5	2,906.6
Work in Progress	37.0	37.2	25.7	129.1	151.0	248.0	279.7	426.3	569.8	719.2	803.6	909.3	748.4
Total Net Fixed Assets	131.2	147.8	176.0	315.4	423.6	619.1	847.1	1,114.8	1,455.9	1,893.5	2,409.2	2,994.8	3,655.0
Current Assets	16.8	23.7	52.7	61.0	67.0	77.0	89.0	110.3	140.0	160.0	195.0	200.0	201.0
TOTAL ASSETS	148.0	171.5	228.7	376.4	490.6	696.1	936.1	1,225.1	1,595.9	2,053.5	2,604.2	3,194.8	3,856.0
LIABILITIES													
Equity													
Accumulated Government Contributions	146.6	167.0	207.8	309.5	390.1	524.2	584.7	609.3	614.7	614.7	614.7	614.7	614.7
Accumulated Profit/Loss	(6.1)	(12.3)	(15.9)	(23.5)	(25.9)	(20.4)	(10.2)	(4.1)	5.6	24.1	48.2	74.6	103.0
Revaluation Reserve	-	8.6	34.3	85.0	116.8	167.6	229.5	314.2	425.7	568.4	733.1	925.8	1,149.4
Total Equity	140.5	163.3	226.2	371.0	481.0	671.4	804.0	919.4	1,046.0	1,207.2	1,396.0	1,615.1	1,867.1
Long-Term Debt	-	-	-	-	0.2	9.7	113.8	277.1	509.6	797.9	1,151.2	1,523.7	1,933.9
Current Liabilities	7.5	8.2	2.5	5.4	9.4	15.0	18.3	28.6	40.3	48.4	57.0	56.0	55.0
TOTAL LIABILITIES	148.0	171.5	228.7	376.4	490.6	696.1	936.1	1,225.1	1,595.9	2,053.5	2,604.2	3,194.8	3,856.0

1/ First quarter 1974 omitted.

Rate of Exchange: US$1 = Rp 415

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

ASSETS NOT REVALUED
EXCLUDING FUTURE PRICE ESCALATION

Actual and Forecast Income Statements
(in Rp billion unless otherwise indicated)

1971-1973: FY Ending December 31
1974/75 onwards: FY Ending March 31

	ACTUAL					FORECAST							
	1971	1972	1973	1974/75[1/]	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Generation plus Purchases (GWh)	2,354	2,498	2,932	3,345	3,769	4,413	5,163	6,127	7,383	8,970	10,915	13,213	16,017
Losses and Plant Consumption (GWh)	(568)	(605)	(757)	(901)	(965)	(1,143)	(1,317)	(1,532)	(1,809)	(2,153)	(2,565)	(3,039)	(3,604)
Sales (GWh)	1,786	1,893	2,175	2,444	2,804	3,270	3,846	4,595	5,574	6,817	8,350	10,174	12,413
Increase in Sales (%)	11.8%	6.0%	14.9%	10.3%	14.7%	16.6%	17.6%	19.5%	21.3%	22.3%	22.5%	21.8%	22.0%
Average Revenues per kWh Sold (Rp)	8.62	8.98	11.13	16.37	22.01	27.21	25.82	25.20	23.30	22.94	22.61	22.65	22.98
Operating Revenues													
Revenues from Sales of Power	15.4	17.0	24.2	40.0	61.7	89.0	99.3	115.8	129.9	156.4	188.8	230.4	285.2
Other Operating Revenues	1.1	1.7	0.3	0.3	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Total Operating Revenues	16.5	18.7	24.5	40.3	62.5	89.8	100.1	116.6	130.7	157.2	189.6	231.2	286.0
Operating Expenses													
Purchased Power	0.7	0.7	0.8	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.5	1.5
Fuel	3.3	4.4	5.6	7.9	14.5	20.7	30.3	41.6	45.0	56.2	69.2	85.9	106.9
Personnel Expenses)													
Material and Other Expenses for)	8.5	5.7	7.5	10.9	13.6	14.0	14.4	14.7	15.1	15.6	15.9	16.3	16.7
Operation, Maintenance and Adm.)													
Depreciation		4.7	6.0	9.0	10.8	12.0	14.0	16.0	18.0	20.0	23.0	25.0	30.0
Total Operating Expenses	9.6	10.4	11.7	12.4	15.9	20.0	23.9	30.9	37.7	43.9	52.8	63.3	76.5
	22.1	25.9	31.6	41.4	56.0	67.9	83.8	104.5	117.2	137.1	162.3	192.0	231.6
Net Operating Income	(5.6)	(7.2)	(7.1)	(1.1)	6.5	21.9	16.3	12.1	13.5	20.1	27.3	39.2	54.4
Other Income (Net)	0.4	0.4	(0.6)	(1.4)	(0.7)	-	-	-	-	-	-	-	-
Interest	-	-	-	-	0.2	0.4	5.9	16.7	29.5	47.3	66.6	86.6	106.2
Interest During Construction	-	-	-	-	(0.2)	(0.4)	(5.9)	(16.7)	(29.5)	(45.3)	(60.4)	(70.7)	(78.1)
Interest Charged to Operation	-	-	-	-	-	-	-	-	-	2.0	6.2	15.9	28.1
Profit/Loss	(5.2)	(6.8)	(7.7)	(2.5)	5.8	21.9	16.3	12.1	13.5	18.1	21.1	23.3	26.3
Adjustments	0.4	0.7	6.5	0.8	-	-	-	-	-	-	-	-	-
Profit/Loss after Adjustments	(4.8)	(6.1)	(1.2)	(1.7)	5.8	21.9	16.3	12.1	13.5	18.1	21.1	23.3	26.3

1/ First quarter 1974 omitted.

ANNEX I-1e

ASSETS NOT REVALUED
EXCLUDING FUTURE PRICE ESCALATION

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Actual and Forecast Sources and Applications of Funds Statements
(in Rp billion)

Rate of Exchange: US$1=Rp 415

1971-1973: FY Ending December 31 1974/75 onwards: FY Ending March 31	ACTUAL					FORECAST							
	1971	1972	1973	1974/75 1/	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
SOURCES													
Internal													
Net Operating Income	(5.6)	(7.2)	(7.1)	(1.1)	6.5	21.9	16.3	12.1	13.5	20.1	27.3	39.2	54.4
Other Income (Net)	0.8	0.3	5.9	(1.4)	(0.7)	-	-	-	-	-	-	-	-
Consumers' Contributions	3.2	2.7	5.3	14.8	15.0	15.0	14.0	13.0	12.0	11.0	10.0	9.0	8.0
Depreciation	9.6	10.4	11.7	12.4	15.9	20.0	23.9	30.9	37.7	43.9	52.8	63.3	76.5
Gross Internal Sources	8.0	6.2	15.8	24.7	36.7	56.9	54.2	56.0	63.2	75.0	90.1	111.5	138.9
Less: Debt Service													
Amortization	-	-	-	-	-	-	-	-	-	0.5	3.9	10.8	20.0
Interest	-	-	-	-	-	-	-	-	-	2.0	6.2	15.9	28.1
Total Debt Service	-	-	-	-	-	-	-	-	-	2.5	10.1	26.7	48.1
Net Internal Cash Generation	8.0	6.2	15.8	24.7	36.7	56.9	54.2	56.0	63.2	72.5	80.0	84.8	90.8
External													
Government Contributions	2.2	15.0	34.1	77.1	80.6	110.9	44.3	18.2	3.6	-	-	-	-
Borrowings	-	-	-	-	0.2	8.5	87.3	120.4	153.9	184.3	206.4	207.7	215.7
Total External Sources	2.2	15.0	34.1	77.1	80.8	119.4	131.6	138.6	157.5	184.3	206.4	207.7	215.7
TOTAL SOURCES	10.2	21.2	49.9	101.8	117.5	176.3	185.8	194.6	220.7	256.8	286.4	292.5	306.5
APPLICATIONS													
Capital Expenditures	5.8	19.4	22.1	78.0	115.5	172.3	180.8	186.6	210.7	241.8	266.4	282.5	302.5
Variations in Cash and Working Capital	4.4	1.8	27.8	23.8	2.0	4.0	5.0	8.0	10.0	15.0	20.0	10.0	4.0
TOTAL APPLICATIONS	10.2	21.2	49.9	101.8	117.5	176.3	185.8	194.6	220.7	256.8	286.4	292.5	306.5

1/ First quarter 1974 omitted.

ASSETS NOT REVALUED
EXCLUDING FUTURE PRICE ESCALATION

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Actual and Forecast Balance Sheets
(in Rp billion)

Rate of Exchange: US$1= Rp 415

1971-1973: FY Ending December 31
1974/75 onwards: FY Ending March 31

	ACTUAL					FORECAST							
	1971	1972	1973	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
ASSETS													
Fixed Assets													
Gross Fixed Assets in Operation	109.6	133.9	166.4	198.8	294.4	408.6	541.6	643.5	780.8	959.9	1,217.6	1,481.3	1,899.2
Accumulated Consumers' Contributions	(5.8)	(8.5)	(13.8)	(23.5)	(38.5)	(53.5)	(67.5)	(80.5)	(92.5)	(103.5)	(113.5)	(122.5)	(130.5)
Accumulated Depreciation	(9.6)	(19.9)	(31.8)	(47.0)	(62.9)	(82.9)	(106.8)	(137.7)	(175.4)	(219.3)	(272.1)	(335.4)	(411.9)
Net Fixed Assets in Operation	94.2	105.5	120.8	128.3	193.0	272.2	367.3	425.3	512.9	637.1	832.0	1,023.4	1,356.8
Work in Progress	37.0	33.8	23.4	117.4	137.3	195.4	243.2	327.9	401.3	464.0	472.7	491.5	376.1
Total Net Fixed Assets	131.2	139.3	144.2	245.7	330.3	467.6	610.5	753.2	914.2	1,101.1	1,304.7	1,514.9	1,732.9
Current Assets	16.8	23.7	52.7	61.0	67.0	73.0	81.0	95.0	115.0	135.0	165.0	170.0	172.0
TOTAL ASSETS	148.0	163.0	196.9	306.7	397.3	540.6	691.5	848.2	1,029.2	1,236.1	1,469.7	1,684.9	1,904.9
LIABILITIES													
Equity													
Accumulated Government Contributions	146.6	167.0	207.8	309.5	390.1	501.0	545.3	563.5	567.1	567.1	567.1	567.1	567.1
Accumulated Profit/Loss	(6.1)	(12.2)	(13.4)	(8.2)	(2.4)	19.5	35.8	47.9	61.4	79.5	100.6	123.9	150.2
Total Equity	140.5	154.8	194.4	301.3	387.7	520.5	581.1	611.4	628.5	646.6	667.7	691.0	717.3
Long-Term Debt	-	-	-	-	0.2	8.7	96.0	216.4	370.3	554.1	756.6	953.5	1,149.2
Current Liabilities	7.5	8.2	2.5	5.4	9.4	11.4	14.4	20.4	30.4	35.4	45.4	40.4	38.4
TOTAL LIABILITIES	148.0	163.0	196.9	306.7	397.3	540.6	691.5	848.2	1,029.2	1,236.1	1,469.7	1,684.9	1,904.9

1/ First quarter 1974 omitted.
2/ Preliminary figures.

ANNEX I-2

INDONESIA
Perusahaan Umum Listrik Negara (PLN)

Capital Expenditures
(in Rp billion)

Rate of Exchange: US$1 = Rp 415

F: Foreign Cost
L: Local Cost

Fiscal Year Ending March 31:	Total Project Cost		2nd Five-Year Plan						3rd Five-Year Plan									
			1976/77		1977/78		1978/79		1979/80		1980/81		1981/82		1982/83		1983/84	
	F	L	F	L	F	L	F	L	F	L	F	L	F	L	F	L	F	L
I. SUMMARY																		
1. Generation																		
Hydro Plants			8.9	8.1	13.0	7.0	16.2	8.4	15.8	9.5	16.0	10.0	19.3	14.8	29.0	14.0	22.4	12.7
Gas Turbines			18.2	6.7	13.5	3.0	0.4	0.1	-	-	-	-	-	-	-	-	-	-
Steam Plants			28.5	8.8	33.4	12.9	42.5	15.7	37.8	22.4	44.9	26.5	63.8	18.5	44.5	13.6	38.8	11.2
Diesel Plants			7.8	3.1	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0
Geothermal Plants			2.7	1.3	3.4	1.3	3.7	1.4	1.8	0.6	-	-	-	-	-	-	-	-
Subtotal Generation			66.1	27.9	69.7	27.1	69.2	28.4	62.8	35.7	68.3	39.5	89.9	35.3	76.9	31.6	68.6	26.9
2. Transmission			31.0	13.0	32.0	14.0	31.0	12.0	24.0	11.0	28.0	12.0	36.0	16.0	45.0	20.0	58.0	25.0
3. Distribution			19.0	13.0	31.0	14.0	25.0	17.0	32.0	21.0	40.0	26.0	49.0	33.0	60.0	40.0	69.0	46.0
4. Other Investments			-	3.2	-	3.0	-	4.0	-	3.0	-	6.0	-	7.0	-	8.0	-	9.0
TOTAL AT 1976 PRICES			116.1	54.2	132.7	58.1	125.2	61.4	136.8	72.7	136.3	83.5	174.9	91.3	181.9	100.6	195.6	106.9
			20.7		41.9		66.2		103.5		154.0		207.3		260.5		321.9	
5. Price Escalation			193.0		222.7		252.8		314.3		395.8		479.9		543.0		624.4	
TOTAL			483.1		536.6		609.2		757.1		933.7		1,161.9		1,368.4		1,504.8	
Total (US$ million equivalent)																		
II. DETAIL																		
A. JAVA																		
Generation																		
(a) Hydro Plants																		
Juanda (25 MW)	1.5	0.6	0.5	0.3	1.0	1.3	-	-	-	-	-	-	-	-	-	-	-	-
Semper (2 MW)	0.8	0.8	0.4	0.3	0.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Wilogi I & II (34 MW)	11.7	7.2	2.1	3.8	4.6	1.6	4.2	1.3	0.8	0.5	-	-	-	-	-	-	-	-
Garung I & II (28 MW)	11.0	4.1	4.0	1.5	4.0	1.0	1.2	0.5	-	-	-	-	-	-	-	-	-	-
Jatigede I & II (400 MW)	48.0	32.0	-	-	-	-	6.6	4.3	11.0	7.0	11.0	7.0	8.0	7.0	7.0	4.0	4.4	2.7
Saguling I-IV (700 MW)	93.0	50.0	-	-	-	-	-	-	-	-	-	-	9.3	5.0	18.0	10.0	18.0	10.0
Total Hydro Plants			7.0	5.9	9.8	4.0	12.0	6.1	11.8	7.5	11.0	7.0	17.3	12.0	25.0	14.0	22.4	12.7
(b) Gas Turbines																		
Pulo Gadung (2x25 MW)	4.3	1.3	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pulo Gadung (3x20 MW)	5.3	1.7	2.3	0.5	1.8	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Tanjung Priok (2x25 MW)	4.3	1.3	0.3	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanjung Priok (4x30 MW)	17.5	5.4	7.0	3.0	9.0	2.0	-	-	-	-	-	-	-	-	-	-	-	-
Cirebon (2x20 MW)	3.5	1.1	1.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Semarang (20 MW)	1.8	0.6	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gresik (2x20 MW)	3.5	1.1	2.0	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Gas Turbines			14.0	5.9	10.8	2.5	-	-	-	-	-	-	-	-	-	-	-	-
(c) Steam Plants																		
Muara Karang I (2x100 MW)	28.0	10.0	11.0	3.0	10.0	2.0	2.0	0.6	-	-	-	-	-	-	-	-	-	-
Muara Karang II (100 MW)	12.0	3.0	4.5	1.0	3.0	0.6	3.0	0.6	1.5	0.8	-	-	-	-	-	-	-	-
Muara Karang III (200 MW)	24.5	8.8	-	-	2.0	2.0	10.0	4.2	10.0	2.1	2.5	0.5	-	-	-	-	-	-
Muara Karang IV (200 MW)	22.0	8.0	-	-	-	-	2.0	2.0	9.0	3.0	9.0	2.0	2.0	1.0	-	-	-	-
Semarang 1 & 2 (2x50 MW)	17.5	7.4	4.0	1.8	2.0	0.6	1.0	0.4	-	-	-	-	-	-	-	-	-	-
Semarang 3 (200 MW)	24.5	8.(	-	-	-	-	2.0	2.0	10.0	4.2	10.0	2.1	2.5	0.5	-	-	-	-
Tanjung Perak 3 & 4 (2x50 MW)	17.5	7.4	7.0	3.0	7.0	3.0	2.0	0.4	-	-	-	-	-	-	-	-	-	-
Gresik I (100 MW)	14.0	5.0	-	-	5.0	1.5	3.5	0.8	3.5	0.8	2.0	1.8	-	-	-	-	-	-
Gresik II (100 MW)	12.0	3.0	-	-	-	-	4.5	1.0	3.0	0.6	3.0	0.6	1.5	0.8	-	-	-	-
Gresik III (200 MW)	24.5	8.8	-	-	-	-	-	-	2.0	2.0	10.0	4.2	10.0	2.1	2.5	0.5	-	-
Gresik IV (200 MW)	22.0	8.0	-	-	-	-	-	-	-	-	2.0	2.0	9.0	3.0	9.0	1.0	2.0	1.0
Gresik V (300 MW)	35.0	12.0	-	-	-	-	-	-	-	-	-	-	-	-	2.5	3.0	14.0	4.0
Gresik VI (300 MW)	33.0	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cilacap I (300 MW)	35.0	12.0	-	-	-	-	-	-	3.5	3.0	14.0	4.0	14.0	4.0	2.5	1.0	-	-
Cilacap II (300 MW)	33.0	11.0	-	-	-	-	-	-	-	-	3.0	3.0	13.0	3.0	13.0	3.0	4.0	2.0
Cilacap III (300 MW)	33.0	11.0	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.0	13.0	3.0
Total Steam Plants			28.5	8.8	19.0	9.7	30.0	12.0	42.5	18.5	55.5	19.7	53.0	16.4	36.2	14.1	31.0	10.7
(d) Diesel Plants																		
Tegal (3 MW)	0.8	0.3	0.4	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Diesel Plants			0.4	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL JAVA (Generation)			49.9	20.0	49.6	16.2	42.0	18.1	54.3	26.0	66.5	27.2	89.5	28.4	89.3	28.5	53.4	23.7
B. OTHER AREAS																		
Generation																		
(a) Hydro Plants																		
Batang Agam 1&2 (2 MW)	2.6	4.6	1.0	1.7	0.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-
Tes (4 MW)	0.6	0.2	0.3	0.1	0.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Riam Kanan (10 MW)	1.4	1.3	0.6	0.4	0.6	0.4	0.2	0.3	-	-	-	-	-	-	-	-	-	-
Mantanjan (3x17 MW)	17.0	11.0	-	-	3.0	3.0	4.0	2.0	4.0	2.0	3.0	3.0	3.0	3.0	-	-	-	-
Total Hydro Plants			1.9	2.1	3.3	3.0	4.2	2.3	4.0	2.0	3.0	3.0	3.0	3.0	-	-	-	-
(b) Gas Turbines																		
Medan (2x15 MW & 3x20 MW)	7.7	2.7	3.0	1.1	1.7	0.5	0.4	0.1	-	-	-	-	-	-	-	-	-	-
Ujung Pandang (15 MW)	1.3	0.5	0.6	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Palembang (15 MW)	1.5	0.5	0.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Gas Turbines			4.2	1.5	1.7	0.5	0.4	0.1	-	-	-	-	-	-	-	-	-	-
(c) Steam Plants																		
Medan (2x55 MW)	19.4	8.2	-	-	2.0	2.2	7.5	2.0	7.5	2.0	2.4	2.0	-	-	-	-	-	-
Bukit Asam (4x25 MW)	12.0	9.0	-	-	1.4	0.6	3.0	1.0	4.0	2.0	4.0	2.0	4.0	1.5	4.0	1.5	2.6	0.4
Ombilin (3x25 MW)	17.0	6.0	-	-	1.0	0.4	2.0	0.7	3.0	1.5	3.0	1.5	3.0	1.0	3.0	0.6	2.0	0.3
Ujung Pandang (2x25 MW)	11.0	4.5	-	-	-	-	-	-	0.5	0.6	2.0	0.8	4.0	1.6	3.0	1.0	1.3	0.1
Total Steam Plants			-	-	4.4	3.2	12.5	3.7	15.2	6.1	11.4	6.3	11.0	4.1	10.0	3.1	5.9	1.3
(d) Scattered Diesel Plants			7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0	7.4	3.0
TOTAL OTHER AREAS (Generation)			13.5	6.7	16.7	9.7	24.1	9.1	26.7	11.1	23.8	12.1	20.4	9.1	17.4	6.1	13.3	4.3

ANNEX I-1h

PERUSAHAAN UMUM LISTRIK NEGARA

CONSOLIDATED BALANCE SHEET

(After Audit Correction)

	Per 31 - 3 - 1976	Per 31 - 3 - 1975
FIXED ASSETS		
Fixed Assets	228,982,697,925	198,891,162,451
Depreciation	(60,969,728,153)	47,030,015,970
	168,012,969,772	151,861,146,481
Work in progress	273,936,102,007	117,409,611,581
	441,949,071,779	269,270,758,062
LONG TERM ASSETS		
Investments	61,209	100,305,074
Long term receivables	82,250,000	82,250,000
Long term deferred expenses	21,000,476	10,040,534
Deposits of consumer contractors	11,711,925	428,117,366
	115,023,610	620,712,974
CURRENT ASSETS		
Corporation tax/Overall Development Fund	919,234,983	1,001,982,790
Deferred expenses	2,381,073,124	1,325,291,900
Prepayments	8,526,994,948	4,182,628,976
Materials and Stocks	24,835,819,274	19,480,401,809
Advances to personnel	953,284,514	737,995,822
External receivables	14,922,866,321	11,492,401,153
Bank Control	15,414,767,986	19,398,817,585
Cash Control	820,209,984	722,720,624
	68,774,251,134	58,402,240,659
TOTAL ASSETS	510,838,346,523	328,393,711,695

ANNEX I-1(

	Per 31 - 3 - 1976	Per 31 - 3 - 1975
CAPITAL LIABILITIES		
Capital	475,480,738,231	309,522,218,488
Balance Profit & Loss combined	(9,978,770,916)	(8,556,093,947)
	465,501,967,315	300,966,124,541
RESERVES		
Consumer contribution toward capital works	40,856,250,820	23,462,815,273
Other reserves	-	-
	40,856,250,820	23,462,815,273
LONG TERM LIABILITIES		
Loans	58,521	58.521
Pension Fund	(1,493,472)	(1,530,304)
Other Loans from consumers	729,778,008	3,984,008
Contribution toward pension	406,754,729	75,641,147
	1,135,097,786	78,153,372
CLOSING ACCOUNTS		
Auxiliary Accounts	8,147,347,468	4,591,679,823
Closing Accounts	(22,785,096,991)	(11,462,913,495)
	(14,637,749,523)	(6,871,233,672)
CURRENT LIABILITIES		
Provision	239,633,369	142,561,101
Expenses due / Accruals	918,304,272	431,892,595
Tax debts	118,136,963	106,240,560
Internal debts	306,471,657	127,827,980
External debts	16,400,233,864	9,849,329,945
	17,982,780,125	10,657,852,181
TOTAL LIABILITIES	510,838,346,523	328,293,711,695

ANNEX I-3A

PLN's (Basic) Tariff Effective July 1973
(Regulation of the Minister of Public Works and Electric Power No. 03/PRT/1973)

Class of Tariff	Type of Consumer	Service Capccity (VA)	Demand Charge (Rp)	Energy Charge (Rp)
A1	Small Domestic Consumers with Load Limiters (unmetered)	60	200	0
		75	250	0
		100	300	0
		125	400	0
		150	450	0
		175	500	0
		200	600	0
A2	Churches, Mosques, Schools, etc.	At least 250	6.00 for each 25 VA	6.00/KWH
B1	Domestic Consumers (meters)	At least 250	12.00 for each 25 VA	First 200 hrs: 13.00/ KWH. Additional KWH: 6.00
B2	Commercial Consumers	At least 250	27.50 for each 25 VA	First 200 hrs: 20.00/ KWH. Additional KWH: 8.00
C1	Industry (Small)	At least 13.500	160.00 for each 500 VA	Off-peak hours: First 150 hrs: 10.00/ KWH. Additional KWH: 6.00 Peak hours: 20.00/KWH
C2	Government Offices, Public Enterprises, Offices of Foreign Mission, etc.	At least 250	80.00 for each 25 VA	First 200 hrs: 15.00/ KWH. Additional hrs: 6.00

Class of Tariff	Type of Consumer	Service Capacity (VA)	Demand Charge (Rp)	Energy Charge (Rp)
D	Street Lighting	-	-	10.00/ KWH.
		(There are additional charges for bulbs)		
E	Large Consumers (Large Industries)	At least 100 KVA	First 400 KVA: 400.00/ KVA 401-through 1000 KVA: 420.00/KVA 1001-through 2000 KVA: 375.00/KVA Above 2000 KVA: 275.00/KVA	Off-peak 5.00/KWH Peak hour 20.00/KWH
F	Temporary Connections	At least 500		30.00/KWH Minimum Consumption 20 hours

PLN is entitled to add to above tariffs:

a. Transportation cost of fuel from the supplier's terminal to the location of consumption;

b. Increases in the price of fuel; and

c. Increases of other current expenses.

The tariff decree provides that increases under items (b) and (c) above be distributed "equally" among the various tariff classes.

ANNEX I-3E

CONNECTION CHARGES P.L.N.INDONESIA

TARIFF	CONNECTION CHARGE (Rp./VA)
A1	180
A2	80
B1	125
B2	125
C2	110
C1	30
E	55

BANK RAKYAT INDONESIA (BRI)

Bank Rakyat Indonesia is a state-owned commercial bank established in 1945, to assume the activities of Rural Development. This involves extending loans in the fields of agriculture, fisheries and cooperatives.

Size BRI has an authorized capital of Rp. 300 million.

Condensed Financial Statement As Of December 31, 1976

Assets	December 31, 1975	December 31, 1976
1. Cash	14,524,003,000	17,202,203,000
2. Central Bank (BI)	66,523,327,000	77,091,455,000
3. Other Banks	7,199,671,000	15,797,135,000
4. Loans and Debtors	342,847,782,000	444,910,698,000
5. Bills Receivables	1,142,542,000	3,720,538,000
6. Foreign Exchange Receivables	14,128,670,000	20,931,194,000
7. Premises and Equipment	5,346,391,000	7,373,119,000
8. Other Assets	16,708,568,000	17,950,123,000
	468,419,454,000	695,026,465,000

Liabilities	December 31, 1975	December 31, 1976
9. Capital	300,000,000	300,000,000
10. Reserves	15,671,331,000	16,445,792,000
11. Demand Deposits	135,852,912,000	161,152,143,000
12. Time Deposits and Savings	62,499,861,000	95,648,061,000
13. Foreign Exchange Liabilities	9,634,257,000*	7,385,152,000*
14. Loans due to Central Bank (BI)	200,691,426,000	271,926,881,000
15. Other Liabilities	43,778.667,000	52,168,436,000
	468,419,454,000	605,026,465,000

*Rate US$1 = Rp. 415.

Organization Operation

BRI has a nationwide network of branch offices which are located throughout the archipelago, consisting of:

1. 13 Regional offices (The Regional offices directly control and coordinate activities of the Branch offices within their operational territories).

2. 9 Audit district offices.

3. 266 Branch offices (Perform the main banking operations), one office in each Kabupaten.

4. 3044 BRI village units (An integral part of the branch office, performing essentially the cashiers function).

The BRI executive body is its Board of Managing Directors which consists of one President Director and 3 Managing Directors. All directors are appointed by the Government for a five year term. (Based on the recommendation of Minister of Finance).

The BRI management board is under the supervision of a Council of Supervisors, which is composed of three members from Central Bank who are appointed for three year terms.

BRI has 21,000 employees.

Functions

The BRI purpose is to improve living standards of the people and support national economic development by:

1. Providing the extension of credits to cooperatives, farmers and fishermen.

2. Assisting people who have not yet joined the cooperatives and carrying out activities in the fields of handicrafts, home industry and small trade.

3. Giving support to and making efforts on the part of the Government in developing rural communities.

4. Supervising the rural village banks, paddy banks and other similar banks.

Loans

BRI has 6 million customers of which 4 million are farmers and over 2 million depositors. It has over 3,000 loans totaling over Rp. 25 billion to cooperatives.

BRI loans are mainly given to:

1. Cooperatives which cover the following fields: agriculture, estates, fisheries, animal husbandry, small industry and handicraft, savings and loans, activities on food production.

Maximum loan period = 12 months. Interest rate = 15% - 24% per annum including 1% of the loan to be charged but once.

2. Sugar cane farmers (in West Java, Central Java, Yogyakarta and East Java). Maximum per loan agreement Rp. 5,000,000. Maximum loan period = 16 months. The farmers are obliged to deliver all their crops to the sugar factory, and share in the yield on the basis of various formulas but do not make a direct repayment or interest payment.

3. Small holders for pepper farming. Maximum loan Rp. 5,000,000. Maximum loan period = 10 months (one planting season). Interest rate = 1½% per month.

4. Participants in the BIMAS program, which is directed towards the increase of agricultural products. Loans are given for:

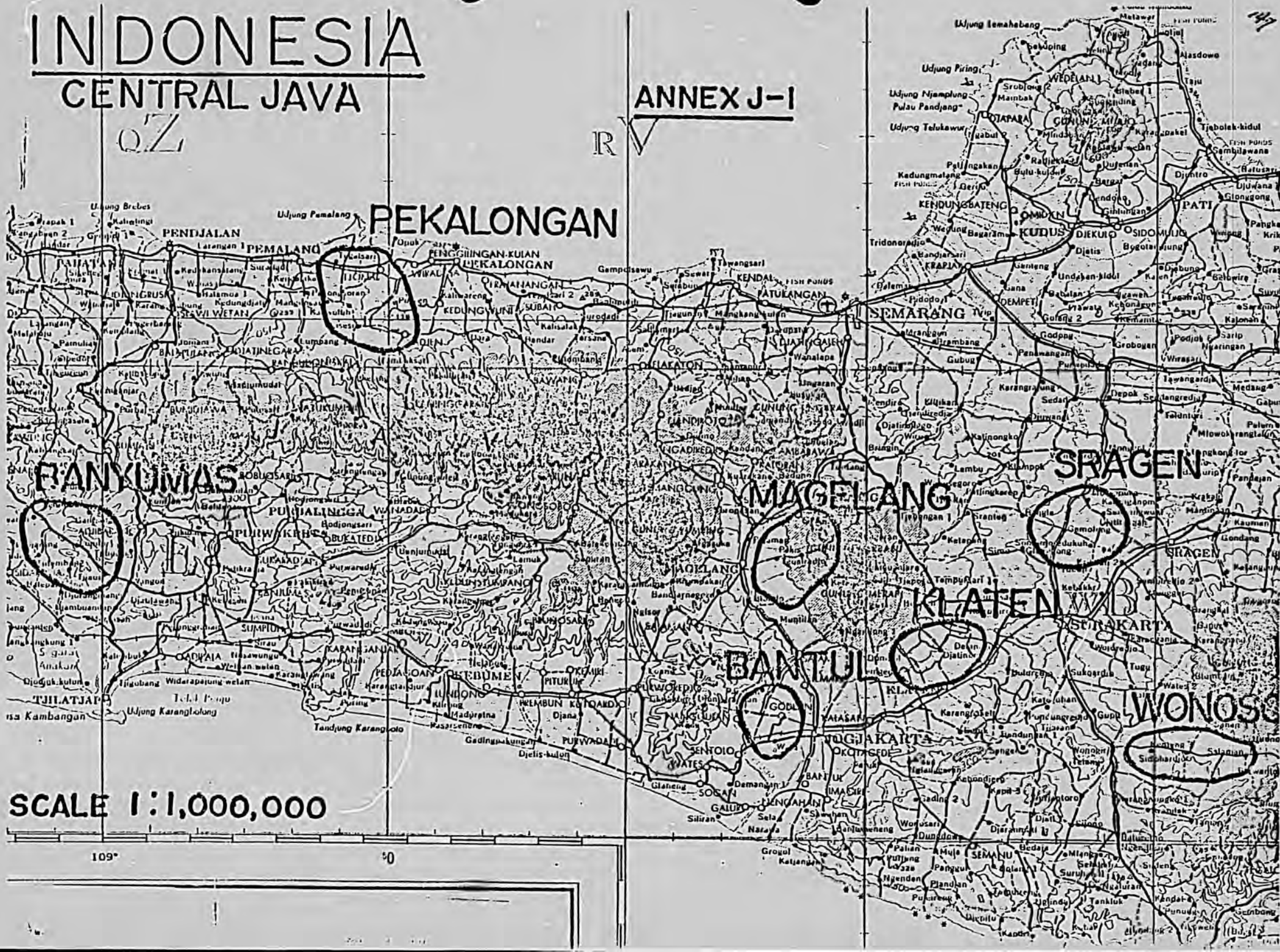
a) The use of selected seeds.
b) Improvement of cultivation and technology.
c) Irrigation improvement.
d) The use of fertilizers, pesticides and insectisides.

Maximum loan period = 7 months. Interest rate 1% per month.

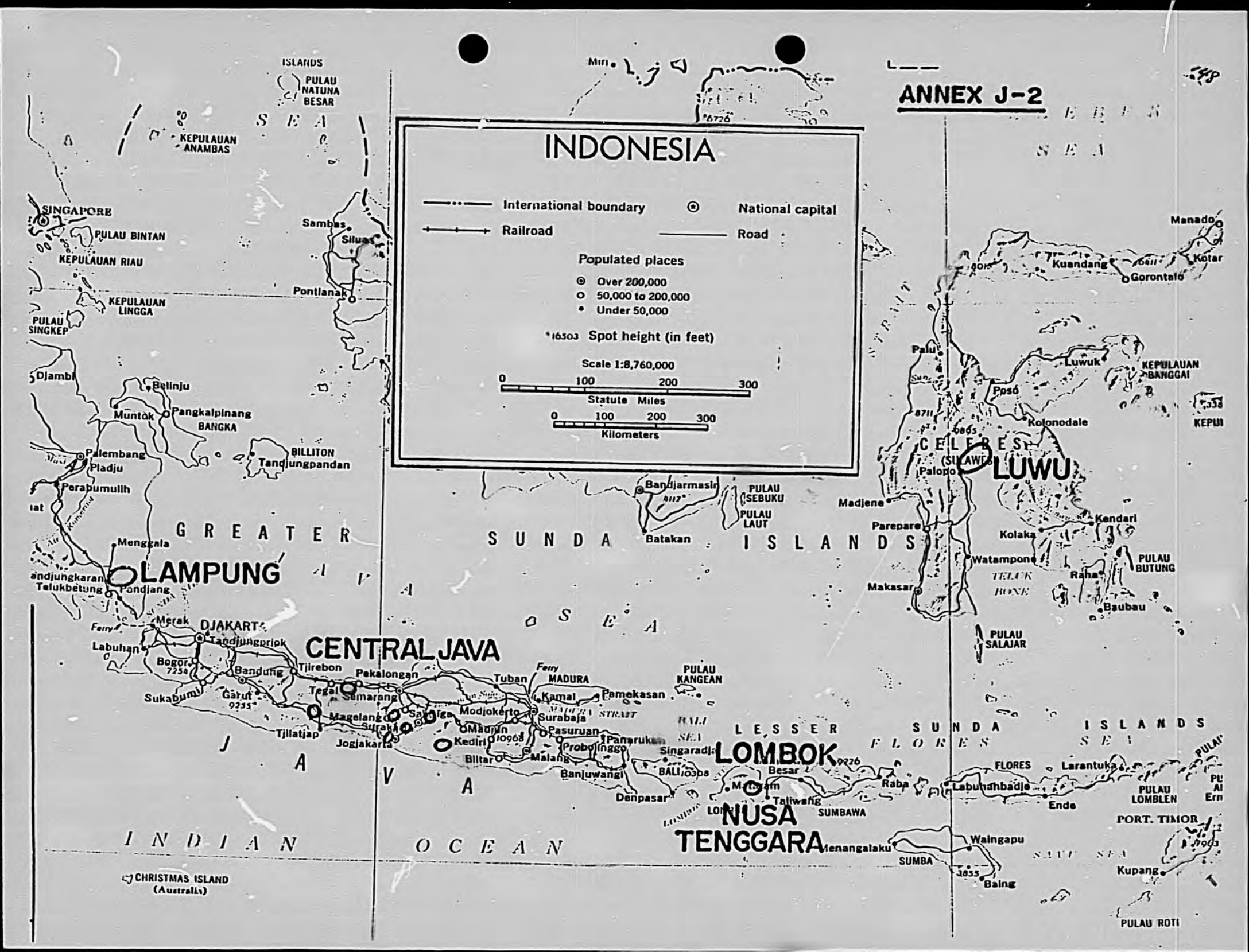
INDONESIA

CENTRAL JAVA

ANNEX J-1



ANNEX J-2


INDONESIA
International boundary
National capital
Railroad
Road
Populated places
Over 200,000
50,000 to 200,000
Under 50,000
16503 Spot height (in feet)
Scale 1:8,760,000
0 100 200 300
Statute Miles
0 100 200 300
Kilometers
ISLANDS
PULAU NATUNA BESAR
KEPULAUAN ANAMBAS
SINGAPORE
PULAU BINTAN
KEPULAUAN RIAU
KEPULAUAN LINGGA
PULAU SINGKEP
Sambas
Pontianak
Belinju
Muntok
Pangkalpinang
BANGKA
BILLITON
Tandjungpandan
Palembang
Pladju
Perabumulih
Menggala
LAMPUNG
Telukbetung
Panjang
Merak
DJAKARTA
Tandjungpriok
Labuhan
Bogor
Bandung
Tjirebon
Pekalongan
Tegal
Semarang
Sukabumi
Garut
Magelang
Surakarta
Jogjakarta
Tjilatjap
Kediri
Modjokerto
Surabaja
Madjuan
Pasuruan
Probolinggo
Malang
Blitar
Banjuwangi
Denpasar
CENTRAL JAVA
Tuban
MADURA
Kamal
Pamekasan
PULAU KANGEAN
Ferry
Singaradja
BALI
LOMBOK
Besar
Mataram
Taliwang
SUMBAWA
NUSA TENGGARA
Menangalaku
SUMBA
Waingapu
Baing
Kupang
PORT. TIMOR
PULAU ROTI
FLORES
Larantuka
Labuanhadje
Ende
PULAU LOMBLEN
Raba
Bandjarmasin
PULAU SEBUKU
PULAU LAUT
Batakan
Madjene
Parepare
Makasar
Palopo
Palu
Luwuk
KEPULAUAN BANGGAI
Posó
Kolonodale
CELEBES (SULAWESI)
LUWU
Kendari
Kolaka
Watampone
Raha
PULAU BUTUNG
Baubau
PULAU SALAJAR
Manado
Kuandang
Gorontalo
Kotar
KEPUL
GREATER SUNDA ISLANDS
LESSER SUNDA ISLANDS
JAVA SEA
FLORES SEA
SAVU SEA
INDIAN OCEAN
CHRISTMAS ISLAND (Australia)
STRAIT
BALI SEA
LOMBOK STRAIT
TELUK BONE

ANNEX J

Kabupaten KLATEN

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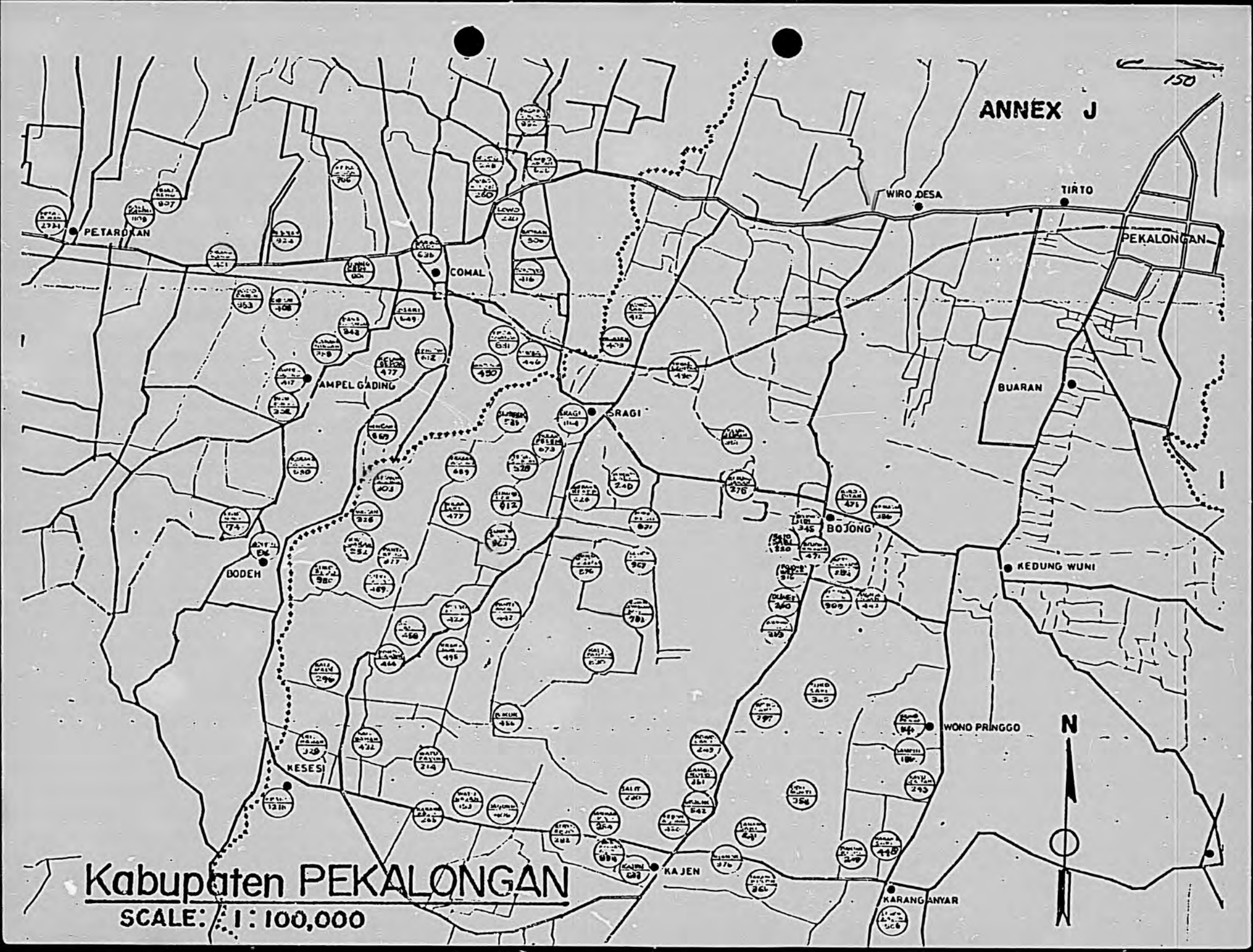
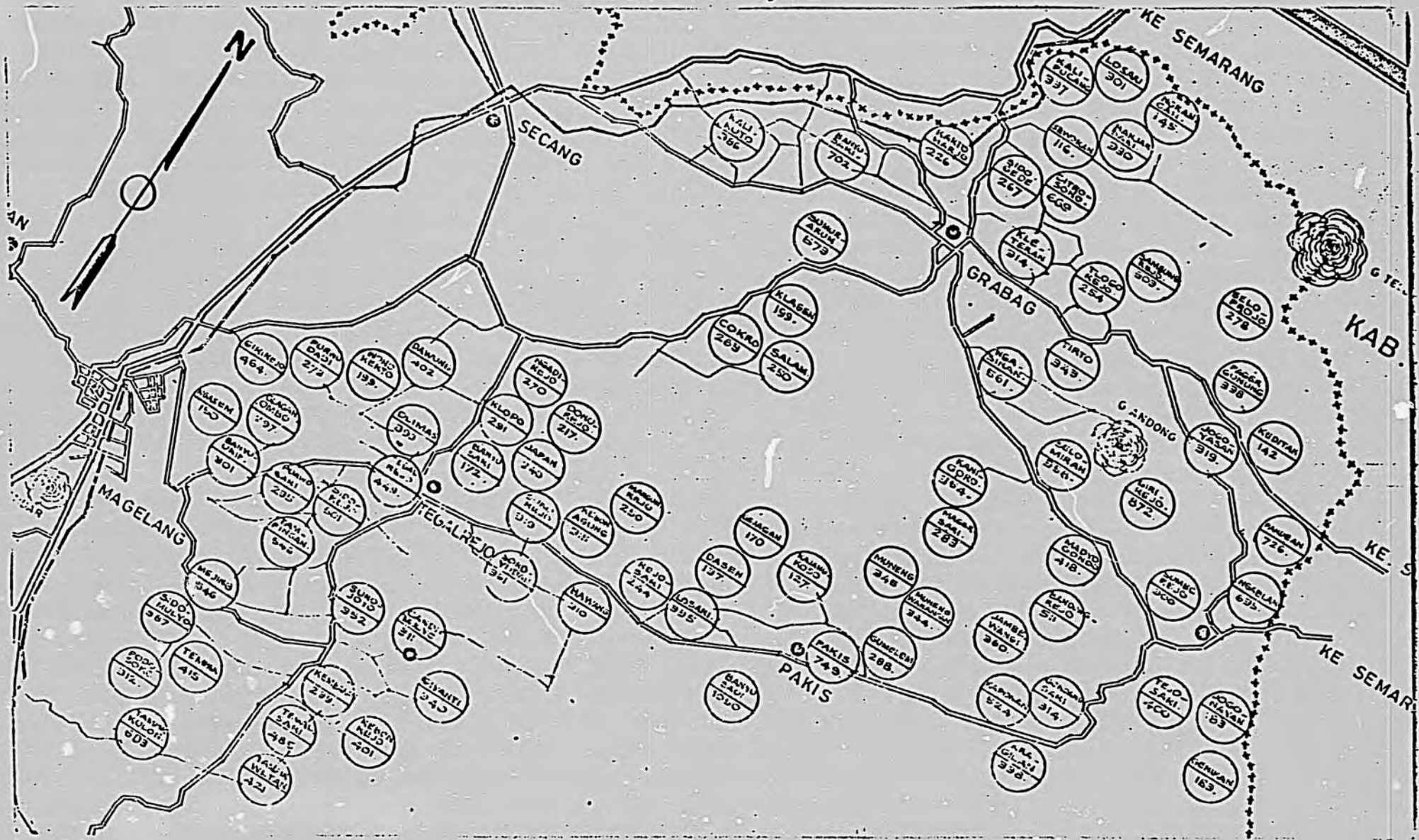
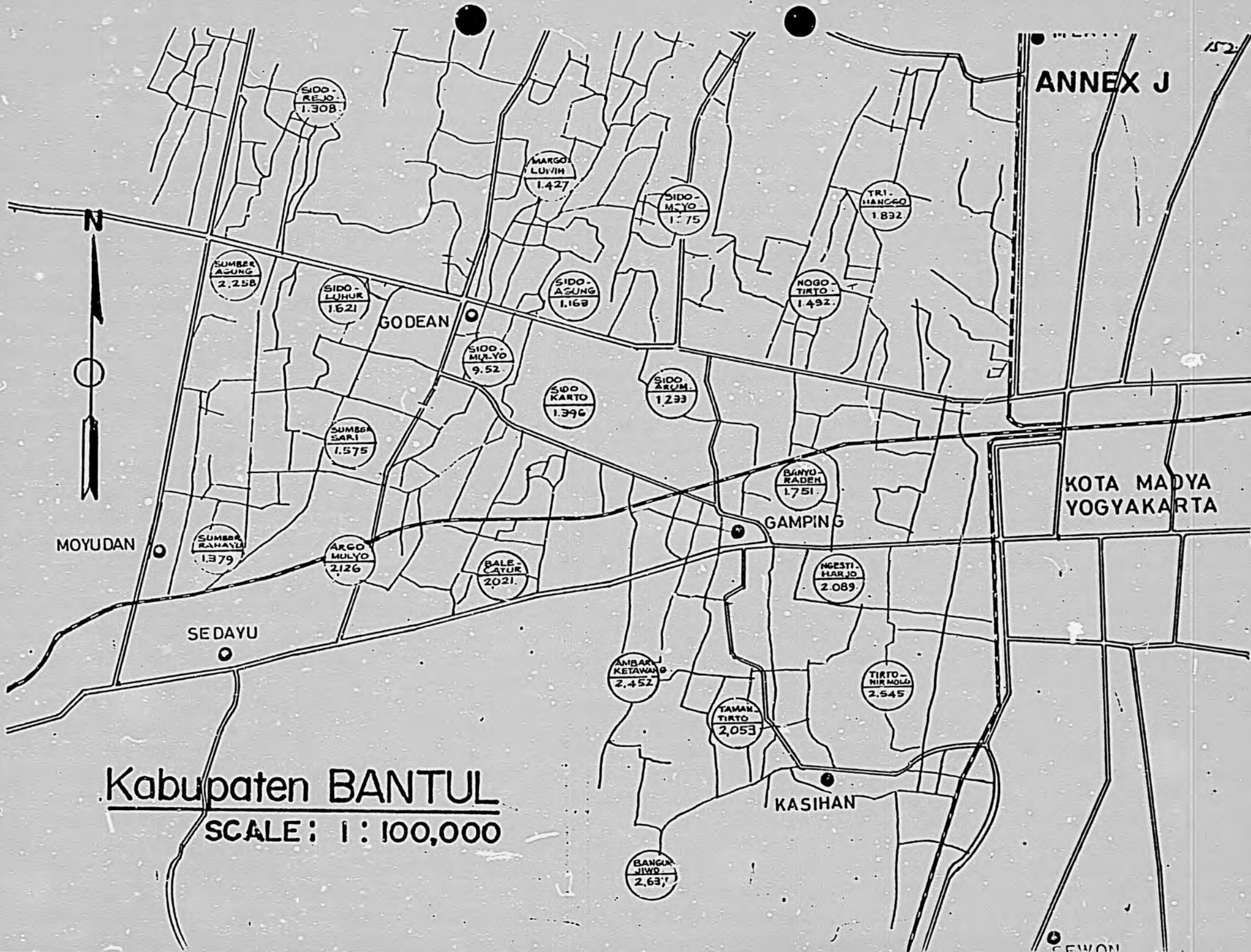

ANNEX J
150
PETARUKAN
COMAL
AMPEL GADING
WIRO DESA
TIRTO
PEKALONGAN
BUARAN
SRAGI
BOJONG
KEDUNG WUNI
BODEH
KESESI
WONO PRINGGO
KAJEN
KARANGANYAR
N
Kabupaten PEKALONGAN
SCALE: 1 : 100,000

Kabupaten MAGELANG

SCALE : 1 : 100,000

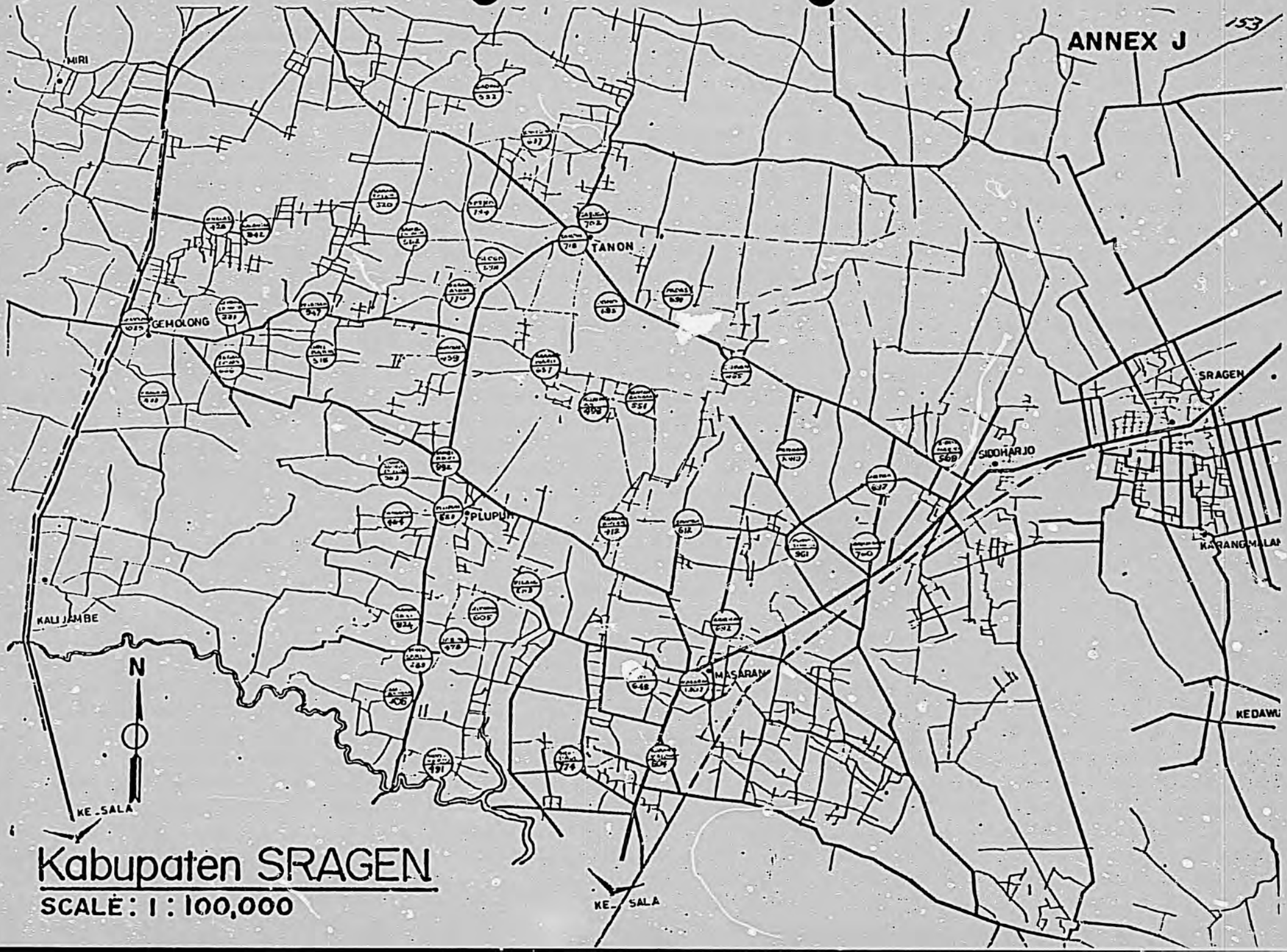




Kabupaten BANTUL

SCALE: 1 : 100,000

ANNEX J



Kabupaten SRAGEN

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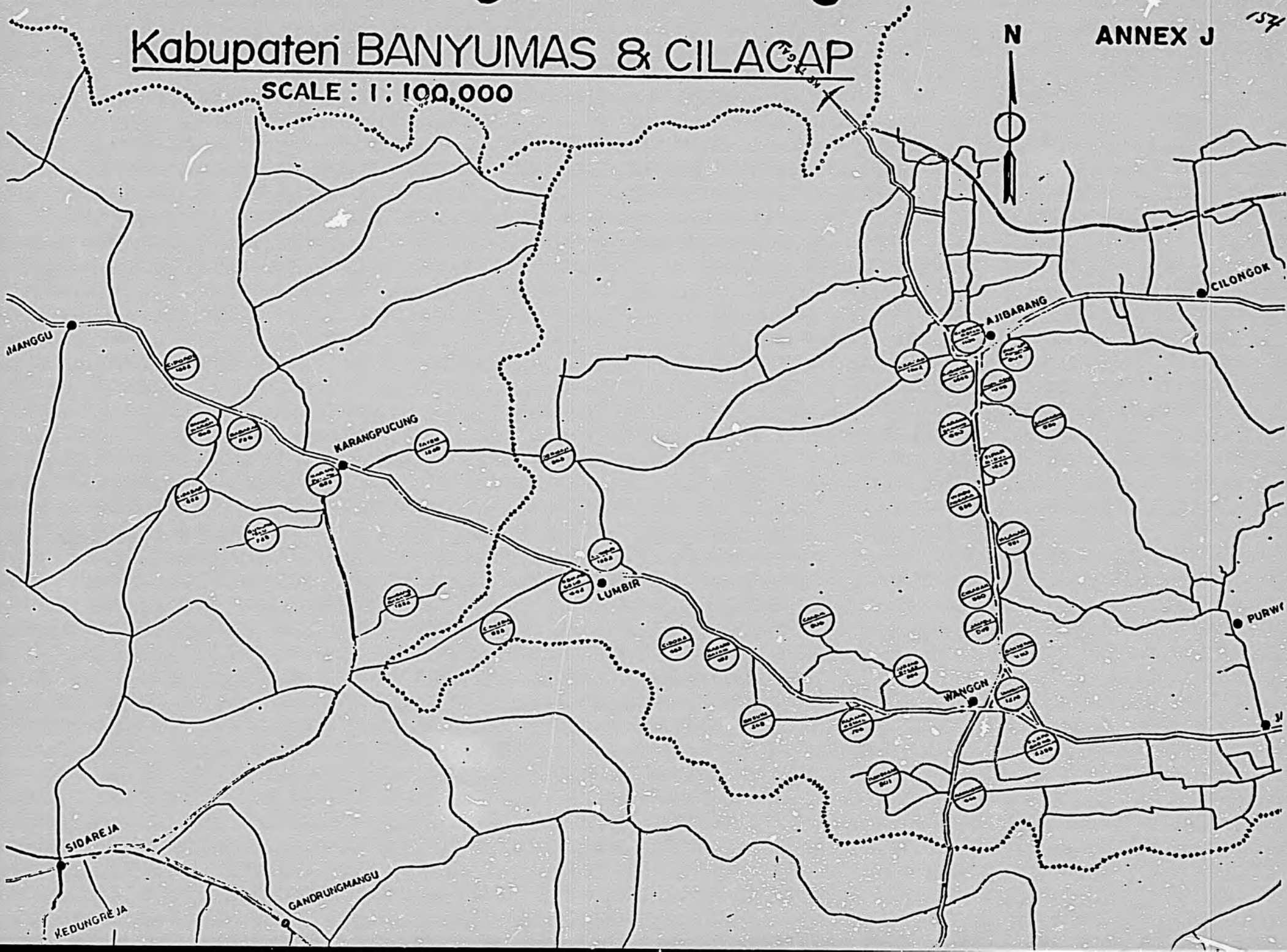
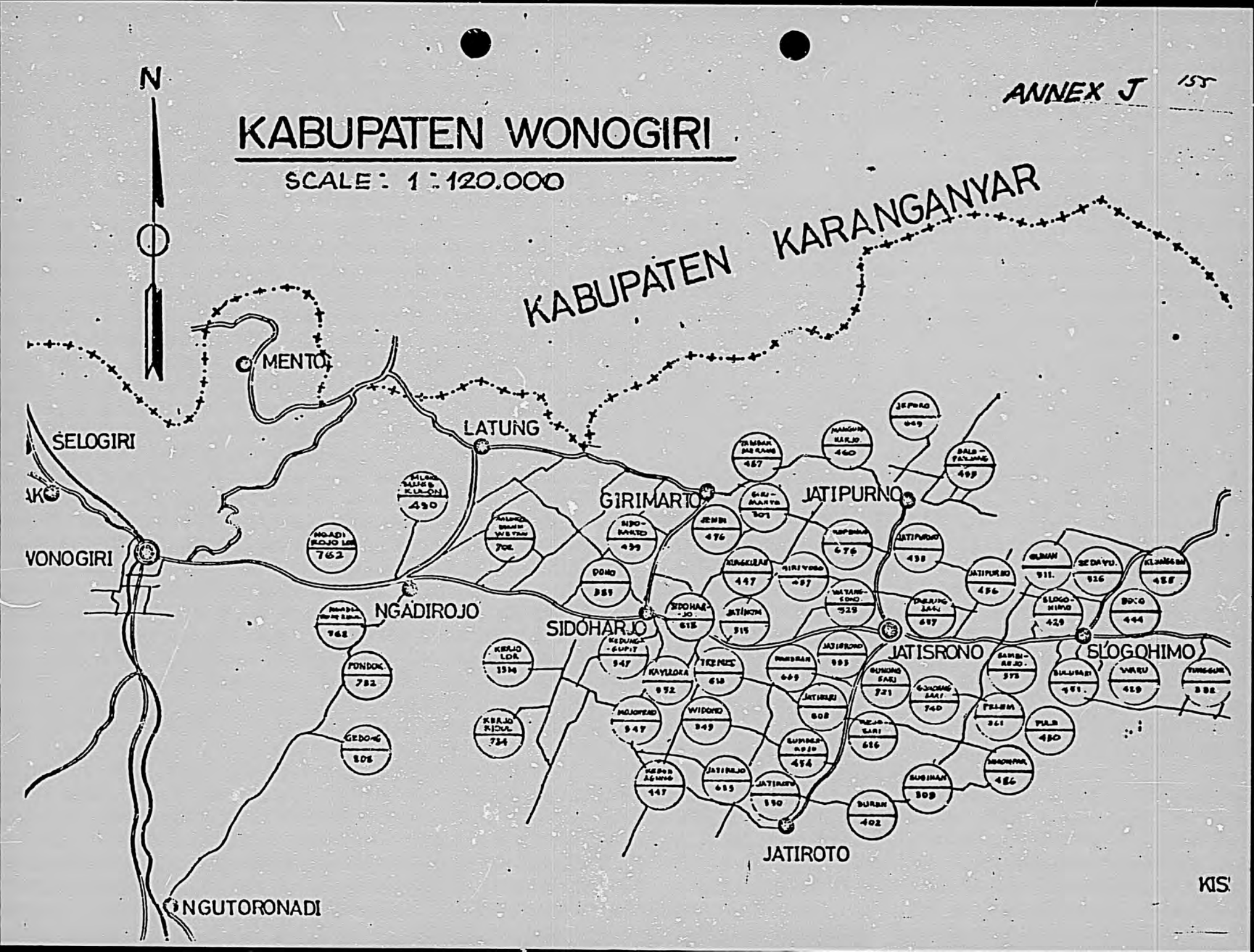
Kabupaten BANYUMAS & CILACAP

SCALE : 1 : 100,000

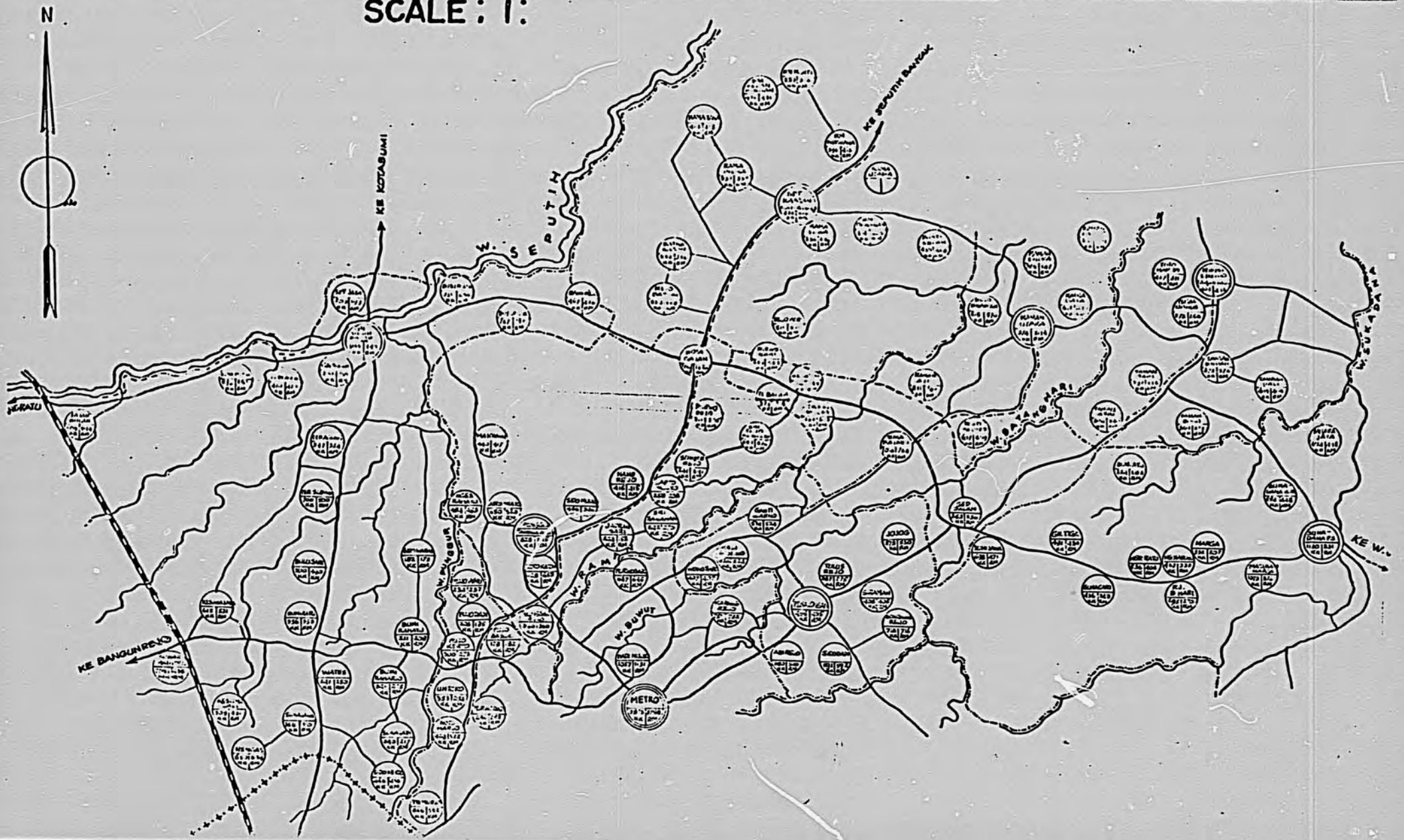



N
KABUPATEN WONOGIRI
SCALE : 1 : 120.000
KABUPATEN KARANGANYAR
MENTOR
LATUNG
SELOGIRI
WONOGIRI
NGADIROJO
SIDOHARJO
GIRIMARTO
JATIPURNO
JATISRONO
SLOGOHIMO
JATIROTO
NGUTORONADI

ANNEX J

Kabupaten LAMPUNG TENGAH

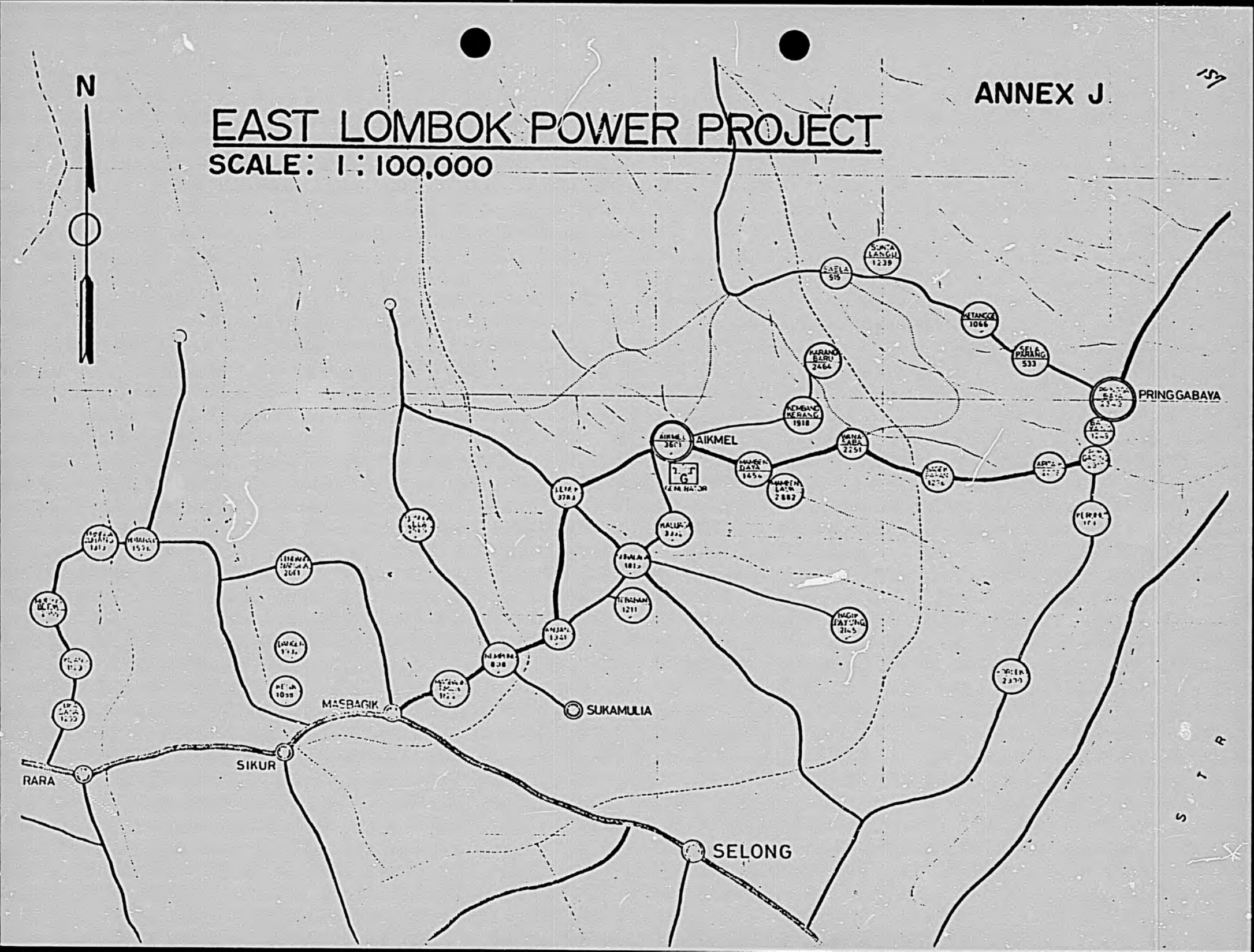
SCALE : 1:



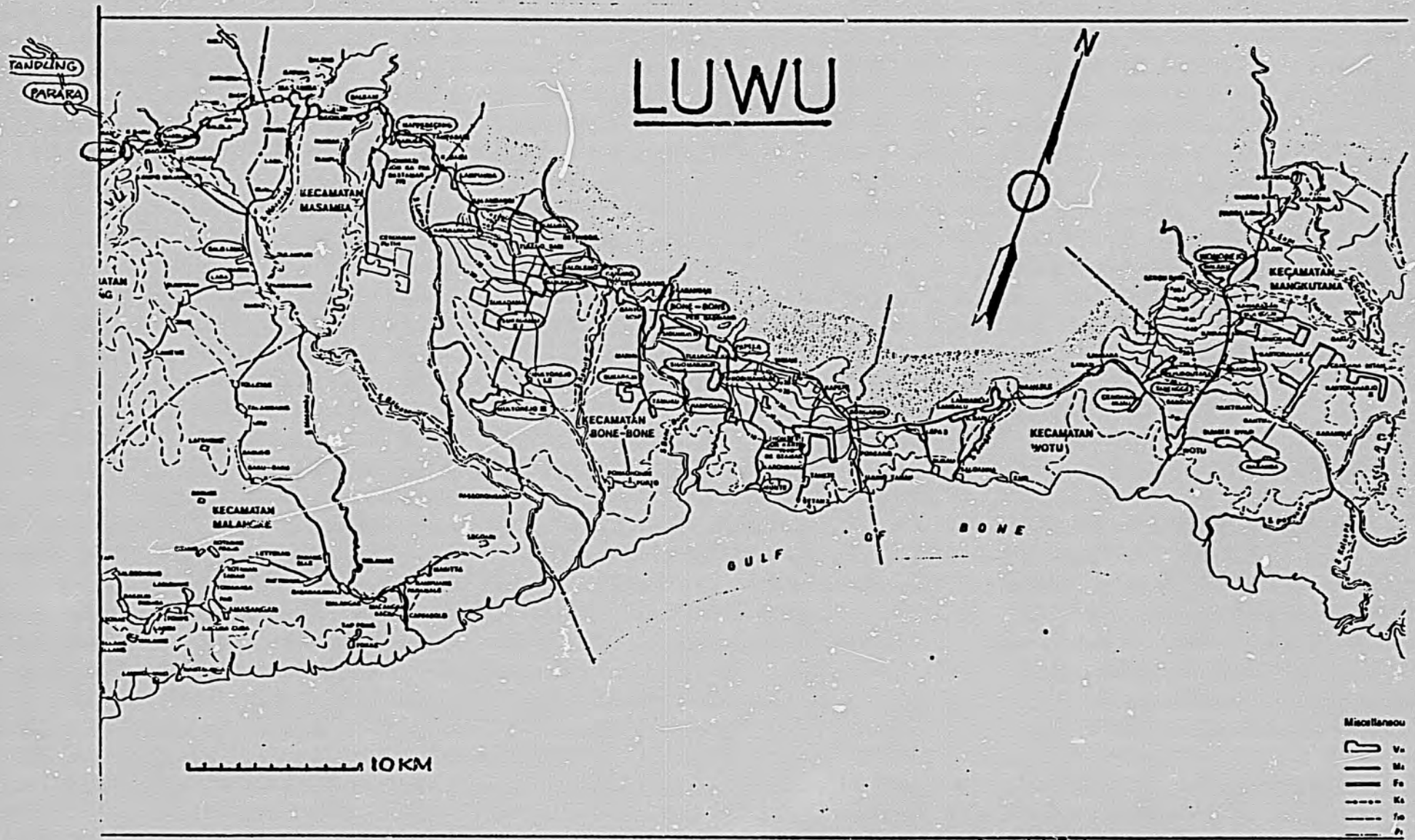
ANNEX J

EAST LOMBOK POWER PROJECT

SCALE: 1 : 100,000



ANNEX J



Potential Rural Electrification
Aug 1977

RURAL ELECTRIFICATION PROJECT
Indonesia

ECONOMIC ANALYSIS

I. Introduction

In this annex, the issue of affordability is dealt with first; and then, methods of measuring some of the benefits which result from rural electrification are outlined. Using this methodology, such benefits are estimated for each site in the project. In addition, other benefits--which cannot be easily measured or foreseen with certainty--are discussed in qualitative terms. Finally, estimates of benefits are combined with cost estimates to determine economic rates of return and benefit-cost ratios for each site.

The findings presented in this analysis can be summarized as follows: 1) On the basis of currently observed household expenditure patterns, one can conclude that at least 50% of existing households in the project sites can afford electricity. Therefore, given the improved quality, reliability, and convenience of electric power vis-a-vis alterrative energy sources, one can expect that 50% or more of households will want to become electrified. 2) Electricity will provide surplus benefits to rural consumers in addition to those direct benefits measured by what consumers actually pay for electricity. These surplus benefits result because: a) bulk generated-electricity is a more efficient source of energy for household uses (lighting and cooking) or productive uses (lighting and motive power) than the alternative energy sources currently available; b) new shops, cottage industries, and employment opportunities will develop as a result of the availability of electricity and c) the quality of health care, education, and life in general in these rural areas will improve. 3) Based on the total Project cost of $70.7 million, the cost per direct beneficiary (resident of a connected household) is $61.53 and the cost per total beneficiary is $41.02. 4) Rates of return vary between 31% and 5% for these ten sites, while benefit-cost ratios are between 1.65 and .81. However, only direct benefits and those surplus benefits which can be foreseen with certainty and measured accurately are included in these analyses. The likely existence of other benefits, which are not included because of the difficulty of accurate measurement,

suggests that actual returns to, or benefits from, this project will be in excess of those measured here. (A full summary of economic benefits is provided in Section VII of this Annex.)

II. Affordability

The proposed Indonesian rural electrification project will provide direct economic and social benefits to the rural poor only if they can afford to purchase electricity once it is made available. Thus the issue of affordability is central to the economic analysis of this project. Fortunately, insight into this issue can be gained from both the results of the IPB surveys and the results of a survey conducted by PLN of all the villages in the Java sites. These two surveys provide--in most cases--three alternative indicators of affordability:

1) In the IPB survey, data on expenditures for energy sources--such as kerosene, candles, batteries, and wood--which serve as substitutes for electric energy was collected for a representative sample of households in each project site. Households currently spending as much, or more, on kerosene and batteries for cooking and lighting as they would for electricity at the established basic monthly charge, $2.89 (Rp. 1,200), are considered to be able to afford electricity. The estimated percentages of households in each site which can afford electricity according to this criteria are presented in column 1 of Table 1.

2) Also in the IPB survey, ten village chiefs in each site were asked to estimate the percentage of households in their villages which could afford electricity at a basic monthly charge of between $2.41-$3.61 (Rp. 1,000-1,500). Average responses for each site are presented in column 2 of Table 1.

3) Finally, in the PLN survey, all village chiefs in each site were asked to estimate the percentage of households that would be willing to pay a monthly charge of between $2.41-$3.61 for electricity. Average responses for each site are presented in column 3 of Table 1.

TABLE 1: INDICATORS OF AFFORDABILITY

Site	(1)	(2)	(3)
Java Sites	% Households Currently Spending $2.89/month of more for Kerosene and Batteries	% Households Able to Pay $2.41-$3.61/ month	% Households Willing to Pay $2.41-$3.61/ month
Banyumas	NA	NA	NA
Bantul	53	60	59
Klaten	60	47	64
Magelang	52	33	56
Pekalongan	60	55	60
Sragen	47	50	44
Wonogiri	38	52	62
Outer Islands			
Lampung	53	45	NA
Lombok	70	45	NA
Luwu	73	81	NA

The survey results presented in Table 1 indicate that over 50% of the households in most of the sites can afford to purchase electricity at the proposed tariff level.1/ As incomes rise in the future, and as those not initially connected see the benefits of electrification, one would expect the connection rate to rise.

III. Economic Benefits of Rural Electrification in Indonesia

The introduction of electricity into rural areas of Indonesia clearly has the potential to provide a variety of benefits--both social and economic--to rural populations. The nature of such social benefits is discussed in detail in a separate annex. Thus the object of this section is to

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1/ This is a conservative estimate since no allowance is made for the fact that the improved quality, reliability, and convenience of electric power would provide an additional inducement for residential consumers to connect. The important influence which such quality factors have on the residential demand for electricity is documented in AID Project Paper, Honduras - Aguan Valley Rural Electrification, April 1, 1977. Specially, survey results indicate that most consumers in Honduras want electricity because it is convenient, reliable, and continually available--rather than because it is necessarily cheaper than alternative energy sources.

quantify, as much as possible, the economic benefits which will result from the proposed rural electrification program. In addition, other resulting benefits are discussed in qualitative terms. No attempt is made to quantify these other benefits, however.

A. Methodology: Nature of Benefits: The introduction of electricity into rural areas will: 1) save resources by providing a more efficient source of energy for: a) households to use in lighting, cooking, and housekeeping, or b) already existing productive activities such as shops, cottage industries, or farms. In either case, there is a resulting cost saving for the household or shop, and a resource saving for the economy as a whole; 2) increase economic activity by stimulating the development of new economic activities, e.g. shops selling refrigerated goods, or agriculture using pump irrigation, and so on; 3) result in the availability of a higher quality, more reliable source of energy; or 4) provide "other," or more indirect, benefits such as improved health care and education, or greater employment opportunities for rural areas.

B. Measuring Benefits: Direct Benefits: A minimum estimate of the value of such benefits can be obtained from the estimate of revenues which will be generated by electricity tariffs. That is, one can assume that the electricity provided to rural consumers is worth at least as much to them as they are willing to pay for it. Thus, estimated revenues serve as a minimum estimate of benefits that will be obtained from the consumption of electricity. The benefits measured in this fashion can be called the direct benefits. Often, however, one might expect consumers to be willing to pay more for electricity than they are actually required to pay. Thus actual benefits exceed direct benefits as defined here. This is especially true when electricity tariffs are kept low intentionally in order to ensure maximum affordability--and hence the maximum dispersion of benefits--within the constraints imposed by financial requirements. This excess of actual benefits over their minimum measure (i.e. revenues) is the "consumers surplus" derived from the provision of electricity; and, the difference between actual benefits and direct benefit (as defined above) can be labeled as surplus benefits.

Surplus Benefits[2]: Resource Savings: The appropriate approach for estimating such surplus benefits depends on the type of benefit derived from the provision of electricity. (See 1)-4) above.) In the case of resource savings, surplus benefits can be approximated by the reduction in the economic cost of already-existing economic activity which results because of electricity being substituted for some previously-used alternative energy source. For example, such savings will occur in rural Indonesian households because electricity provides a cheaper source of energy for lighting or cooking than does kerosene or other alternatives. Similarly, bulk-generated electricity is a cheaper source of motive power for grain mills than currently-used alternatives such as small diesels or autogenerators. The resulting savings to households and grain mills constitute the benefits of electrification which are in excess of those measured by the tariffs that such consumers pay for electricity.[3] To repeat, these are surplus benefits in the form of resource savings. Specific methods of measuring such savings for rural households and grain mills in Indonesia are outlined below.

Surplus Benefits: Increased Economic Activity: As a result of the availability of relatively cheap, clean electric energy in rural areas, increased economic activity may arise. For example, shops may choose to remain open at night, small stores selling cold drinks and ice cream may develop, or electric pumps may be used to irrigate farm land and thus increase agricultural outputs.

The surplus benefits associated with such increased economic activity can be measured by the net value of the increases in outputs which result because of electrification. That is, surplus benefits equal the market value of additional

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2/ A more rigorous approach to measuring surplus benefits is presented in Appendix 1 of this Annex.

3/ A simple example will clarify this point. Assume that a rice mill currently spends $1,000 a year for a small diesel, while after electrification the same motive power can be obtained by spending $700 a year for electricity. While only $700 is paid for the electricity, it must be worth $1,000 to the mill owner since it provides the same motive power for which $1,000 was previously paid. Thus this electricity is worth $300 more to the mill owner than he actually pays for it. This $300 represents the surplus benefit in the form of resources (or cost) savings which the mill owner gains from the provision of electricity.

outputs minus any extra costs incurred to produce these outputs, e.g. the cost of hiring someone to work in a shop in the evening plus the electricity cost, or the cost of a refrigerator used to chill drinks and ice cream plus electricity costs. Thus such surplus benefits can be measured by the additional economic profits which result from the introduction of electricity minus electricity costs.4/

Other Surplus Benefits: Finally, other types of surplus benefits may also result. Such benefits might take the form of: 1) improvements in the quality of education and medical services during daytime hours, and increases in the availability of such services during nighttime; 2) greater employment opportunities--especially for women (as discussed at length in the Social Analysis Annex of this paper); 3) a greater feeling of security resulting from increased lighting outside homes and from street lighting (again discussed in the Social Analysis Annex); and 4) a lessening of rural-to-urban migration. In addition, surplus benefits might result because electricity provides a more reliable, higher quality, source of energy. This is true even if electricity results in no resource savings or additional economic activity.

Such surplus benefits are exceedingly difficult to measure--either because they are inherently unquantifiable or because measurement requires detailed (and non-existent) knowledge of what will happen in the future after electrification. Thus no attempt at measurement is made here. The probable existence of such other surplus benefits should be kept in mind, however; and, they provide an additional qualitative argument in favor of rural electrification.

4/ Once again, a simple example is useful. Assume that a shop selling cold drinks opens. This shop sells $1,000 worth of cold drinks in a year and incurs costs of $600--of which $200 are for electricity. The profit to the shop owner is $400. Thus in this case, electricity is worth to the shop owner not just what he pays for it ($200), but what he pays for it plus the profit he makes minus electricity costs, $200 (i.e. $200 = $400 - $200). Therefore, the actual benefits of electricity to this shop owner are worth $400, of which $200 are measured as direct benefits and $200 are measured as surplus benefits resulting from increased economic activity.

IV. Residential Consumers

A. Demand Forecast (Minimum Estimate of Benefits): Demand forecasts for residential consumers were made on the basis of: 1) estimates of affordability (as discussed above), 2) the stated USAID objective of serving 50% of households currently existing in the electrification sites by the third year of operation, 3) a realization of the constrairts which housewiring requirements impose on connection levels, and 4) estimates of expected household appliance usage.

Specifically, it was assumed that by the third year of system operation 50% of current households will be connected and using--on average--slightly more than 20KWH's a month. Both connection and usage levels were assumed to increase steadily between the fourth and fifteenth years of operation--with 85% of current households being connected and using an average of 61 KWH's a month in the 15th year. These increases can be attributed to both rising family incomes and increased awareness of the benefits which electricity provides. Demand forecasts based on these assumptions should be viewed as conservative. This is because no allowance is made for increases over time in the number of households in the sites. This increase in households, which took place at an average annual rate of about 2% between 1972-75 in the proposed sites, can be expected to continue and to result in even greater demands for electricity than those estimated above on the basis of the given assumptions. Thus, tariff revenue estimates derived from these demand forecasts are conservative estimates of the minimum benefits which residential consumers derive from electricity.

B. Surplus Benefits: Resource Savings: Surplus benefits in the form of resource savings will accrue as a result of residential consumers in the project sites choosing to connect. A simple method of estimating the value of these resource savings is presented below.[5/] It is estimated that 2.08[6/] liters of kerosene will provide lighting equivalent to that obtained from a KWH of electricity. Similarly, 1.53 liters of kerosene will provide as much energy for cooking as a KWH of electricity.[7/]

Given the proposed tariff structure, most residential consumers will be paying $.14/KWH[8/] (Rp. 60) for electricity. The current retail price of kerosene in rural areas is approximately $.10/liter (Rp. 40). This price is, however, subsidized by the Indonesian Government to the extent of $.07/liter (Rp. 30). Thus the economic cost of kerosene is about $.17/liter (Rp. 70). This means that the economic cost of

See p. 8 for footnotes

obtaining a KWH-equivalent of energy derived from kerosene and used for lighting and cooking is $.35 (Rp. 146) and $.26 (Rp. 107) respectively. Since this energy will be available after electrification at a cost of $.14/KWH, the resource savings realized from each KWH used for lighting and cooking will be $.21 (Rp. 86) and $.12 (Rp. 47) respectively.9/

5/ Only the resource savings resulting from switching from kerosene lighting and cooking to electrical lighting and cooking are considered here. Electricity is also more efficient than other alternative energy sources such as wood, charcoal, or candles. The resource savings gained by switching from these energy sources to electricity are not explicitly considered here since it is difficult to determine energy equivalents between electricity and these substitutes, and because prices of these substitutes vary widely. The possible existence of such additional resource savings should be kept in mind, however.

6/ A pressurized kerosene lantern uses one liter of kerosene every six hours of operation. This type of lantern provides lighting equivalent to two 40-watt fluorescent lights. So one liter of kerosene provides .48 KWH's worth of lighting (i.e. $.48 = \frac{2x40x6}{1000}$). Thus it takes about 2.08 liters of kerosene to obtain illumination equivalent to that obtained from one KWH of electricity.

7/ The basis of comparison is a 650-watt rice cooker.

8/ This figure is believed to accurately reflect the economic cost of supplying electricity to rural consumers.

9/ Note that these are resource savings for the economy as a whole. Cost savings to individual families will be considerably less since they do not directly bear the cost of the subsidy for kerosene. Such savings will be approximately $.07 and $.01 per KWH of electricity used for lighting and cooking.

The above analysis neglects the fact that additional costs are incurred with electrification. Specifically, households must--at minimum--purchase light bulbs and (perhaps) a rice cooker. The cost of light bulbs distributed over their expected KWH's of lifetime usage is approximately $.02/KWH (Rp. 8), while for a rice cooker the cost is about $.04/KWH[10] (Rp. 17). If these costs are subtracted from the estimated resource savings per KWH determined above, then actual resource savings are about $.19 (Rp. 78) and $.08 (Rp. 30) per KWH used for lighting and cooking.[11]

It is assumed that two-thirds of the electricity demanded by residential consumers will be used for lighting, while one-third will be used for cooking. Therefore, the weighted-average resource saving per KWH is approximately $.15 (Rp. 62) which is 107% of the basic per KWH charge. Thus by multiplying the estimated revenues generated by residential consumption times 1.07, one can estimate the surplus benefits to the economy as a whole which result from resource savings achieved by residential consumption of electricity.

The fact that Indonesia is currently a net exporter of oil should not be allowed to minimize the importance of such resource savings. Specifically, during 1976 Indonesia produced approximately 1.5 million barrels of crude oil per day,[12] while it imported 22,000 barrels of crude oil per day. However, domestic consumption accounted for 78% of total domestic

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10/ These figures are based on two 40-watt bulbs that cost Rp. 400 each and are used for 10KWH/month for a year, and a Rp. 10,000 rice cooker used for 5KWH/month for 10 years.

11/ These estimates of resource savings are conservative since: 1) the savings resulting from using electricity, rather than batteries, to run radios are not considered; 2) the costs of replacing kerosene lamps, which frequently wear out, are ignored; and 3) the costs of alternative energy sources can be expected to increase more in the future than the cost of providing electricity since much of this latter cost consists of a large capital cost which is incurred at an early date and which will not be affected by inflation.

12/ The statistics used here are from U.S. Embassy Report, "Indonesia's Petroleum Sector," July 1977.

production of refined petroleum products[13] (244,000 barrels per day out of a total of 312,000 barrels per day). Kerosene consumption is the largest single component of total petroleum product consumption (78,000 barrels per day or 32% of the total); and, in fact, approximately 47% of this kerosene was imported. A recent study by the Ministry of Oil and Gas predicts that domestic energy consumption will increase at a 14% annual rate between now and 1985. During the same period, the Indonesian economy is expected to grow at approximately half this rate, while crude oil production is expected to remain relatively constant. Clearly, the result must be a reduction in exports of crude oil, an increase in imports of petroleum products, or both. In any case, Indonesia's net exports of oil can be expected to be reduced significantly in the near future; and in this context, the resource savings which can be achieved by substituting electricity for other less efficient sources of energy become especially important.

Also, the use of wood for cooking has resulted in a severe reduction in forest cover in many regions of Java, which is causing serious soil erosion problems. The reduction of soil erosion may be another type of resource savings which results from rural electrification.

C. Surplus Benefits: Increased Economic Activity and Other Benefits: Electricity is a higher quality, more reliable, source of energy than those alternative energy sources currently available. Thus after electrification one might expect households to want to consume more energy (in the form of electricity) than they were previously consuming. This is a form of increased economic activity which will result in surplus benefits. However, without any knowledge of the nature of the demand for electricity by rural, residential consumers, it is very difficult to even roughly estimate such surplus benefits.[14] The relative price of energy used for cooking and lighting changes with the introduction of electricity; the quality of available energy changes as well.

13/ Petroleum products include kerosene, auto-diesel oil, gasoline, fuel oil, residual fuel, and naptha.

14/ See Appendix 1 for a discussion of the appropriate theoretical approach for measuring such surplus benefits.

Therefore, because of the uncertainties involved, no attempt is made to estimate such surplus benefits.15/

Some of the "other" benefits which might result from rural electrification can be logically considered here: 1) Electrification should improve health services available in rural areas. Better sterilization of equipment and refrigeration of medicines will result, and water supply systems powered by electric pumps might reduce the incidence of water-borne diseases. 2) Educational opportunities can be expanded. Schools can be used at night for vocational education or farmers' associations meetings. In addition, classes in automobile repair, wood working, cooking, and sewing would be facilitated by electricity. 3) More religious activities can take place in the evening--thus not interfering with employment during the day. 4) Street lighting and outside house lighting can provide greater safety and security. 5) Villages will be brought into closer contact with the "outside world" via greater exposure to mass media. The result would be greater educational and cultural opportunities. In fact, a study16/ of the results of rural electrification in the Philippines indicates that all these benefits are apt to be realized in rural areas which electrify. 6) Electrification might reduce the incentive of the rural population to seek the bright lights of the city. This is because both greater amenities and greater employment opportunities will be available to them after electrification. The employment effect will take time to develop, however, and thus rural electrification should not be viewed as a panacea for the problems posed by excessive rural-to-urban migration.

15/ In the demand forecasts for residential consumers, allowance is made for expected increased household usage of electricity over time. Such estimates are crude, however, and also at least partially reflect the effects of rising household incomes. Thus they cannot be used to obtain meaningful estimates of any resulting surplus benefits.

16/ U.S.A.I.D., "An Evaluation of the Misamis Oriental Rural Electric Service Cooperative, Inc. (MORESCO)," March 1976.

V. Small Commercial and Miscellaneous Consumers

A. Demand Forecast (Minimum Estimate of Benefits): Small commercial and miscellaneous consumers include small shops, restaurants, tailoring shops, mosques, tile factories, street lights, and so on. The assumptions underlying demand forecasts for such consumers are the following: 1) A relatively constant ratio of 6:100 between small commercial users (shops, retaurants, handicrafts) and houses was observed as present in the sites and is assumed to continue in the future. Ninety percent of these users are assumed to connect by the third year of system operation, with this number increasing at a 1% annual compound growth rate thereafter. On the basis of both the observed potential for electricity usage and experience in the Philippines, it is assumed that such small commercial users will use six times as much electricity as an average residential consumer. 2) There are assumed to be seven street lights per desa during the first year of system operation, with this number increasing to twenty-three per desa by the fifteenth year. Each street light uses about 45 KWH's a month. 3) One small water system using electric pumps is assumed to connect every other year. 4) Finally, three miscellaneous consumers, each using an average of 6.25 MWH's a month, are assumed to connect each year.

These assumptions appear to be consistent with both the levels of economic activity and the potentials for future expansion which were observed by the IPB and NRECA study teams. Thus the resulting forecasts of tariff revenues based on these assumptions seem to provide an accurate minimum estimate of the benefits derived from electrifying small commercial and miscellaneous consumers.

B. Surplus Benefits: Resource Savings, Increased Economic Activity, and Other Benefits: In the proposed electrification sites, most potential small commercial consumers would use electricity for illumination. They currently have either no illumination--and thus are closed at night--or use some sort of kerosene lantern (or, in a few cases, their own generator). To the extent that electric lighting is substituted for kerosene lighting, then resource savings would be of the magnitude discussed previously for residential consumers.

Electrification might also result in significantly increased economic activity. For instance, shops might find that inexpensive electricity makes it feasible for them to

stay open at night; or, the availability of electricity might encourage the sale of new products, e.g. cold drinks.

In either case, the resulting surplus benefits can be measured by the increases in these shops' profits net of electricity-related costs. As indicated in Table 2, there are a relatively large number of existing small commercial establishments that are potential consumers.

TABLE 2: POTENTIAL COMMERCIAL AND MISCELLANEOUS CONSUMERS IN 10 DESAS IN EACH OF THE PROPOSED ELECTRIFICATION SITES

SITE	Dwelling Combined with Shop or Restaurant		Restaurant		Barber Shops		Small Shops		Handicrafts		Mosques. Church, Temples	
	Total	With Generator	Total	With Gen.	Total	With Gen.	Total	With Gen.	Total	W/Gen	Total	W/Gen.
BANTUL	291	3	31	0	67	0	347	0	1908	2	155	0
KLATEN	304	2	28	3	21	7	17	0	50	0	54	0
MAGELANG	403	3	26	0	13	0	68	0	349	0	80	0
PEKALONGAN	391	68	65	0	27	0	166	4	263	0	100	0
SRAGEN	100	3	42	0	35	0	133	0	925	0	78	0
WONOGIRI	420	2	20	0	18	0	68	0	618	0	28	0
LAMPUNG	13	0	37	0	24	0	388	3	183	0	140	0
LOMBOK	24	0	20	0	20	0	92	2	347	0	354	1
LUWU	267	2	1	0	5	0	112	0	13	0	77	1
TOTAL	2213	83	270	3	230	7	1391	9	4656	2	1066	2

Source: IPB Survey, Model 1

In addition, of course, new establishments can be expected to develop after electrification.17/ The fact is, however, that there is little detailed knowledge available concerning the current usage of kerosene for lighting by such establishments; and, it is impossible to foresee with any certainty what kind of new establishments will develop. Thus no estimates of surplus benefits resulting from resource savings or increased economic activity by small commercial consumers are made here.

Finally, as commercial consumers increase their hours and grow in number, new employment opportunities are created. This is especially true for women since they are most often employed in small businesses and handicrafts, and since electricity often serves as a substitute for muscle power (see Table 3, and the lengthier discussion of this issue in the Social-Soundness Analysis Annex). Such employment creation can be expected to be one of the most important benefits resulting from electrification. Once again, however, the value of such benefits cannot be quantified at this point in time.18/

17/ Results in the Philippines indicated that auto repair shops, wood working shops, tailoring shops, retail shops, restaurants, movie theaters, and bakeries developed after electricity was introduced.

18/ In one electric coop in the Philippines, 25 new business establishments developed within four years after electrification, with 432 new jobs being created.

TABLE 3: SOURCES OF INCOME FOR WOMEN

SITE	ACTIVITY[19/]
Bantul	(1) Small business, (2) Handicrafts, (3) Rice planting and harvesting, (4) Making baskets
Banyumas	NA
Klaten	(1) Small business, (2) Rice planting & harvesting, (3) Selling produce, (4) Tailoring
Magelang	(1) Small business, (2) Making baskets, (3) Laboring
Pekalongan	(1) Laboring, (2) Selling produce, (3) Small business, (4) Rice planting and harvesting
Sragen	(1) Rice planting and harvesting, (2) Small industry, (3) Laboring, (4) Making baskets
Wonogiri	(1) Small business, (2) Small industry, (3) Rice planting and harvesting, (4) Making baskets
Lampung	(1) Rice planting and harvesting, (2) Making baskets, (3) Small business, (4) Tailoring
Lombok	(1) Rice planting and harvesting, (2) Weaving cloth, (3) Selling produce, (4) Making baskets
Luwu	(1) Selling produce, (2) Rice planting & harvesting, (3) Making baskets, (4) Weaving cloth.

19/ Activities are listed in decreasing order of importance.

Source:
IPB Survey, Model 1

VI. Productive and Agricultural Consumers

A. Demand Forecast (Minimum Estimate of Benefits): Productive and agricultural consumers include grain mills, irrigation pumps, and other producers of raw materials and agricultural products found in the electrification sites. The number of such consumers, and their current levels of diesel power usage, are derived from PLN and DGC surveys. It is assumed that 50% of the grain mills identified in these surveys will be connected by the fourth year of system operation, with this figure increasing to 100% by the fifteenth year. By that year, half of these mills are assumed to use grain driers. Where pump irrigation potential was found to exist, it is assumed that two such pumps connect to the system each year. Other large loads specific to individual sites are assumed to connect after a few years of system operation, e.g. in Lampung a palm oil plant is assumed to connect in the fifth year. In summary, the demand forecasts for these consumers are based on currently observed potential demands, with little consideration given to the possible development of new users during the fifteen year period. Therefore, resulting revenue forecasts--and hence direct benefit estimates--should be viewed as conservative.

B. Surplus Benefits: Resource Savings: Since grain mills are assumed to account for most of the demand for electricity by agricultural and productive consumers,[20] only the resource savings achieved by such mills are considered here. Survey results indicate that the energy-related costs of operating a typical rice mill powered by a 15 H.P. diesel for 20 hours are approximately $7.14 (Rp. 2,966). If the mill is electrified, energy-related costs (at the proposed tariff for large users of $.07/KWH (Rp. 31/KWH) will be about $6.27 (Rp. 2,603). Thus there will be a savings of $.87 (Rp. 361). Estimated costs to the mill of the electricity it will purchase are $4.20 (Rp. 1,744). In other words, resource savings amount to about 21% ($.87/$4.20 = .21) of the revenues generated by sales of electricity to such large load consumers. Therefore, the value of these resource savings can be estimated by multiplying forecasted tariff revenues by .21.

20/ For example, in Lampung grain mills account for about 95% of total KWH's demanded by consumers in this category, while for Klaten this percentage is even higher.

C. Surplus Benefits: Increased Economic Activity and Other Benefits: After electrification, one can expect many existing agricultural consumers to expand the size of their operations. Grain products can be milled more effectively, and other agricultural products can be produced (e.g. palm oil) or dried (e.g. rice and tobacco) more efficiently. In addition, most of the sites have large numbers of lumber yards, small furniture factories and other cottage industries (see Table 4). Their outputs can be significantly increased by electrification. Finally, the increased availability of ice will allow fish products to be marketed more widely in Luwu and Bantul--effectively increasing the marketable output of this industry.

It is also likely that new agricultural and productive consumers will come into existence. In the Philippines, for example, small foundries, sawmill and box factories developed after electrification. In Indonesia, there is a similar potential for new economic activities. At Klaten and Banyumas, interest was expressed in using electricity for incubators to hatch duck and chicken eggs and to keep the young chicks alive. Also, although in most sites gravity-fed irrigation was judged to be adequate, the potential for significant increases in rice production resulting from pump irrigation was found to exist in Mageland, Klaten, Luwu, and Banyumas.21/ Lesser potentials for irrigation exist in the other sites.

Since it is impossible to foresee with any accuracy how much economic activities will increase after electrification, no attempt is made to estimate most of the surplus benefits which are expected to result from such increases. However, those benefits resulting from increased rice outputs are estimated by using the results presented in column (4) of Table 5 and the methodology outlined in footnote 21 below. In addition, of course, there will be additional benefits resulting from increased employment opportunities--as discussed above for small commercial consumers. Since the benefits derived from such additional employment opportunities are thought to be especially important, this point is worth repeating here.

21/ For example, there is the potential to pump-irrigate 1,000 hectares of rice paddy in Banyumas, Assuming such irrigation will permit an additional rice crop each year and that the average yield per hectare is about 1.5 tons, then the potential increase in rice production is 1500 tons a year. This would be worth approximately $9,858 (Rp. 4,090,950).

TABLE 4: POTENTIAL AGRICULTURAL AND PRODUCTIVE CONSUMERS IN 10 DESAS IN EACH OF PROPOSED ELECTRIFICATION SITES

Site	Rice Mills		Lumber Yards		Crop Drying		Furniture	
	Total	With Gen.	Total	With Gen.	Total	With Gen.	Total	With Gen.
Bantul	76	7	28	0	2	0	57	0
Banyumas	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Klaten	15	12	11	0	18	0	11	0
Magelang	10	0	111	0	1	0	44	0
Pekalongan	14	0	4	0	1	0	15	0
Sragen	65	3	12	0	6	0	29	0
Wonogiri	11	6	92	0	1	0	73	0
Lampung	43	4	2	0	50	0	50	0
Lombok	12	7	43	0	77	2	101	0
Luwu	34	1	56	0	3	0	32	0
TOTAL:	280	40	359	0	159	2	412	0

Source: IPB Survey, Model 1

TABLE 5: EXISTING AND POTENTIAL IRRIGATION IN 10 DESAS IN EACH OF THE ELETRIFICATION SITES

% of Cultivated[1] Land That is Irrigated

Site	(1) Technical[2]	(2) Semi-Technical[3]	(3) Simple[4]	(4) Hectares of Land that Could be Cultivated Irrigated
Bantul	32	15	10	2
Banyumas	N.A	N.A	N.A	100
Klaten	46	26	2	165
Magelang	22	13	4	295
Pekalongan	53	6	4	60
Sragen	29	3	11	35
Wonogiri	13	15	2	1
Lampung	52	3	.9	113
Lombok	41	11	.6	972
Luwu	4	2	26	11,571

1/ Cultivated land includes the three types of irrigated land listed here plus "upland", "rainfed", and "plantation".

2/ Two or more crops of rice are grown on technically irrigated land.

3/ Only once crop of rice is grown although the land is irrigated.

4/ Only one crop of rice is grown and water is supplied partly by irrigation and partly by rainfall.

Source: IPB Survey, Model 1

VII. Summary of Economic Benefits

The above analysis has outlined the methods used to estimate tariff revenues and has attempted to quantify some of the surplus economic benefits in the form of resource savings which are expected to be realized. In addition, the surplus benefits which result from increased economic activity have been discussed--with evidence gathered from the Philippines rural electrification projects serving as a basis for this discussion; and whenever possible, the nature and magnitude of such benefits which are expected to result from the Indonesian rural electrification project have been outlined. Finally, some of the other benefits which might result because of rural electrification were discussed.

This analysis indicates that quantifiable surplus benefits resulting from resource savings amount to approximately 107%, and 21% of the estimated tariff revenues for residential, and productive and agricultural consumers respectively. Added to these benefits are, of course, those resulting from increased economic activity. Only such benefits derived from increased irrigation are quantified and included in the estimate of total economic benefits resulting from rural electrification. No attempt was made to quantify surplus benefits resulting from other increases in economic activities--such as new shop and small cottage industries, or increased employment opportunities--since there were too many uncertainties involved. For the same reason, no effort was made to quantify some of the "other" benefits resulting from electrification. Thus the estimates of direct and surplus benefits presented here should be viewed as being minimum estimates of those benefits of rural electrification which can be foreseen with a high degree of certainty. Estimates of these economic benefits--by type of benefit, category of consumer, and project site--are presented in Table 6.

VIII. Costs of Rural Electrification

A. Actual Outlays: Estimated costs according to actual year of outlay are presented for each site in Table 7. These estimates cover seventeen years--two years of system construction and fifteen years of system operation--and are broken down into capital costs and operating costs. The sources of these estimates are the NRECA feasibility studies and other preliminary cost studies provided by NRECA.

TABLE 6: ECONOMIC BENEFITS (U.S. $000)

Site: Type of Benefit:	YEAR 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LUWU															
Residential: Revenue	174	289	405	492	550	658	803	993	1202	1406	1597	1768	1947	2102	2263
Surplus	186	309	433	526	589	704	859	1062	1286	1504	1709	1892	2083	2249	2421
TOTAL	360	598	838	1018	1139	1362	1662	2055	2488	2910	3306	3660	4030	4351	4684
Commercial and Misc. Prod. and Agriculture: Revenue	18	34	50	66	86	111	135	161	193	221	257	288	325	359	395
Agriculture: Revenue	15	38	63	85	102	120	136	153	173	187	203	218	229	249	265
Surplus	3	7	12	16	19	22	25	28	32	34	37	39	41	44	46
TOTAL	18	45	75	101	121	142	161	181	205	221	240	257	270	293	311
TOTAL: Revenues	207	361	518	643	738	889	1074	1307	1568	1814	2052	2274	2501	2710	2923
Surplus	189	316	445	542	608	726	884	1090	1318	1538	1746	1931	2124	2293	2467
TOTAL	396	677	963	1185	1346	1615	1958	2397	2886	3352	2798	4205	4625	5003	5390
Site: TYPE OF BENEFIT															
LOMBOK															
Residential: Revenue	159	347	578	781	882	1049	1260	1570	1816	2079	2253	2464	2650	2854	3031
Surplus	170	371	618	836	944	1122	1348	1680	1943	2224	2410	2636	2836	3054	3243
TOTAL	329	718	1196	1617	1826	2171	2608	3250	3759	4303	4663	5100	5486	5908	6274
Commercial and Misc. Prod. and Agriculture: Revenue	70	128	167	198	230	274	328	394	458	522	582	644	712	785	851
Agriculture: Revenue	30	70	118	161	194	223	254	280	318	343	371	389	415	443	471
Surplus	6	14	24	32	38	44	50	55	62	67	72	75	80	85	90
TOTAL	36	84	142	193	232	267	304	335	380	410	443	464	495	528	561
TOTAL: Revenues	259	545	863	1140	1306	1546	1842	2244	2592	2944	3206	3497	3777	4082	4353
Surplus	176	385	642	868	982	1166	1398	1735	2005	2291	2482	2711	2916	3139	3333
TOTAL	435	930	1505	2008	2288	2712	3240	3979	4597	5235	5688	6208	6693	7221	7686

TABLE 6: ECONOMIC BENEFITS (U.S. $000)

Site	Type of Benefit	Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LAMPUNG																
Residential:	Revenues	452	369	578	730	953	1184	1390	1726	1940	2208	2394	2571	2794	2983	3095
	Surplus	103	395	618	781	1020	1267	1487	1847	2070	2363	2562	2751	2990	3192	3312
	Total	315	764	1196	1511	1973	2451	2877	3573	4016	4571	4956	5322	5784	6175	6407
Commercial and Misc. :	Revenues	163	283	340	379	457	543	635	729	820	902	1001	1089	1192	1283	1352
Prod. and Agriculture:	Revenues	47	103	160	225	286	327	371	417	476	529	577	659	720	789	873
	Surplus	11	22	33	46	59	67	76	85	97	107	116	133	145	159	174
	Total	58	125	193	271	345	394	447	502	573	636	693	792	865	948	1047
Total:	Revenues	362	755	1078	1334	1696	2054	2396	2872	3236	3639	3972	4319	4706	5055	5320
	Surplus	174	417	651	827	1079	1334	1563	1932	2173	2470	2678	2884	3135	3351	3486
Total	Benefits	536	1172	1729	2161	2775	3388	3959	4804	5409	6109	6650	7203	7841	8406	8806
KLATEN																
Residential:	Revenues	216	504	774	999	1357	1698	2092	2411	2722	2978	3286	3524	3816	4040	4199
	Surplus	231	539	828	1069	1452	1817	2238	2580	2913	3186	3516	3771	4083	4323	4407
	Total	447	1043	1602	2068	2809	3515	4330	4991	5635	6164	6802	7295	7899	8363	8606
Commercial and Misc. :	Revenues	127	226	310	368	452	538	635	724	818	903	1007	1094	1174	1248	1298
Prod. and Agriculture:	Revenues	30	45	60	66	77	83	96	100	111	119	135	145	161	171	180
	Surplus	8	11	15	16	18	19	22	23	25	27	30	32	36	38	40
	Total	38	56	75	82	95	102	118	123	136	146	165	177	197	209	220
Total:																
Total:	Revenues	373	775	1144	1433	1886	2319	2828	3235	3651	4000	4428	4763	5151	5459	5677
	Surplus	238	550	843	1085	1470	1836	2260	2603	2938	3213	3546	3803	4119	4361	4447
Total	Benefits	611	1325	1987	2518	3356	4155	5088	5838	6589	7213	7974	8566	9270	9820	10,124

TABLE 6: ECONOMIC BENEFITS (U.S. $000)

Site	Type of Benefit	Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BANTUL																
Residential:	Revenues	183	399	581	730	989	1242	1546	1764	2005	2197	2441	2645	2894	3081	3167
	Surplus	195	426	621	781	1058	1328	1654	1887	2145	2350	2611	2830	3096	3296	3388
	Total	378	825	1202	1511	2047	2570	3200	3651	4150	4547	5052	5475	5990	6377	6555
Commercial and Misc. :	Revenues	104	188	244	304	329	419	500	571	646	711	787	840	895	940	970
Prod. and Agriculture:	Revenues	51	84	114	125	146	150	167	171	189	193	213	220	238	244	254
	Surplus	10	17	22	24	28	29	32	33	36	36	40	41	44	45	46
	Total	61	101	136	149	174	179	199	204	225	229	253	261	282	289	300
Total :	Revenues	338	671	939	1159	1464	1811	2213	2506	2840	3101	3441	3705	4027	4265	4391
	Surplus	205	443	643	805	1086	1357	1686	1920	2181	2386	2651	2871	3140	3341	3434
Total Benefits		543	1114	1582	1964	2550	3168	3899	4426	5021	5487	6092	6576	7167	7606	7825

Site	Type of Benefit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PEMALANG																
Residential:	Revenues	183	365	564	752	1076	1436	1868	2263	2625	2919	3305	3613	3966	4217	4304
	Surplus	195	390	603	804	1151	1536	1998	2421	2808	3123	3536	3865	4243	4512	4605
	Total	378	755	1167	1556	2227	2972	3866	4684	5433	6042	6841	7478	8209	8729	8909
Commercial and Misc. :	Revenues	144	251	295	369	449	544	653	748	846	925	1014	1069	1131	1180	1213
Prod. and Agriculture:	Revenues	15	27	43	55	61	69	76	82	89	95	104	121	128	136	145
	Surplus	2	5	7	10	11	12	13	14	15	16	17	18	19	20	20
	Total	17	32	50	65	72	81	89	96	104	111	121	139	147	156	165
Total :	Revenues	342	643	902	1176	1586	2049	2597	3093	3560	3939	4423	4803	5225	5533	5664
	Surplus	197	395	610	814	1162	1548	2011	2435	2823	3139	3553	3883	4262	4532	4625
Total Benefits		539	1038	1512	1990	2748	3597	4608	5528	6383	7078	7976	8686	9487	10065	10289

TABLE 6: ECONOMIC BENEFITS (U.S. $000)

Site: Type of Benefit	Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MAGELANG															
Residential: Revenues	183	398	581	727	986	1267	1578	1850	2114	2315	2556	2744	2976	3149	3211
Surplus	196	426	621	758	1055	1355	1688	1979	2261	2477	2734	2936	3184	3369	3435
TOTAL	379	824	1202	1485	2041	2622	3266	3829	4375	4792	5290	5680	6160	6518	6646
Commercial and Misc. : Revenues	117	197	255	305	382	458	549	623	704	768	837	883	935	979	1008
Prod. and Agriculture: Revenues	27	50	68	75	86	89	101	104	116	120	134	139	152	157	165
Surplus	5	9	13	14	16	16	18	18	20	21	23	24	26	26	27
TOTAL	32	59	81	89	102	105	119	122	136	141	157	163	178	183	192
TOTAL: Revenues	327	645	904	1107	1454	1814	2228	2577	2934	3203	3527	3766	4063	4285	4384
Surplus	201	435	634	772	1071	1371	1706	1997	2281	2498	2757	2960	3210	3395	3462
TOTAL BENEFITS	528	1080	1538	1879	2525	3185	3934	4574	5215	5701	6284	6726	7273	7680	7846
Site: TYPE OF BENEFIT															
BANYUMAS & CILACAP															
Residential: Revenues	132	240	491	557	781	1001	1233	1411	1581	1712	1889	2035	2189	2319	2379
Surplus	141	256	525	595	835	1071	1319	1509	1691	1831	2021	2177	2342	2481	2545
TOTAL	273	496	1016	1152	1616	2072	2552	2920	3272	3543	3910	4212	4531	4800	4924
Commercial and Misc. : Revenues	83	151	171	209	258	312	376	427	484	532	585	626	672	709	735
Prod. and Agriculture: Revenues	21	39	53	59	66	70	78	81	90	95	105	111	121	127	134
Surplus	2	7	9	10	11	12	13	13	15	15	17	18	19	20	21
TOTAL	23	46	62	69	77	82	91	94	105	110	122	129	140	147	155
TOTAL: Revenues	236	430	715	825	1105	1383	1687	1919	2155	2339	2579	2772	2982	3155	3248
Surplus	143	263	534	605	846	1083	1332	1522	1706	1846	2038	2195	2361	2501	2566
TOTAL BENEFITS	379	693	1249	1430	1951	2466	3019	3441	3861	4185	4617	4967	5343	5656	5814

TABLE 6: ECONOMIC BENEFITS (U.S. $000)

Site: Type of Benefit	Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SRAGEN															
Residential: Revenue	190	288	402	492	648	799	996	1169	1344	1495	1692	1862	2037	2161	2288
Surplus	203	308	430	526	693	854	1065	1250	1438	1599	1810	1992	2179	2312	2448
TOTAL	393	596	832	1018	1341	1653	2061	2419	2782	3094	3502	3854	4216	4473	4736
Commercial and Misc. : Revenue	92	160	201	239	302	367	442	516	588	654	765	772	860	925	980
Prod. and Agriculture: Revenue	17	29	41	48	56	59	68	71	80	83	94	98	109	117	125
Surplus	3	5	7	8	9	10	11	11	13	14	15	15	17	18	19
TOTAL	20	34	48	56	65	69	79	82	93	97	109	113	126	135	144
TOTAL: Revenues	299	477	644	779	1006	1225	1506	1702	2012	2232	2551	2732	3006	3203	3393
Surplus	206	313	437	534	702	864	1076	1261	1451	1613	1825	2007	2196	2330	2467
TOTAL	505	790	1081	1313	1708	2089	2582	2963	3463	3845	4376	4739	5202	5533	5860
Site: TYPE OF BENEFIT															
WONOGIRI															
Residential: Revenue	136	273	395	484	819	904	1127	1348	1578	1795	1935	2158	2325	2439	2554
Surplus	145	292	422	520	876	967	1205	1442	1688	1920	2091	2309	2487	2609	2732
TOTAL	281	565	817	1006	1695	1871	2332	2790	3266	3715	4046	4467	4812	5048	5286
Commercial and Misc. : Revenue	102	168	214	252	316	382	458	546	601	671	750	795	883	947	1005
Prod. and Agriculture: Revenue	15	38	54	61	68	74	81	84	95	98	110	115	127	131	139
Surplus	2	7	10	11	12	13	14	14	16	16	18	19	21	21	22
TOTAL	17	45	64	72	80	87	95	98	111	114	128	134	148	152	161
TOTAL: Revenues	253	479	663	799	1203	1360	1666	1978	2274	2564	2815	3068	3335	3517	3698
Surplus	147	299	432	531	888	980	1219	1456	1704	1936	2109	2328	2508	2630	2754
TOTAL	400	778	1095	1330	2091	2340	2885	3434	3978	4500	4924	5396	5843	6147	6452

TABLE 7: ECONOMIC COSTS BY YEAR OF OUTLAY (U.S. $000)

Site:	Type of Cost	Year -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BANTUL:	Operating Cost	0	0	302	528	778	898	1147	1397	1795	1941	2191	2397	2737	2900	3288	3457	3650
	Capital Cost	1283	473	417	346	295	230	242	117	77	71	54	224	48	47	29	23	192
	Total Cost	1283	473	719	874	1073	1128	1389	1514	1872	2012	2245	2621	2785	2947	3317	3480	3842
BANYUMAS	Operating Cost	0	0	233	369	521	656	844	1057	1303	1470	1549	1843	2073	2198	2451	2601	2746
	Capital Cost	1393	536	268	293	230	213	238	106	61	32	29	178	22	19	15	13	154
	Total Cost	1393	536	501	662	751	869	1082	1163	1364	1502	1578	2021	2095	2217	2466	2614	2900
KLATEN	Operating Cost[1/]	0	0	333	658	898	1141	1446	1781	2191	2486	2801	3113	3503	3772	4190	4473	4715
	Capital Cost[2/]	2667	1143	496	473	427	358	393	186	148	106	101	351	78	58	50	50	244
	Total Cost	2667	1143	829	1131	1325	1499	1839	1967	2339	2592	2902	3464	3581	3830	4240	4522	4959
MAGELANG	Operating Cost	0	0	340	550	726	903	1138	1403	1743	1992	2255	2505	2798	2975	3321	3507	3675
	Capital Cost	2174	901	447	415	308	246	278	148	126	97	69	227	35	28	19	10	178
	Total Cost	2174	901	787	965	1034	1149	1416	1551	1869	2089	2324	2732	2833	3003	3340	3517	3853
PEMALANG	Operating Cost	0	0	424	609	788	1002	1279	1617	2055	2395	2738	3082	3486	3757	4221	4477	4694
	Capital Cost	2966	1165	348	378	371	330	373	268	224	187	150	310	105	79	49	19	175
	Total Cost	2966	1165	772	987	1159	1332	1652	1885	2279	2582	2888	3392	3591	3836	4270	4496	4869
SRAGEN	Operating Cost	0	0	260	380	478	601	757	934	1169	1359	1556	1771	2144	2173	2509	2693	2929
	Capital Cost	1283	473	302	241	214	145	135	74	73	55	54	53	53	36	36	35	35
	Total Cost	1283	473	562	621	692	746	892	1008	1242	1414	1610	1824	2197	2209	2545	2728	2964
WONOGIRI	Operating Cost	0	0	274	404	591	657	861	1064	1334	1594	1785	1880	2275	2458	2797	2979	3220
	Capital Cost	2162	900	326	250	240	185	243	93	92	92	92	191	38	37	37	19	163
	Total Cost	2162	900	600	654	831	842	1104	1157	1426	1686	1877	2071	2313	2495	2834	2998	3383
LAMPUNG	Operating Cost	0	0	362	555	722	911	1054	1194	1392	1508	1601	1798	1926	2012	2284	2372	2445
	Capital Cost	5159	1586	579	5095	551	2745	320	2658	204	200	173	2843	130	125	2553	124	268
	Total Cost	5159	1586	941	5650	1273	3656	1374	3852	1596	1708	1774	4641	2056	2137	4837	2496	2713

1/ Operating costs include: 1) plant operation and maintenance costs (where applicable), 2) fuel costs, 3) administrative and general costs for distribution, 4) operation and maintenance costs for distribution, 5) sales costs, and 6) cost of power (where applicable)

2/ Capital costs include 1) total investment costs for distribution, and 2) total investment costs for generation (where applicable).

TABLE 7: ECONOMIC COSTS BY YEAR OF OUTLAY (U.S. $000)

OUTER ISLANDS

Site:	Type of Cost	Year -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LOMBOK:	Operating Cost	0	0	290	452	623	751	805	965	933	1165	1246	1432	1547	1617	1753	1822	1839
	Capital Cost	1851	3814	493	5215	675	379	263	117	2566	117	116	2797	80	71	67	64	2509
	Total Cost	1851	3814	783	5667	1298	1130	1068	1082	3499	1282	1362	4229	1627	1688	1820	1886	4348
LUWU:	Operating Cost	0	0	298	360	423	589	720	801	809	1001	1101	1292	1326	1595	1641	1721	1911
	Capital Cost	1997	3665	283	294	287	4782	200	200	200	200	200	100	100	2374	100	100	100
	Total Cost	1997	3665	581	654	710	5371	920	1001	1009	1201	1301	1392	1426	3969	1741	1821	2011

B. Costs per Beneficiary: Expenditures by USAID and the Government of Indonesia are presented in Table 8. To summarize the results presented there, total USAID commitments are $48 million--of which $6 million (12.5%) are in the form of grants and $42 million (87.5%) are in the form of loans. GOI commitments are $22.7 million (Rp. 9,421 million).

TABLE 8: Expenditures by USAID and GOI ($1000)

Purpose	Grant	Loan	Total	GOI Total	Total
Distribution	6000	30,000	36,000	21,500	57,500
Generation	0	12,000	12,000	1,200	13,200
Total	6000	42,000	48,000	22,700	70,700

Using both the estimates of total outlays presented in Table 8 above, and the estimates of total household connections by the fifth project year presented in Table 9, one can estimate total expenditures per beneficiary.22/ Direct beneficiaries are those households, or household members, that receive electricity. Total beneficiaries are estimated by increasing the number of direct beneficiaries by 50% since it is assumed that many individuals in non-electrified households will receive benefits from electricity in the form of better health care and education, more street lighting, and so on. Based on the total Project cost of $70.7 million, the cost per direct beneficiary (resident of a connected household) is $61.53 and the cost per total beneficiary is $41.02.

22/ Alternatively, one might argue that the number of consumers in the fifteenth year of system operation is a more accurate measure of beneficiaries. This is because the number of beneficiaries increase, and the benefits of rural electrification continue to accrue, even after project funding stops. In this case, total expenditures per direct beneficiary in the fifteenth year are $189.84 per household or $31.64 per person.

TABLE 9: Beneficiaries in the Fifth Project Year

Site	Direct Beneficiaries: Households Connected	Direct Beneficiaries: People in Con. Households	Total Beneficiaries
Bantul	20,000	120,000	180,000
Banyumas	15,000	90,000	135,000
Klaten	25,000	150,000	225,000
Magelang	20,000	120,000	180,000
Pekalongan	20,000	120,000	180,000
Sragen	15,000	90,000	135,000
Wonogiri	15,000	90,000	135,000
Lampung	23,500	141,000	211,500
Lombok	22,000	132,000	198,000
Luwu	16,000	96,000	144,000
Total	191,500	1,149,000	1,723,500

IX. Rate of Return and Benefit- Cost Analysis

Rate of return, and benefit-cost analyses were performed for each of the proposed electrification sites. The estimates of economic benefits and costs previously presented in Tables 6 and 7 respectively were used in these analyses. It should be emphasized again that only those benefits which can be estimated with a high degree of certainty are included in Table 6.

The rates of return and benefit-cost ratios which were calculated for each site on the basis of the previously described estimates of costs and benefits are presented in columns 1 and 2 of Table 10. Rates of return vary between 31% for Banyumas and 5% for Luwu. Similarly, benefit-cost ratios vary between 1.65 and .81 for the same sites. As is evident from Table 10, the returns on investments for rural electrification at the Java sites are very high--all significantly exceeding the assumed opportunity cost of capital (12%). In contrast, the returns to investments in the Outer Island sites are all somewhat below this opportunity cost. The factor which is the principal cause of this sharp distinction is clearly the relatively large investment for generation capacity which must be made early in the construction

and operating periods at each of the Outer Island sites.[23] Still, when consideration is given to the other benefits of rural electrification--which have been discussed above, but not quantified here--one can conclude that none of the proposed electrification projects should be rejected on grounds of economic inefficiency. In fact, the returns described above could be viewed as being very high given the conservative nature of the assumptions underlying the estimation of benefits.

Two sensitivity analyses were also performed. In these, the following alternative assumptions concerning load growth were employed: 1) residential consumers were assumed to connect at a 25% slower rate over the fifteen year period than assumed in the base case, and 2) commercial, agricultural, and productive consumers were assumed to demand 25% less electricity than in the base case. Benefit-cost ratios were calculated for all sites under both alternative assumptions; and, the results are presented in columns 3 and 4 of Table 10.

The 25% reduction in demand by commercial, agricultural, and productive consumers has little effect[24] on the benefit-cost ratios for the Java sites, while these ratios are uniformly reduced for the Outer Island sites. Once again, the reason for this is the generation capacity which must be built at these latter sites. On Java, reduced benefits resulting from lower demand for electricity can be largely offset by reductions in the cost of power purchased by PLN. On the Outer Islands, however, reduced benefits significantly exceed reduced costs since a large fraction of generation costs are incurred regardless of how much electricity is actually generated.

23/ The lower population density found in the Outer Islands is also important since it results in lower benefits and higher distribution costs.

24/ The fact that benefit-cost ratios for the Java sites increase slightly when the commercial-agricultural load is reduced should not be interpreted to mean that the economy would be "better off" with a lower load. The net benefits provided by rural electrification are measured by the present value of benefits minus the present value of costs. For all the Java sites, net benefits are reduced when the commercial-agricultural load is reduced. The benefit-cost ratios increase (even though net benefits are reduced) because costs are reduced relatively more than benefits--although in absolute terms, benefits are reduced more than cost.

If residential consumers connect at a 25% slower rate than forecast, then the benefit-cost ratios for all sites are reduced. This is essentially because of the large surplus benefits which--together with revenues--are "lost" in this case. Still, ratios of benefits to costs remain relatively high for the Java sites; however, they become quite low for the Outer Island sites. What this analysis points out is the importance of the level of residential demand to the economic performance of each electrification project. Available evidence strongly indicates that potential residential demand at all the sites is sufficient to generate the direct and surplus benefits predicted in the base case. Thus it is crucial that other factors--say, for instance, the inability to provide sufficient house-wiring servies--not be allowed to restrict actual residential demand.

TABLE 10: RATES OF RETURN AND BENEFIT-COST RATIOS FOR THE PROPOSED ELECTRIFICATION SITES

Site	Rate of Return Using Base Assumptions (%)	B/C Using Base Assumption	B/C Assuming 25% Fewer Residential Consumers Connect	B/C Assuming 25% Lower Demand by Comm/Agri., Prod. Consumers
Java Sites				
Banyumas	29	1.57	1.39	1.58
Bantul	31	1.65	1.48	1.68
Klaten	27	1.48	1.33	1.52
Magelang	26	1.48	1.30	1.49
Pekalongan	24	1.43	1.25	1.44
Sragen	28	1.52	1.37	1.54
Wonogiri	22	1.36	1.19	1.36
Outer Island				
Lampung	10	.95	.79	.77
Lombok	11	.97	.80	.93
Luwu	5	.81	.66	.79

Appendix 1: 25/

I. Residential Consumers:

A) Surplus benefits from resource savings can be measured as:

$$S = Q_s (P_s - P_e),$$

where Q_s = quantity of energy consumed before the introduction electricity,

P_e = per energy unit price of electricity (including the cost of electricity itself plus the cost of complementary inputs such as light bulbs, house wiring, and so on),

P_s = per energy unit price of the substitute energy, source (wood or kerosene)

S = surplus benefits.

B) Surplus benefits from increased economic activity can be measured as:

$$S = \frac{(P_s + P_2)}{2} \cdot \Delta Q_e - P_e \; Q_e,$$

where P_s and P_e are as defined above,

ΔQ_e = increase in energy demand (in the form of electricity) after the introduction of electricity.

The assumption is that consumers value this additional energy consumption somewhere between what they paid for the substitute energy sources and what they now pay for electricity.

25/ The methodology outlined here is essentially a restated form of that developed in Dennis Anderson, "Costs and Benefits of Rural Electrification", P.U. Report No. 5, World Bank, February 1975.

II. Productive Consumers

A) Surplus benefits from resource savings can be measured as:

$$S = TC_s - TC_e,$$

where TC_s = total cost of the productive activity using an alternative energy source,

TC_e = total cost of the productive activity using electricity.

B) Surplus benefits from increased economic activity can be measured as:

$$S = TR_e - TC_e - (P_e.Q_e)$$

where TR = total revenue obtained from the new activity,

TC = total cost of the new activity,

Q_e = amount of electricity used, and P_e as defined above.

ANNEX L

RURAL ELECTRIFICATION PROJECT, INDONESIA

SOCIAL SOUNDNESS ANALYSIS

		Page
I.	Introduction	1
II.	Proposed Direct Beneficiaries	2
	A. Summary	2
	B. Identification of Proposed Direct Beneficiaries	3
	1. Population Density of Sample Villages	3
	2. Types and Numbers of Proposed Direct Beneficiaries	4
	a. Farmers	4
	b. Wage Laborers	5
	c. Cash Crop Farmers	5
	d. Tradesmen	5
	e. Salaried and Professional	5
	f. Transmigrants	6
	g. Women	6
	3. Significant Ethnic, Linguistic and Religious Affiliations	7
	4. Possible Non-Participants	7
III.	Socio-Cultural Environment	8
	A. Summary	8
	B. The Socio-Cultural Environment	9
	1. Value: Concord and Cooperation	9
	2. Community Activities, Traditional and Modern	9
	3. The Formal Cooperatives System of the Government and its Role in Village Life	11
	4. The Rural Administrative Framework of the Proposed Project	13
	5. The Villagers' Attitude Towards Work	14
	6. The Economic Role of Women in Rural Indonesia	16

		Page
IV.	Willingness to Accept Electricity	17
	A. Summary	17
	B. Willingness to Accept Electricity	17
V.	Expected Benefits of Electricity	18
	A. Summary	18
	B. Expected Benefits at Klaten, Central Java; a Microcosmic View	19
	C. Expected Benefits at Other Sites: an Overview	21
VI.	Communications as an Aid to Spread Effects	23
	A. Summary	23
	B. Spread Effects	23
	C. Follow-on Contacts	25
VII.	Appendices (Based on Data from Ten Sample Villages at Each Site	26
	1. Beneficiary Incidence by Site	1
	2. Village Demographic Data by Site	3
	3. Births and Deaths by Site	4
	4. Selected Social Indicators by Site	5
	5. Educational Level Attained as a Social Indicator	6
	6. Selected Economic Indicators by Site	7
	7. Number of Selected Small Economic Enterprises by Site	8
	8. Number of Selected Skilled Personnel by Site	9

ANNEX L

RURAL ELECTRIFICATION PROJECT
SOCIAL SOUNDNESS ANALYSIS

I. Introduction

The following socio-cultural description of Indonesian rural life is based on surveys and observations of ten sample villages (desa) in each of six proposed rural electrification sites in Central Java (Sragen, Wonogiri, Bantul-Sleman, Klaten, Magelang and Pekalongan-Pemalang) and in three islands outside Java: Lampung, Sumatra; Luwu, Sulawesi; and East Lombok, Lombok. Thus, detailed data are based on findings in 90 of the 647 initial target villages. A tenth site, Banyumas in Central Java, was also visited but a more detailed survey there was limited by time.

The objectives of the survey were:

1. To identify the target beneficiaries of the proposed rural electrification project.

2. To determine whether or not the socio-cultural environment was receptive of the project.

3. To determine whether or not the people were receptive of, and able to afford, the project.

4. To forecast what the expected benefits would be.

The answers to financial and economic questions are dealt with in sections separate from this.

Teams from the Department of Social Economics of the Institut Pertanian Bogor (IPB), the Agricultural Institute of Bogor, composed of members of its faculty, were the main agents in data collection. Armed with personal interview questionnaires, they interviewed, at the nine intensive study sites, a total of 90 lurah (village head), 450 sub-village (kampung) heads, and 290 household heads. In addition, interviews were held with a number of bupati (district heads), camat (sub-district heads) and other administrators, and electricity, educational, health and cooperatives personnel.

Except for Banyumas, valid aggregate data were collected on 40,648 sample households in Central Java sites; in the

Outer Islands, the sample households numbered 6,707 in Lampung, 6,373 in Luwu and 20,869 in Lombok for a grand total of 74,597 households.

Since a large number of Javanese transmigrants, forming a majority, had founded the sample villages in Lampung, the cultural pattern there was essentially Javanese. This was true to a certain extent in Lombok, perhaps due to cultural diffusion from nearby Java, and less true in Luwu where indigenous peoples of differing traditions were in the majority. Because, however, the survey concentrated on demographic, economic and social factors which are broadly universal in rural Asia (and not on strange customs or costumes), because Central Government has brought a uniformity in administration and modern institutions, because the vast majority of the people profess Islam, and because of a general emphasis on rice cultivation, a picture emerges of a generalized Indonesian rural culture nurtured in villages situated in a similar climate and somewhat similar terrain though not with a similar history except in recent times.

II. Proposed Direct Beneficiaries

A. Summary

1. The proposed direct beneficiaries of the Indonesian rural electrification scheme will be the rural poor: the small farmer, the daily wage laborer and the small entrepreneuer. Together they total some 90% of the 74,597 sample households surveyed in the proposed project sites.

2. Important among these direct beneficiaries are the women for much of rural entrepreneurship is in their hands.

3. Transmigrants (i.e., settlers in newly opened lands in islands outside of Java) are the predominant direct beneficiaries in Lampung and, to a lesser extent, in Luwu. In the latter site, however, many of the direct beneficiaries are, in a sense, still tribal peoples who hitherto have not had full opportunity for direct participation in national life.

4. A total of 195,000 households or an estimated total of 983,000 people in the 647 initial target villages will immediately and directly benefit from the proposed project. Spread effects will ultimately reach a population estimated to be over 10,000,000.

5. No problems are foreseen on the basis of language, religion or ethnicity. The Indonesian language is a lingua franca at all the sites; however, the vast majority of the proposed direct beneficiaries speak Javanese. The majority religion is Islam but of a liberal variety which imposes but few restrictions either on women's economic activities or on the acceptance of innovations. An ethnic heterogeneity obtains only at one site (Luwu); no group appears, however, to have imposed a hegemony.

6. The number of people who do not benefit directly from the scheme will diminish as the acceptance of electricity spreads. In the last analysis, people and enterprises who already have access to electricity will be the non-participants.

B. Identification of Proposed Direct Beneficiaries

1. Population Density of Sample Villages

Seven of the proposed project sites are located in Central Java and cover the districts (kabupaten) of Klaten, Bantul and Sleman (treated as one unit), Sragen, Pekalongan-Pemalang (treated as one unit), Magelang, Wonogiri and Banyumas-Cilacap (treated as one unit). Three other sites are located in the Outer Islands: Luwu, South Sulawesi; East Lombok, Lombok; and Lampung, South Sumatra.

The average population density of each village in these sites and the number of people per hectare of all irrigated land are:

Site	No. per sq km	No. per ha of irrigated land
Klaten	2003	36
Bantul-Sleman	1403	29
Pekalongan-Pemalang	1141	25
Sragen	1132	29
Magelang	1002	37
Wonogiri	872	31
Banyumas	791	n/a
Lombok	828	22
Lampung	590	14
Luwu	34	14

2. Types and Numbers of Proposed Direct Beneficiaries

A total of 195,000 households (comprised of an estimated 983,000 people) in 647 initial target villages will immediately and directly benefit from the project. Spread effects will also almost immediately benefit the remaining 1,500,000 people of these villages and then ripple out to the estimated remaining 8,000,000 people of the districts in which the sites are located.

A sample survey of 74,597 households at these sites showed that farmers predominate among the proposed beneficiaries, when they are classified by primary occupation of their heads. The word "primary" must be stressed for, as will be discussed later, most men make their livelihood in several different ways.

*Primary Occupation of hh. heads	No. of hh. heads	%
Farmer	44,743	60.0
Wage laborer	18,200	24.4
Salaried/Professional	6,454	8.6
Tradesman	4,078	5.5
Cash crop farmer	1,122	1.5
Total	74,597	100.0

a. Farmers: The vast majority of the farmers are small farmers: 37,045 (or 82.3% of farmers) cultivate plots of less than one hectare of land; further, among them 24,236 (or 54.1% of farmers) cultivate less than 0.5 ha. each. This must be evaluated in light of the fact that average national holding is 0.98 ha. Only 5% of farmers cultivate more than 2.0 ha. of land and they are concentrated in Lampung and Luwu where government has allotted 3-4 ha. of land to transmigrants.

In terms of the total sample, therefore, small farmers each cultivating plots of less than half-a-hectare of land amount to 32.5%. They compose the largest single

*A detailed breakdown by site is given in Annex L, Appendix 1.

group of beneficiaries and they are, by-and-large at bare subsistence level, agriculturally speaking, and must depend on secondary, tertiary and even quaternary occupations to make a living. The line between them and daily wage laborers is hard to delineate except in terms of how an individual defines himself.

b. Wage Laborers: The daily wage laborer, not necessarily landless but often the holder of a plot of land which cannot sustain his family, rarely earns above Rp. 500 a day. Earnings for permanently employed laborers ran from about Rp. 250 per day (for agricultural and other labor) to a top of Rp. 475, which included the cost of meals on the job, in a palm-oil processing plant in Lampung. (The same plant, incidentally, employed some 1,000 casual laborers, 80% of them women, at a straight Rp. 170 per day). One construction company claimed it paid Rp. 500 to Rp. 1,000 a day for laborers but this was on a one-time, crash basis.

c. Cash Crop Farmers: In general, the size of plots cultivated by cash crop farmers conform to the pattern briefly discussed above for general farmers. In Lombok, however, their holdings averaged about 3.0 ha. Because of their emphasis on cash crops (sugarcane, tobacco, jute, coconut) they are perhaps somewhat better off, in terms of cash income, than the small rice farmer.

d. Tradesmen: Shopkeepers, tradesmen, artisans and the like are more concentrated in Central Java and Lombok than in Luwu and Lampung reflecting, no doubt, the land shortage in the former areas. Most businesses and shops are run on a small scale with not more than two employees, if any. Of 4,078 tradesmen, 3,499 (86.0% of tradesmen) were classified as small enterprises. Family businesses do occur but there is a tendency for Indonesians to hire help, as business expands, rather than to mobilize relatives. They are engaged in running small food stalls and shops, in such small scale industries as the weaving of sarong and women's cummerbands, in the making of palm-leaf hats, wooden utensils and traditional farm implements, and in operating a horse-cab or a pedicab for hire.

e. Salaried and Professional: Salaried and professional people, including civil servants, amount to 6,454 heads of households (8.6% of the total sample). In general, most of them plus the few more affluent of the farmers and businessmen form the economic (and, by extension,

usually the political and social) elite of the villages. Education, however, or a reputation for wisdom, as an artiste or as a sportsman, a knowledge of Muslim law, or service in the armed forces aid in gaining entry into elite circles. The elite stratum of society is not sharply exclusive; rather, it is a part of the whole in keeping with the traditional value of concord.

f. Transmigrants: Predominant in Lampung, South Sumatra, are transmigrants, immigrants from other parts of Indonesia, who have come in search of new land. The ten sample villages in this area did not exist 20 years ago and eight of them are composed wholly of transmigrant families, principally from Java. Approximately 75% of the population of the other two villages are also transmigrants, the remainder being native Sumatrans from nearby areas. The grand total is some 6,200 transmigrant households out of 6,730.

The only other place where transmigrants were found was in the ten sample villages of Luwu, South Sulawesi, where they resided in two villages only: 502 households or 90% of one village and 300 or 50% of the second. Together these households amounted to about 12% of the total sample of 6,373. The remainder of the population was composed of peoples, still tribal in a sense, representing six ethnic groups indigenous to the area and, along with the Javanese transmigrants, living interdependently in relatively recently created large villages. Thus, to take one ethnic group as the base, Bugis live with Javanese, with Padoe, Toraja, Pamona, Wotu and Luwu. And, of course, Padoe with Pamona, Luwu with Toraja and so on.

Thus, in both places there is something of a frontier aspect in the adjustment of people to new land and to each other.

g. Women: The importance of women in the economic scheme of the village cannot be overrated. If it were not for her efforts either in support of her husband or in full charge of a small business or handicraft activity, many a village household would not be able to sustain itself economically. She fits into the pattern of the multiplicity of informal economic enterprises that a household engages in to survive and thus is definitely a leading beneficiary, though not included in the formal listing above. More will be mentioned of her role in a later section.

3. Significant Ethnic, Linguistic and Religious Affiliations

The majority ethnic group in Central Java and Lampung is Javanese. Lombok is Sasak with a few Javanese. Luwu is relatively heterogeneous with representation of six indigenous ethnic groups plus some Javanese.

As with ethnicity, Javanese is spoken in Java and Lampung with Indonesian as the second language. Sasak is spoken in Lombok; Indonesian is the second language. In Luwu, four or five languages are spoken, various predominating in one village or another or as the second language. Indonesian is the third language and serves as a lingua franca.

All sites are strongly Muslim.

Since Javanese predominate in Central Java and in Lampung (approximately 92% of the population of the site), it is assumed that land ownership, capital ownership and production system are in their hands. For the same reason, it is assumed that this is true of the Sasak in Lombok. The situation is not known in Luwu: whether one or another of the indigenous groups predominates over the other. There are a very few Chinese entrepreneurs scattered in many of the sites but they are mostly in the market or district town rather than in the villages.

No barriers, however, to the project on ethnic, linguistic or religious grounds are foreseen.

4. Possible Non-Participants

Because of the strategy adopted by USAID and the Government of Indonesia to concentrate electric connections to households within a precisely limited area at each site, the benefits of electricity will reach the rural poor. The lines will not be diffused over an extensive area to reach only those relatively affluent 10% of the population.

Despite this there will be some who cannot, or do not wish to, participate in the project.

Those who do not participate in the project in the target villages will be those who, at least initially, cannot afford it or those who already have a private generator or access to one. It is expected that desire to participate will be close to 100% in the target (and neighboring villages) especially as the advantages of electricity are demonstrated.

Some who could afford to participate may be unable to do so because of the fragility of their houses (often a reflection of fear of earthquake rather than a sign of poverty).

Since there are households who do not own bicycles or kerosene petromaxes or have access to well water, it is accepted by the villagers that there are fortunate and unfortunate and that the unfortunate can hope, and strive, to join the ranks of the fortunate. Those villages, not initially included in the scheme, will conclude that something is being done finally and will await their turn and perhaps try to speed up the process. Nothing has been taken away from them; to the contrary, they see concrete evidence that something may come to them.

Except for those areas where rural electricity cooperatives are planned (in the Outer Islands) it is very unlikely that the proposed direct beneficiaries will be involved in the planning and operation of an electricity system.

In the rural electricity cooperatives areas, they will have an avenue to engage in the planning (whether or not they freely avail themselves of the opportunity). But the general situation will enforce participation to at least some degree, even at the other sites and this is especially true for the local government representatives of the people.

III. Socio-Cultural Environment

A. Summary

No serious disruption is foreseen in Indonesian rural society because of the introduction of electricity. It will, however, hasten the process of change which is inevitable merely through the passage of time and the increasing exposure of the village to new objects and new ideas through cumulative improvement in transportation and communication. It is concluded that the rural electrification project in Indonesia is compatible with the socio-cultural environment because of:

1. The traditional value placed on group cooperation and concord which, in application, encourages village cohesion under a well-organized local administration and the establishment of such modern institutions as a system of

cooperatives which provides a durable framework for the acceptance and exploitation of innovations.

2. The pragmatic attitude towards maintenance of community projects or property that is clearly understood to belong to the community not as the responsibility of some individual or of a higher government level or body. This project will attempt to build wherever possible on a village traditional sense of joint ownership and joint responsibility (which may be extendable, through educative methods, to innovations).

3. The pragmatic attitude towards things that work or bring profit: which includes investment in kerosene petromaxes, kerosene cookers, and bicycles, the re-use of used machinery parts in different contexts, and raising of pigs.

4. The positive attitude towards work which enables the Indonesian villager and his wife to work all day long with no cultural inhibitions about engaging in manual or in several varieties of labor.

B. The Socio-Cultural Environment

1. Value: Concord and Cooperation

The life of the Indonesian villager is focused on his village (desa) as a social unit and as a physical unit. He belongs to a group of people who inhabit a given physical area which blends into and becomes part of the landscape. By and large, the village is not obtrusive in its setting and by and large the villager is not individualistic except within the limits acceptable to his group. His key value is identifiable as that of concord (or the appearance of concord) with his social and physical setting. Ideal expressions of this value can be seen in formal courtesy in manners, in adjusting to rather than combatting or controlling a relatively benign climate and terrain, in communal and cooperative activities which enhance village cohesion, and in the administration of the village.

2. Community Activities, Traditional and Modern

The construction, maintenance and repair of village or common property is the responsibility of the villagers. Voluntary labor maintains irrigation canals and channels, springs, bridges, culverts and community buildings. For example, roads immediately leading to, and within, a village are maintained by the people of the village through

communal voluntary labor. A few access roads are even tarred, as in Manjung in Klaten, and many roads within the village are paved with carefully aligned fist-sized pebbles. Bamboo pole fences delineating the property of the householder are anchored to closely spaced acacia saplings and trees (which are pollarded and kiln-burned to provide a poor grade of charcoal for cooking fuel) and many houses have kerosene wick lamp poles (looking oddly Victorian) by the gatepost.

Aside from these lamps to provide faint flickers of light along the road (and they are comforting, if not functional, on a dark night), security is maintained by a village watchman or two or, more often, a handful of volunteer youths who take turns during the night to man posts set up in key locations to sound the alarm (usually a hollow wooden cylinder) to help in cases such as fire, earthquake or sudden illness in a home. Not the least of security problems in a village deals with malevolent supernatural beings who are as real to the villagers as muggers are to New Yorkers and whose believed presence greatly inhibits movement after dark to the actual detriment of social and economic life. The village which has been active since dawn is virtually closed down by six-thirty in the evening.

One community activity which draws people at night is a performance of the village traditional orchestra (gamelan), a performance which may last all night accompanied by the enactment of drama through shadow play. The village orchestra is another, and strong, symbol of cohesion. Javanese migrants to other islands have taken their orchestra with them as a primary step in establishing a new community. In many villages there is a man or woman renowned in the district or region as a singer, a dancer, a narrator or a musician.

More modern manifestations of group cohesion are village sports teams: soccer, badminton, pingpong, volley-ball, occasionally basketball and, rarely, tennis. In the eleven villages which compose the sub-district of Godean in Sleman, Central Java, are seven village soccer clubs, not counting school teams, and six soccer fields. There are 50 badminton clubs and 68 courts and eight volley-ball and 14 pingpong clubs. Each kampung of the village often has its own soccer team and the village team is selected from the best kampung players.

Godean also has 3,115 Boy Scouts.

3. The Formal Cooperatives System of the Government and its Role in Village Life

Rooted in and integrated with this traditional concept of cooperation and concord is the system of formal cooperatives organized by the Government of Indonesia, specifically through its Directorate General of Cooperatives (DGC), Department of Manpower, Transmigration and Cooperatives.

An office of the DGC is located in the capital of each district (kabupaten) and an officer is assigned, as necessary, to each sub-district administrative center within the kabupaten. It is his job to encourage the formation, and guide the operation at least in the initial stages, of cooperatives. Later, when the cooperative is in full operation, his job may become that of occasional advisor and supervisor.

While the formation of independent cooperatives of, say, twelve or twenty persons is not precluded, such units usually tend to be integrated, or at least loosely allied, with a larger, centralized general cooperative. This larger cooperative is not necessarily based on a single village or a given number of people but on those farmers, living in one area, where aggregate paddy-fields total 600 ha. to 1,000 ha. These paddy-fields, moreover, must have a year-round supply of water and produce at least two crops. Thus the membership of a cooperative may range from about 400 to 3,000 individual and may be drawn from several villages adjacent to one another. (More correctly, their paddy-fields should be adjacent to one another.)

At a meeting of the members, held annually if the cooperative is in operation, a board of directors of at least three members is elected. Also elected at this meeting are a board of supervisors (also at least three members), to oversee the directors, and the members of a varying number of committees, responsible to the directors, who deal with such matters as the securing and control of external funds (e.g., grants from Government, loans from banks, gifts) and the welfare of members and protection of their rights.

The board of directors appoints a manager who, in turn, hires his own staff for general and financial administration and for heading service and operational sections which would variously include some or all of the following:

procurement of supplies, distribution of fertilizer and seeds, milling and marketing of rice, raising and marketing of poultry, furniture-making, brick-making, house-building, and so on. The manager gets a salary ranging from about Rp. 20,000 to about Rp. 50,000 a month. In some cooperatives he is also given a rice ration.

A special cooperative can be set up in cases where it is warranted by, for example, the importance beyond the ordinary of certain cash crops such as sugarcane, tobacco, jute, cloves and coconuts. House-building cooperatives can be found: in Lampung, groups of 20 men build each other permanent houses, pooling labor and material resources, at the rate of two per year (one after each rice harvest) and in Wonogiri a brick-maker donates 25% of his bricks to his group, seven men who build one house a year for one another. (He sells the remaining 75%) Since a farmer is often faced with the necessity, at short notice, of raising small sums of money which would make the difference between success and failure in any given year, credit cooperatives can also be found. Because of the short notice involved, the raising of these sums would be beyond the service offered by a central and general cooperative which normally actively helps its members to get bank loans.

The reasons for seeking loans can be social (a child to send to school, a wedding, a funeral) or, more often, economic (to start a stall, to purchase livestock or fertilizer, to transport special clay for tile-making, to buy thread for weaving). Interest rates are higher if the loan is for a social reason rather than economic but, in either case, they are lower than if the money were borrowed from a money-lender (whose activities are now illegal).

These special cooperatives can exist side by side with the central cooperative; they are not necessarily integrated with it as one of its operational sections. Thus there are no barriers in what might be termed the "culture of cooperatives" in regard to the formation of a rural electricity cooperative either as an autonomous unit or integrated with a larger general system so long as it conforms to the basic regulations laid down for all types of cooperatives.

In sum, the cooperatives system of Indonesia can be seen as an extension of the traditional system of

village cooperation and concord. It helps the villager cope with the exigencies of modern life and provides a framework for his acceptance of innovations. If properly introduced and clearly seen to be under the control of the villagers themselves, a rural electricity cooperative can be the vehicle for the maintenance of an electric system by the villagers themselves.

4. The Rural Administrative Framework of the Proposed Project

The basic organizations through which this project will work is the Directorate-General of Cooperatives (DGC) of the Department of Manpower, Transmigration and Cooperatives, for the three Outer Island sites, and the Perusahaan Umum Listrik Negara (PLN), the national power electric agency, for the Central Java sites.

Usual bureaucratic rivalries, not confined to Indonesia, obtain both between and within these organizations but on the regional and local levels friction is much less apparent particularly in relation to local administration authorities. They are, in brief, in descending order, the governor (gubernor) of a province, the district head (bupati), the sub-district head (camat) and the village head (lurah). The lurah is a key person in the scheme and under him are the heads of kampung (a village sub-unit of some 100 - 150 households) and under them, the heads of tetangga, a local and usually kinship unit of some 40 - 50 households.

Both the gubernor and the bupati have planning cells attached to their offices staffed by, among others, engineers, economists and administrators. These planning cells are even reflected in the staff of the lurah of a large and well-developed village who may have a "planning officer", usually his deputy, in addition to, for example, a records-keeper and secretary, the village treasurer or accountant, the controller of irrigation for rice-fields, a religious officer (who, in matters of marriage, divorce or inheritance, interprets Muslim law), and even a messenger and village watchman.

The camat who has a Volkswagen runabout at his disposal and a crank field telephone in his office can be easily reached, relatively speaking, by the bupati, but the

lurah maintains communications on a daily basis by travelling on foot, by bicycle or, if he can afford it, a Honda or Yamaha motorcycle.

The lurah's office is occasionally a large room in his own house; more often it is a separate building which is not infrequently partitioned by bamboo dividers into such areas, labelled in English, as Conference Room and Operation (sic) Room. He may have a "Data Bank" which are village demographic, social and economic records, often graphed and charted annually. The least he has are records kept in notebooks with current data chalked on blackboards on the walls of his office and based on information given him by the kampung heads (who themselves get them from kinship unit heads).

The core of successful administration is in his relationship with kampung heads and the decisions he makes in consultation (sometimes the appearance of consultation) with them. He cannot afford to ignore them (at least, not more than once) and he cannot afford to keep them uninformed. He must maintain concord, or the appearance of it. Thus he maintains a courteous and respectful relationship with them and meets with them frequently. Whether elected to his office, as happened in the past, or appointed as is the trend these days, he is responsible for the well-being of his village both socially and economically. In the last analysis, his success depends on the way he satisfies both his superiors and his villagers, not the least of which is in the maintenance of security, concord and prosperity. The burden of any scheme directly affecting the village falls on him.

A final word: in villages where electricity is already provided, a very few lurah's offices even collect the monthly charges. Usually, however, the bills are paid at the village branch (unit desa) of the Bank Rakyat Indonesia which is found in many of the larger and more centrally located villages.

5. The Villagers' Attitude Towards Work

Although there are a very few individual villages in the total sample which depend on wage labor as being the primary source of livelihood, rice growing is paramount for all the sites except Magelang, Central Java. In this one site, maize, because of its extensive cultivation in the sample villages, ranks slightly ahead of rice. Improvement in means of irrigations, however, would very likely lead to more extensive growing of rice in its higher altitude villages.

The following crops are to some degree universally found in all the sites. But the four most important, excluding rice, in order of priority in making a living as seen by the villages are:

Central Java

Klaten	:	tobacco, sugarcane, jute, maize
Wonogiri	:	cassava, peanuts, cloves, coconuts
Sragen	:	cassava, fruit, sugarcane, soybean
Magelang	:	maize, cassava, tobacco, soybean
Bantul-Sleman	:	coconuts, sugarcane, maize, soybean
Pek.-Pemalang	:	sugarcane, maize, cassava, peanuts
Banyumas	:	maize, tobacco, coconuts, cloves

Outer Islands

Lombok	:	tobacco, onions, maize, coconuts
Lampung	:	cloves, cassava, coconuts, fruit
Luwu	:	coffee, maize, fishing*, timber

An unknown villager in Lampung, when asked what the main problems of his village were, answered laconically, "Laziness". He was being too harsh on his people. While the Indonesian villager does not engage in frenetic activity, he and his family, particularly his wife, work steadily throughout the day. The raising of two crops of rice a year requires much labor and time, from preparing the seed bed to puddling the fields before transplantation, from transplanting the seedlings and controlling the level of water at various stages of growth to weeding, from harvesting to drying the grain in small neat shocks before they are hulled or taken to the rice mill. And two crops of rice a year is the minimum needed to support a farm family of five cultivating half-a-hectare of land.

In between work on his rice field, the farmer may tend to his other crops and his livestock (usually chickens and ducks), he may burn bricks or pick up a few days' work in some construction job, he may drive a pedicab or a two-wheeled horse-drawn carriage, he may carve wooden handles for farm implements, and he may even be found raising pigs

*(In Luwu, fishing was a primary or secondary source of income for 21% of its 6,373 households and 329 boats were owned as contrasted with two for all the other sites.)

for cash sales to a butchery, the ultimate market for pork being the cities of Yogyakarta, Surabaya or even Jakarta. The variety of ways to supplement his income appear endless and, indeed, if he prospers at any of the above or at blacksmithy, bean curd (tahu) making, bicycle (and even radio) repairing, or cabinet making, this may eventually become his primary occupation. Given enough capital in the form of loans or accumulated joint household savings, he is apt to branch out, on a small scale at first, into some form of entrepreneurship.

A case in point is a man in Wonogiri who initially cultivated rice; now he also sells coconuts and burns bricks. He also raises pigs, an unexpected activity (but not too uncommon, as it turned out) in a Muslim country. He buys five-day old shoats ("I buy the hungriest," he said, "they get fat quicker") of Australian origin, the parent stock having been imported by the Ministry of Agriculture.

Each shoat costs Rp. 5,000 (he borrowed money from his credit cooperative) and, after eight months' of fattening them on grain husks, bought locally, of giving them anti-biotic and Vitamin B Complex shots, of watering them ("Pigs take a lot of water"), he sells them for a maximum of Rp. 35,000 and they are transported in trucks to Jakarta. His maximum net profit is Rp. 20,000 ($48.20) per pig and "very good manure for my fields". And, in the meantime, his wife has her own business: she runs a small shop buying and selling silver and gold ornaments.

6. The Economic Role of Women in Rural Indonesia

The role of a woman in the economic support of a village household is crucial to its continuance as a unit. She may work with her husband (and a couple of employees who get paid Rp. 250 a day each) to make soybean curd for sale in nearby markets or help him in the fields. Very often she works as an agricultural laborer, especially at planting and harvesting seasons - at the latter, her pay is in the form of 20% of the rice she harvests - but also very often she runs and is in charge of her own enterprise whether it be selling garden produce at the roadside, baking pastries and crackers, manufacturing tempe (a soybean product) or raising chickens. In a Sragen market one evening five or six women were noted with flat basket trays each piled high with some 20 whole roasted chickens; and in Wangon sub-district, Banyumas, chicken sales amount to over 4,000 monthly.

The woman may engage in tailoring (an important activity in Lampung and Wonogiri), in weaving sarongs and cummerbands (especially in Klaten and Lombok), in basketry (Magelang) or in mat-making (Banyumas) but most of all she is the operator of a small shop, if general, with a small but varied inventory, if specialized perhaps only in women's apparel and cheap cosmetics, or a food stall. In Lombok, whether because local divorce customs have been reinforced by the financial independence of women, many women are heads-of-household and support themselves and their children. It must be stressed again that the women, in most cases, are not merely assisting their husbands in the operation of a small business or industry. They themselves are in charge, from acquiring raw material or an inventory of goods, manufacturing, to wholesale or retail selling. They keep the books.

And the village woman is not necessarily uneducated or illiterate. In Central Java sites, women comprised 44.1% of the graduates of elementary schools, 37.8% of junior high schools, 30.3% of senior high schools, 17.6% of academy and 7.7% of university.

IV. Willingness to Accept Electricity

A. Summary

1. The desire for the proposed electricity project of the two GOI organizations mentioned previously is directly related to national development policy. These details are given elsewhere in the project paper.

2. Desire for electricity is strongly expressed in the villages and is backed up by local authorities from the gubernor through the bupati to the kampung headmen. The surveys were the catalyst to start discussions on the possible uses of electricity and benefits perceived now, and later, will augment the willingness to accept electricity.

B. Willingness to Accept Electricity

Desire for electricity was strongly expressed in all the villages - though sometimes accompanied by cautious queries as to the cost of installation and monthly charges and a few households in occasional villages do buy electricity from owners of private diesel-powered generators. In a Wonogiri village, for instance, were 20 subscribers who each paid Rp. 2,000 for 18 kilowatt hours a month. They were

mostly owners of the larger shops, using fluorescent tubes for greater brilliance, but one line was extended to the community hall where readings of the Koran, social meetings and gamelan orchestra performances were held at night.

Additionally, almost without exception, villages foresaw no difficulty in providing the voluntary labor necessary for electrification, including transport of materials, the digging of holes for poles, and the cutting down of their trees to provide access for electric lines. Because the response was universally favorable, its tabulation is superfluous. Only one village thought it might not have the necessary vehicles to help transport materials.

The most important factor is that of benefits perceived. As the villages grow to realize the practical applicability of electricity, their pragmatism will come into play and money will be forthcoming from the informal sectors of the economy discussed at length previously. And, in circular fashion, the use of electricity even to lengthen the day will increase earnings in the informal sector.

Benefits perceived by the villagers at this time, however, are often couched in terms of lighting: for the homes, for the roads (for security), for the shops and for community centers such as schools (for night classes), community halls, mosques, health centers and, to a lesser degree, sports centers, libraries and churches. But other uses of electricity soon come to their mind. Perhaps a discussion of the benefits perceived in one site, Klaten, Central Java, will serve as an illustration.

V. Expected Benefits of Electricity

A. Summary

1. The immediate benefits of the scheme will lie in the fact that a harsh restriction (darkness) to social and economic activities will now be lifted. The villages will now have the option to engage more fully in, and extend, their normal activities with positive consequences on village morale and economic well-being. This is especially true of entrepreneurship with consequent benefit to women.

2. Moreover, many villages are now actively considering the further uses of electricity: to bring certain plots of land, hitherto unirrigated, under extensive

cultivation; for lighting the health post, the community center, the library (where it exists), the school for night adult literacy and vocational training courses, and the roads for security purposes; for lighting a community latrine; for starting a bakery; for energizing community rice mills; for pumping community water from a clean source; for chicken hatcheries; and even for sewing machines in the home.

B. Expected Benefits at Klaten, Central Java: a Microcosmic View

Benefits derived from electricity as perceived by the villagers are listed below. They summarize the responses obtained in the ten sample villages (out of 98) of Klaten, Central Java, and with the addition of observations serve to give a microcosmic view of the possible uses of electricity in rural Indonesia.

Benefits		No. of Villages Mentioning
Education:	a) Lights for night schools for adult literacy and for vocational training courses; power for demonstrations in vocational training; lights for longer school and homework hours for children.	8
	b) Lights for formal Koran reading sessions.	1
	c) Lights for the library.	1
Health:	a) Lights for the health center.	3
	b) Energy for the health center.	3
	c) Polluting effects of kerosene negated.	1
	d) Lights for public latrine (already constructed through community effort)	1
	e) "Helps birth control"	1
Convenience:	Lights for homes	10
Security:	Lights for roads	9

Benefits		No. of Villages Mentioning
Decorative:	Lights for "the whole village"	1
Economy:	a) Lights for longer working/ shopping hours	6
	b) Industries and handicrafts:	
	- Welding/blacksmithy/tool-making	5
	- Food processing, incl. rice mill	5
	- Manufacture of ice	3
	- Incubators for poultry	3
	- Saw mill	3
	- Cabinet and furniture-making	3
	- Brick/tile/cement	3
	- Water pumps	3
	- Textiles (batik)	1
	- Charging of batteries	1
	- Radio repairs	1
	- Sewing machines for tailoring	1
Entertainment:	a) Radio/TV	6
	b) Lights for sports club/community hall	2

Because experienced men are present, among the specific new enterprises which may be initiated, aside from the possible opening of new retail shops and stalls, are a bakery in the village of Karanglo and a radio repair shop and a photographer in Kahuman. New bicycle repair shops may open since there is in Klaten one bicycle to every eight persons, the highest ratio found in all the sites except Bantul-Sleman (one bicycle to 7.5 persons there).

Moreover, there are in Kahuman 165 ha. of unirrigated land which could be brought under better production if water were provided.

Existing industries and handicrafts which would benefit are:

- A soun (a kind of translucent noodle) industry on which the village of Manjung depends. The soun is exported to nearby towns and even to the city of Yogyakarta. It is mixed, dried and cut entirely by hand at present.

- A small soft drinks industry in Karanglo which uses kerosene powered machinery.

- Cabinet making in Kwaren, the products being exported to Surakarta and Yogyakarta.

- Stone-cutting and cement latticework for transoms in Gedaren.

- The products of blacksmiths (e.g., pick heads) in Padas, Bonyokan and Gedaren are exported to South Sulawesi and South Kalimantan.

- Poultry breeding in several villages where incubators are needed not only to protect hatchlings from the cold but also to hatch eggs, particularly ducks' eggs.

- There are 18 crop drying facilities (mostly tobacco) in Karanglo and Sidoharjo.

- Jetis has a number of textile weavers using handlooms (and bicycle wheels adapted as spinning wheels).

- In at least 26 households in Bonyokan, women produce tempe, a soybean product, for sale at local markets.

This kind of list can be made for every site. It is evident that rural electrification will not only assist the poor socially but also very definitely economically, particularly in the field of rural entrepreneurship.

C. Expected Benefits at Other Sites: an Overview

The picture at Klaten is reflected in all the sample villages of the other sites but with differences in detail. Against a universal background of some 400-500 small retail shops and stalls found in all the sites, such differences lie in the number found of a particular small industry. (See Appendix 8 for a listing by site of some economic enterprises.) There are, for example, 29 smithies in Bantul-Sleman and 9 in Sragen; there are 111 sawmills and lumberyards in Magelang and 4 in Pekalongan-Pemalang. The operation of minibuses for public transport is an important business in

Klaten as it is in Lombok and repair facilities are needed with concomitant electric power.

The following list gives some of the more conspicuous enterprises by site (and it must be reemphasized that only ten sample villages were surveyed at each):

Bantul-Sleman: Tile and clay pipe-making which is the main support of at least two villages; 76 rice mills (only 8 with generators); 1908 households engaged in handicrafts; 57 cabinet makers; 29 smithies.

Magelang: 11 sawmills and lumberyards (none with power); 44 cabinet makers; 165 ha. of land which could be put under irrigation.

Pekalongan-Pemalang: Over 600 small shops and stalls; 13 rice mills (none with power); 15 cabinet makers.

Sragen: 65 rice mills (3 with generators); 925 home handicrafts; 29 furniture makers.

Wonogiri: 92 lumberyards and sawmills (all with no generators). One village is already discussing plans to acquire a lift-pump to lift water from an adequate clean water source which lies on the far side of a low ridge.

Banyumas: At least 1,000 ha. of land can be brought under irrigation; the raising and selling of livestock, particularly chickens, and including sheep, is a strong economic enterprise here.

Lampung: 50 crop drying installations (excluding 3 for copra drying); tailoring is an important occupation for women here but only foot-treadle or hand-crank sewing machines can be used.

Lombok: 77 crop drying installations; 972 ha. which can be brought under irrigation; 43 sawmills (none with generators).

Luwu: Two villages in Luwu, dependent on fishing, are interested in refrigeration for their catch; 11,500 ha. could be brought under irrigation; 56 lumberyards and sawmills (none with generators); 34 rice mills and 19 smithies.

Among those qualitative effects which result from the provision of electricity, which need evaluation in the future, are:

1. The role of electrification in the supply of pure water (and of that on health conditions) to the village or even to individual homes. The case of a village (Sidoharjo) in Wonogiri has been mentioned: the community leaders have already discussed the possibility of utilizing a lift pump to obtain water from a more abundant and cleaner source. They have even called in an engineer to investigate this possibility.

In each village the majority of the houses have, or share, a well. Thus, the water table is adequate. A lift pump, however, could very well draw purer water from deeper levels.

2. At least in one area in Luwu where health education programs flourish in conjunction with the establishment of Government sponsored women's clubs, a set of indicators have been formulated by them for a "healthy home". Among them are: a refuse pit in the yard, a water-sealed latrine, a place to wash feet before entering the home, and electricity in the house.

VI. Communications as an Aid to Spread Effects

A. Summary

1. The mobility of the Indonesian villager spreads news very rapidly in given areas, aided by official channels of communication and the communications-media, particularly the radio.

2. Among the rural institutions which can be utilized for favorable propaganda are the weekly fair, the traditional drama and the village wise man.

3. While there is a tradition of maintaining community property, effort will be required to educate the people in the maintenance of an innovation.

4. An evaluation and monitoring component is needed in the proposed project to assess its progress and its results.

B. Spread Effects

The Indonesian villager is very mobile and thus word spreads very quickly in the rural areas. Within his area he travels by bicycle, motorcycle, minibus (known generally as

the Colt, the name of the most popular make), country bus, pedicab, horse-drawn carriage and bullock-cart (though this last is used more for transport of goods than for travel). The country bus and usually the minibus are confined to the main highways, along with the motorcycles and bicycles which also join the other forms of transport on back roads between, and within, villages.

The bicycle is a popular form of transport, especially in Bantul-Sleman and Klaten where there is one to every seven or eight persons. Not the least of its users are school-children, riding daily to school, especially to high schools which are found only in centrally located villages. In addition to educational requirements, the main reasons for a daily exodus from a village are to go to the place of daily wage employment, to the markets, to the health center, and to attend to business or official matters.

These people not only exchange news and gossip, although gregariousness is muted by their concept of good manners, but so do the drivers of these vehicles. A minibus driver may make five or six round-trips a day between, say, Sragen and Surakarta, picking up and dropping off passengers on the way and, at the end of his run, he relates the news of the day to his friends in Sragen.

Weekly fairs occur on a rotating basis among centrally located villages using, in Java, a five-day week. They not only constitute a formal economic rural institution but a social one where inhabitants of several villages meet and mingle on a regular basis. Many villages have set aside an area with roofed stalls which come to noisy life six times a month. Exactly half of the 100 sample villages had such reserved areas; the occasions of market days are eminently exploitable for educational messages and demonstrations.

Another traditional means which might be susceptible of use as a propaganda vehicle is the traditional dance and shadow play performances. They are apparently used, in comic or non-formal interludes, in social criticism or in extolling the virtues of proper action.

The wise man or religious leader, dukun bayi, of whom a dozen may typically be found in a village often is consulted. He can actively oppose a project and thus his support, or at least passive acquiesence, is necessary for the successful operation and completion of a project.

C. Follow-on Contacts

Follow-on contact will be necessary with the Government agencies involved and with officials at the local level. These efforts should be supported by a formal system of monitoring the project continuously and by an evaluation of results at regular intervals. Initially, educational and demonstration programs may be necessary to acquaint fully the beneficiaries with the potential uses of electricity.

The people are capable of maintaining, and do maintain, what they see as theirs, such as village roads or community springs, but are less concerned with things that fall, as they think, under Government responsibility. Thus, they will probably be more likely to maintain a cooperative electricity system than a Government one. In either case, particularly under the cooperatives, some local people will have to be trained in the necessary maintenance skills. A reservoir of skilled people which may be tapped is found to a greater or lesser degree in all sample villages (see Annex L, Appendix 8).

VII. APPENDICES
Based on Data from Ten Sample Villages at Each Site

1. Beneficiary Incidence by Site
2. Demographic Data by Site
3. Births and Deaths by Site
4. Selected Social Indicators by Site
5. Educational Level Attained as a Social Indicator by Site
6. Selected Economic Indicators by Site
7. Selected Small Economic Enterprises by Site
8. Selected Skilled Personnel by Site

Appendix 1: Beneficiary Incidence By Site

Primary condition of household head	Wonogiri No.	%	Magelang No.	%	Bantul-Sleman No.	%
A. Farmer, cultivating:						
1) less than 0.5 ha	2469	39.7	1020	32.6	4344	48.2
2) 0.5 - 0.9 ha	1781	28.7	456	14.5	595	6.6
3) 1.0 - 1.9 ha	329	5.3	78	2.5	200	2.2
4) 2.0 ha or more	31	0.5	38	1.2	58	0.6
B. Cash Crop farmer	-	-	-	-	-	-
C. Wage laborer						
1) Agricultural	824	13.3	287	9.2	1667	18.5
2) Non-agric	224	3.6	536	17.1	913	10.1
D. Tradesman, with:						
1) 0-2 employees	79	1.3	369	11.8	197	2.2
2) 3 or more employees	24	0.4	-	-	66	0.7
E. Salaries	450	7.2	347	11.1	962	10.7
Totals	6211	100.0	3131	100.0	9002	99.8

Primary occupation of household head	Klaten No.	%	Sragen No.	%	Pek.-Pem. No.	%
A. Farmer, cultivating:						
1) less than 0.5 ha	1314	24.3	1404	16.6	2703	32.1
2) 0.5 - 0.9 ha	510	9.4	1773	21.0	1168	13.8
3) 1.0 - 1.9 ha	186	3.4	450	5.3	474	5.6
4) 2.0 ha or more	24	0.4	67	0.8	119	1.4
B. Cash Crop Farmer	-	-	142	1.7	-	-
C. Wage Laborer						
1) Agricultural	992	18.3	2036	24.0	1715	20.3
2) Non-Agric	1554	28.7	811	9.6	1161	13.8
D. Tradesman, with						
1) 0-2 employees	111	2.1	628	7.4	369	4.4
2) 3 or more employees	151	2.8	98	1.1	75	0.9
E. Salaried	568	10.5	1055	12.4	641	7.6
Totals	5410	99.9	8469	99.9	8425	99.9

Appendix 1: Beneficiary Incidence By Site (cont'd)

Primary Occupation of household head	Lombok		Lampung		Luwu	
	No.	%	No.	%	No.	%
A. Farmer, cultivating:						
1) less than 0.5 ha	8984	43.0	1049	15.6	949	14.9
2) 0.5 - 0.9 ha	3009	14.4	1843	27.5	1669	26.2
3) 1.0 - 1.9 ha	1341	6.4	1305	19.4	1125	17.6
4) 2.0 ha or more	537	2.6	799	12.0	537	8.4
B. Cash Crop Farmer	682	3.3	-	-	298	4.6
C. Wage laborer						
1) Agricultural	2813	13.5	481	7.2	22	0.3
2) Non-agric	1130	5.4	345	5.1	689	10.8
D. Tradesman, with:						
1) 0 - 2 employees	1489	7.1	69	1.0	188	3.0
2) 3 or more employees	18	0.1	87	1.3	60	1.0
E. Salaried	866	4.1	729	10.9	836	13.1
Totals	20869	99.9	6707	100.0	6373	99.9

Appendix 2:

Village Demographic Data By Site
(based on 10 sample villages at each site) - General

A = Village population density: no. of persons per sq. km.

B.= Av. size of household.

C = Av. population of village.

D = Percent of children (0 - 14 yrs) in total village population.

E = Sex ratio: no. of men to 100 women.

F = Dependancy ratio : no. of dependants (ages 0 - 14 yrs and 65 or over) to 100 workers (ages 15 -64).

G = Middle-aged working ratio (no. of workers aged 45 - 64 to 100 workers aged 15 - 44).

Central Java

Sites	A	B	C	D	E	F	G
Klaten	2003	4.8	2585	34	96	63	50
Bant.-Sleman	1403	4.2	9002	33	94	63	43
Sragen	1132	4.7	3960	34	92	70	52
Pek.-Pem.	1141	5.1	4228	34	85	75	66
Magelang	1002	5.0	3253	38	96	76	44
Wonogiri	872	5.4	3230	34	105	77	46
Banyumas	791	n/a	4625	39	97	84	54
Outer Islands							
Luwu	34	5.7	3682	47	92	n/a	n/a
Lampung	590	6.0	4013	39	100	80	45
Lombok	828	4.6	9550	44	91	89	31

Appendix 3:

Village Demographic Data By Site
(based on 10 sample villages at each site)
- Births and Deaths in the Past Twelve Months

Site	Total Births	Deaths			
		Children			Total deaths incl. Adults
		Below 1	1-4 yrs	Stillborn	
Central Java					
Klaten	536	13	32	36	257
Bant.-Sleman	1968	153	61	47	613
Sragen	852	64	75	20	204
Pek.-Pemalang	891	100	89	6	514
Magelang	613	69	43	9	320
Wonogiri	707	32	78	16	254
Banyumas*	103	n/a	n/a	n/a	33
Outer Islands					
Luwu	902	81	57	16	243
Lampung	735	54	17	40	214
Lombok	1619	227	136	63	660

* Though births and deaths refer to the same period in Banyumas, the duration of the period was not specified.

Appendix 4:

Social Indicators By Site: Number of Persons per Item Listed (rounded out)

Site	Health Cent./ Hospital	Bank/Credit Coop.	Library	Sports Center
Central Java				
Bant. - Sleman	8185	8185	2500	2370
Klaten	5170	1725	3230	2585
Pek. - Pem.	14095	3845	5285	21145
Magelang	8130	4645	16265	8130
Sragen	7920	3600	7920	1800
Wonogiri	16150	1900	6460	3230
Banyumas	n/a	n/a	n/a	n/a
Outer Islands				
Lombok	15910	31825	19095	3410
Lampung	20065	10030	5730	40130
Luwu	7365	7365	12275	18410

Appendix 5:

Social Indicator: Graduates of Educational Institutions as a Percent of Total Population

Site	Elementary	Jr. High School	Sr. High School	Academy	University
Central Java					
Banyumas	44.4	2.3 (for all high schools)		0.05	n/a
Klaten	37.4	8.3	5.5	0.8	0.3
Wonogiri	36.7	4.3	2.1	0.1	0.03
Pek.-Pemalang	26.8	3.5	1.5	0.2	0.007
Bantul - Sleman	21.7	5.2	1.6	0.2	0.4
Sragen	21.6	5.3	2.6	0.3	0.04
Magelang	20.3	2.6	0.8	0.1	0.02
Outer Islands					
Lampung	26.0	5.0	1.4	0.1	0.01
Lombok	21.2	1.5	0.9	0.03	0.01
Luwu	11.6	2.6	0.5	0.04	0.005

Appendix 6:

Economic Indicators By Site: Number of People per Item Listed (decimals rounded out)

	Motor Car	Motor Cycle	Bicy-cle	Radio	Sewing Mach.	Kero-Cooker	Ha. of irrig. land
Central Java							
Bant.-Sleman	1023.0	58.5	7.5	17.0	29.0	33.0	28.5
Klaten	760.0	70.5	8.0	24.5	88.0	23.0	36.0
Sragen	1015.0	125.5	11.0	44.0	109.5	83.0	29.0
Pek.-Pem.	863.0	167.0	21.0	75.0	19.5	49.0	25.0
Magelang	739.5	189.0	66.5	47.0	86.0	25.5	37.0
Wonogiri	923.0	283.5	78.0	24.0	55.0	15.0	30.5
Banyumas	n/a	471.0	37.5	77.5	n/a	n/a	n/a
Outer Islands							
Lombok	4151.0	783.0	321.0	130.5	472.5	33.5	22.0
Lampung	743.0	189.5	11.0	21.0	n/a	n/a	14.0
Luwu	2301.0	195.0	14.5	22.0	32.0	88.5	13.5

Appendix 7:

Number of Selected Small Economic Enterprise By Site
(based on 10 sample villages each)

Site	Small Shops	Rice mills	Black smiths	Crop driers	Restau-rant	Home handi-craft	Furni-ture	Sawmill lumber
Central Java								
Bant. - Sleman	665(3)	76(8)	29	2	67	1908	57	28
Klaten	306(17)	15(12)	18(1)	18	28(3)	50	11	11
Pek.-Pem.	557(83)	13	4	1	65	263	15	4
Magelang	471(3)	10(4)	2	1	26	349	44	111
Sragen	233(13)	65(3)	9	6	42	925	29	12
Wonogiri	488(2)	11(6)	9	1	20	618	73	92
Banyumas	144 shops and 30 industries (unspec.)							
Outer Islands								
Lombok	116(2)	12(7)	13	77	20	347	101	13
Lampung	401(3)	43(4)	8	53*	37	183	50	2
Luwu	379(2)	34(1)	19	3	1	13	52	56

* Includes 3 copra drying installations

NB. Figures in brackets indicate numbers which already use electricity (private generators).

Appendix 8:

Number of Selected Skilled Personnel By Site (based on 10 sample villages each)

Site	Relig. leader	Carp-enter	Mason	Auto driver	Mecha-nic	Electri-cian	Radio repair	Bicycle repair	Doctor	Nurse	Trad. midwife	Book-keeper	Sports coach	Milit-ary man
Central Java														
Bant. - Sleman	282	736	956	171	69	35	11	80	3	22	76	38	16	395
Klaten	72	186	191	51	23	6	11	44	-	18	25	3	13	84
Pek.-Pemalang	119	233	151	187	42	21	14	41	2	13	29	4	13	120
Magelang	103	169	122	232	11	1	9	12	6	6	28	1	8	78
Cirebon	93	254	125	75	25	10	16	54	4	14	58	2	33	123
Wonogiri	39	395	316	84	22	9	14	17	-	4	41	7	19	179
Banyumas	No information available													
Outer Islands														
Lombok	408	267	96	71	41	-	13	12	2	2	106	4	18	25
Lampung	136	30	281	142	13	5	10	49	1	22	54	2	7	49
Luwu	112	184	56	33	2	-	15	23	2	49	75	-	17	223

NB. Teachers are not included as there were invariably 200-300 per site

ANNEX M-1a

A & E TEAM COSTS

Salaries			$
1	Jakarta Team Leader	42 mo. @ 35,000/yr.	122,500
1	Administrative Officer	30 Mo. @ 25,000/yr.	62,500
1	PLN Principal Design Supervisor Semarang	36 mo. @ 30,000/yr.	90,000
1	Design Engineer Semarang	18 mo. @ 30,000/yr.	45,000
1	Material Supervisor Semarang	24 mo. @ 25,000/yr.	50,000
3	Const. Supr. C. Java	90 mo. @ 30,000/yr.	225,000
1	DGC Principal Design Supervisor Jakarta	36 mo. @ 30,000/yr.	90,000
3	Resident Engineers, OI	126 mo. @ 30,000/yr.	315,000
3	Construction Supervisors, OI	72 mo. @ 30,000/yr.	180,000
15		474 Total Salaries:	(1,180,000)
	Overseas differential 25%		295,000
	Consultants 500 days @ 150/day		75,000
	Overhead, 85% on base salaries		1,003,000
		Total Salaries and Overhead:	(2,553,000)
Allowances			
	School, est. 20 children @ $ 2500		50,000
	Housing, est. avg. $ 8000/yr.		320,000
			(370,000)

ANNEX M-1b

International Travel

Est. 15x2+20 = 50 round tripsfares @ 2000	=	100,000
Home leave travel		
34 round trips	=	68,000
10 Consultants round trip	=	20,000
International per diem	=	12,000
Household effects 15 families $ 8,000 each	=	120,000
10 Headquaters Personnel Trips to Indonesia	=	20,000
		(340,000)

Internal Travel

Est. 200 @ $ 100 each	20,000
Per Diem 200x40x3 - Regular personnel	24,000
Per Diem 500x40 - Consultants	20,000
	(64,000)

Total for A&E 3,327,000

A&E
YEARLY COSTS

FY 78	Salaries 54 month	$135,000
	Differential	45,000
	Consultants	25,000
	Overhead	115,000
		(320,000)
	Allowances	
	School 8 yrs.	20,000
	Housing (Total amount for leasing)	320,000
		(340,000)
	International Travel	50,000
	Consultants Travel	8,000
	International Per Diem	3,000
	HHE	60,000
	Internal Travel	16,000
	TOTAL FY 78	$ 797,000
FY 79	Salaries 180 months	450,000
	Differential	115,000
	Consultants	35,000
	Overhead	385,000
		(985,000)
	School 8 yrs.	20,000
	Consultants Travel	10,000
	Int. Per Diem	1,000
	Internal Travel	16,000
	TOTAL FY 79	1,032,000

A & E
YEARLY COSTS

FY 80	Salaries 162 months		$405,000
	Differential		100,000
	Consultants		10,000
	Overhead		345,000
			(860,000)
	School 4 yrs.		10,000
	Consultant Travel		5,000
	Internal Travel		10,000
	International Travel (return 3 families)		10,000
	HHE		12,000
		Total FY 80	907,000
FY 81	Salaries 84 months		210,000
	Differential		52,000
	Consultants		5,000
	Overhead		180,000
			(447,000)
	International Travel		25,000
	Internal Travel		5,000
	HHE		32,000
		Total FY 81	509,000
FY 82	Salaries 12 months		25,000
	Differential		6,000
	Overhead		20,000
			(51,000)
	International Travel		15,000
	HHE		16,000
		Total FY 82	82,000

ANNEX M-1e

INDONESIAN A&E SUBCONTRACT TEAM COSTS

1. Salaries	Total Man Months	Billing Rate	Rupiah Amounts
1 Senior Engineer - Team Chief	42 mo.	517,500	21,735,000
1 Design Engineer	36	442,175	15,918,300
2 Design Engineer	48	442,175	21,224,400
2 Junior Engineer	72	136,275	9,811,800
3 Draftsmen	72	136,275	9,811,800
2 Draftsmen	84	136,275	11,447,100
1 Administrative Officer	42	173,000	7,266,000
1 Secretary	42	115,000	4,830,000
3 Typist	126	34,500	4,347,000
1 Machine Operator	42	34,500	1,449,000
2 Driver	84	34,500	2,898,000
3 Mapping Engineer	9	271,975	2,447,775
3 Staking Party Chief/Res. Engineer	117	271,975	31,811,075
3 Instrumenc man	63	136,275	8,585,325
3 Chainman	63	58,600	3,691,800
3 Recorder	63	136,275	8,585,325
9 Driver	378	34,500	13,041,000
2 Laborer	84	16,650	1,398,600
			180,299,000

	Total Man Months	Billing Rate	Rupiah Amounts
2. In-Country Transportation & Per Diem			
a. Local Transportation	50 RT @	41,000	2,050,000
b. Per Diem	320 days @	16,400	5,248,000
			7,298,000
3. Vehicle Costs			
a. Number of Vehicles required = 11			
b. Operation and Maintenance Cost @ Rp. 46,000 (month/Vehicle)			21,252,000
c. Cost of 11 Vehicles @ Rp. 2,870,000			31,570,000
d. Cost of 6 motor cycle @ Rp. 441,250			2,647,000
			55,469,000
4. Office Cost			
2600 sq. ft. @Rp2870 sq/ft (year for 3.5 yrs.)		26,117,000	
Electricity-Light & A/C 124,320 kwh @ Rp. 41		5,097,000	
Janitorial service		900,000	
		32,114,000	
5. Miscellaneous Costs			
a. Expendable office supplies		5,500,000	
b. Expendable field supplies		3,500,000	
c. Office equipment		4,889,000	
d. Transits (3)		492,000	
e. Communications, postage		4,000,000	
f. Miscellaneous Costs		1,000,000	
		19,381,000	

6. Housing

Guest House @ Luwu, Sulawesi	7,200,000
9 Staff houses (for GOI citizens) @ 1,821,000	16,389,000
Land for housing	2,000,000
	25,589,000
Contingency	31,850,000
TOTAL RUPIAH COSTS FOR COOPS TO SUPPORT A&E	352,000,000

OMT TEAM COSTS

Salaries

1	Chief of Party	48 mo. @ 35,000/yr.	$ 140,000
1	Financial Analyst	24 mo. @ 30,000/yr.	60,000
1	Training Advisor	36 mo. @ 30,000/yr.	90,000
3	Cooperative Management Advisor	144 mo. @ 30,000/yr.	360,000
1	PLN Semarang Advisor	42 mo. @ 30,000/yr.	105,000
2	PLN C.Java Advisors	48 mo. @ 30,000/yr.	120,000
9		342	875,000
	Overseas differential 25%		220,000
	Consultants 500 days @ 150/day		75,000
	NRECA Overhead 36% on base salaries		315,000
	Total Salaries and Overhead		(1,485,000)

Allowances

School, est. 20 children @ $2500		50,000
Housing est. avg. $ 8000/yr.		240,000
		(290,000)

International Travel

Est. 38 round trips @ 2000	76,000
Home leave travel 26 round trips	52,000
10 consultant round trips	20,000
International per diem	7,000
Household effects 9 families $ 8,000 each	72,000
	227,000

OMT Team Costs

Internal Travel ---------	
Est. 200 @ $100 each	20,000
Per Diem 200 x 40 x 3	24,000
	44,000
Total	2,046,000

ANNEX M-2c

TRAINING COSTS

Round Trips to US 10 x 2,000	$20,000
Per Diem 10 x 30 x 40	12,000
Round Trips to Philippines 100 x 600	60,000
Per diem 100 x 45 x 30	135,000
Tuition & Fees	30,000
	257,000

ANNEX N

PROJECT ASSUMPTIONS

LOCATION: KLATEN

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS		96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
2	NO OF NEW RESIDENTIAL CONSUMERS	2,000	8,000	8,000	7,000	5,500	4,200	2,700	2,000	1,400	1,200	1,000	800	600	400	300	200
3.	NUMBER OF CONSUMERS		10,000	18,000	25,000	30,500	34,700	37,400	39,400	40,800	42,000	43,000	43,800	44,400	44,800	45,100	45,300
4.	AVERAGE NUMBER OF CONSUMERS		6,000	14,000	21,500	27,750	32,600	36,850	38,400	40,100	41,400	42,500	43,400	44,100	44,600	44,950	45,100
5	AVERAGE KWH / MONTH		22	22	22	22	26	30	35	39	43	46	50	53	57	60	61
6	NO OF NEW COMMERCIAL CONSUMERS	250	500	400	300	200	100	100	90	90	90	90	80	80	75	50	25
7.	NUMBER OF CONSUMERS		750	1,150	1,450	1,650	1,750	1,850	1,940	2,030	2,120	3,210	2,290	2,370	2,445	2,495	2,520
8	AVERAGE NUMBER OF CONSUMERS		500	950	1,300	1,550	1,700	1,800	1,895	1,985	2,075	2,165	2,250	2,330	2,408	2,470	2,508
9	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	318	342	360	366
10.	NUMBER OF STREET LIGHTS / DESA		7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS																
12	NUMBER OF PUMPS																
13	AVERAGE NUMBER OF PUMPS																
14	AVERAGE KW / MONTH																
15	NUMBER OF HOURS / MONTH																
16	NO OF NEW GRAIN MILLS	10	10	5	3	2	2	2	2	2	2	2	2	2	2	2	2
17	NUMBER OF MILLS		20	25	28	30	32	34	36	37	38	40	42	44	46	48	50
18	AVERAGE NUMBER OF MILLS		15	22	27	28	31	33	35	36	37	39	41	43	45	47	49
19	AVERAGE KW / MONTH		12	12	13	13	14	14	15	15	16	16	17	17	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21	NO. OF NEW WATER SYSTEMS	-	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
22	NUMBER OF SYSTEMS		48	96	144	192	240	288	336	384	432	480	528	576	624	672	720
23.	AVERAGE NUMBER OF SYSTEMS		24	72	120	168	216	264	312	360	408	456	504	552	600	648	696
24	AVERAGE KW / MONTH		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
25	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO OF NEW MISCELLANEOUS	-	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4
27	NUMBER OF CONSUMERS		2	4	6	8	11	14	17	20	23	27	31	35	39	43	47
28	AVERAGE NUMBER OF CONSUMERS		1	3	5	7	9	13	16	19	22	25	29	33	37	41	45
29	AVERAGE KWH / MONTH		6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : KLATEN

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			373	775	1,144	1,423	1,886	2,319	2,823	3,235	3,581	4,000	4,428	4,763	5,151	5,459	5,597
2	LESS Cost of Power		-	232	466	684	854	1,140	1,454	1,791	2,077	2,385	2,626	2,990	3,252	3,597	3,876	4,112
3	Dist - A&G Expenses	-	-	43	48	53	72	77	82	100	102	104	122	128	130	148	149	151
4	Dist - O&M Expenses		-	51	58	64	86	92	98	120	123	125	154	154	156	178	179	181
5	Dist - Cons Expenses			69	76	86	115	122	131	160	164	166	195	205	208	237	239	241
6	Sales Expenses	-	-	9	10	11	14	15	16	20	20	21	24	26	26	30	30	30
7	Dist - Depreciation			122	136	150	162	173	182	187	190	193	200	207	209	210	212	216
8	Dist - Interest	-	-	81	91	100	108	111	111	111	111	163	160	155	151	147	146	142
9	TOTAL OPER EXPENSES	-	-	607	885	1,148	1,411	1,730	2,074	2,489	2,787	3,157	3,473	3,865	4,332	4,547	4,831	5,073
10	OPERATING MARGIN	-	-	(234)	(110)	(4)	12	156	245	334	448	424	527	563	631	604	628	524
11	PLUS Membership Fees (US $)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Interest Income			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	TOTAL ACCURAL MARGIN	-	-	(234)	(110)	(4)	12	156	245	334	448	424	527	563	631	604	628	524
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN	-	-	(234)	(110)	(4)	12	156	245	334	448	424	527	563	631	604	628	524
15	PLUS Dist - Depreciation			122	136	150	162	173	182	187	190	193	200	207	209	210	212	216
16	Gen - Depreciation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Dist - Interest	-	-	81	91	100	108	111	111	111	111	163	160	155	151	147	146	142
18	Gen - Interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	GROSS CASH MARGIN	-	-	(31)	117	246	282	440	538	632	749	780	887	925	991	961	986	882
20	LESS Debt- Service			81	91	100	108	111	111	111	111	273	273	273	273	273	284	284
21	CASH-(After Debt Service)			(112)	26	146	174	329	427	521	638	507	614	652	718	688	702	598
	RATIOS																	
22	T.I.E.R.			(1.89)	(0.21)	0.96	1.11	2.41	3.21	4.01	5.04	3.60	4.29	4.63	5.18	5.11	5.30	4.69
23	D.S.C.											2.86	3.25	3.39	3.63	3.52	3.47	3.11

PROJECT ASSUMPTIONS

LOCATION : BANTUL, CENTRAL JAVA

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS	21															
2	NO. OF NEW RESIDENTIAL CONSUMERS	2,000	7,000	6,000	5,000	4,000	2,900	2,000	1,300	1,200	900	800	800	800	500	400	400
3	NUMBER OF CONSUMERS		9,000	15,000	20,000	24,000	26,900	28,900	30,200	31,400	32,300	33,100	34,900	34,700	35,200	35,600	36,000
4	AVERAGE NUMBER OF CONSUMERS		5,500	12,000	17,500	22,000	25,450	27,900	29,550	30,800	31,850	32,700	33,500	34,300	34,950	35,400	35,800
5	AVERAGE KWH / MONTH		20	20	20	20	24	28	23	37	41	44	48	51	56	58	59
6	NO OF NEW COMMERCIAL CONSUMERS	200	500	300	200	140	120	100	80	70	70	60	60	40	20	20	20
7	NUMBER OF CONSUMERS		700	1,000	1,200	1,340	1,460	1,560	1,640	1,710	1,780	1,840	1,900	1,940	1,960	1,980	2,000
8	AVERAGE NUMBER OF CONSUMERS		450	850	1,100	1,270	1,300	1,510	1,600	1,675	1,745	1,810	1,870	1,920	1,950	1,970	1,990
9	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	274	300	310	342	360	366
10	NUMBER OF STREET LIGHTS / DESA	5	7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS	0	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12	NUMBER OF PUMPS		2	4	6	8	10	12	14	16	18	20	23	26	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16	NO. OF NEW GRAIN MILLS	15	20	10	7	2	1	-	1	-	1	-	1	-	1	-	1
17	NUMBER OF MILLS		35	45	52	54	55	55	56	56	57	57	58	58	59	59	60
18	AVERAGE NUMBER OF MILLS		25	40	49	53	55	55	56	56	57	57	58	58	59	59	60
19	AVERAGE KW / MONTH		12	12	13	13	14	14	15	15	16	16	17	17	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21	NO. OF NEW WATER SYSTEMS	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	-
22	NUMBER OF SYSTEMS		30	60	90	120	150	180	210	240	270	300	330	360	390	420	450
23	AVERAGE NUMBER OF SYSTEMS		15	45	75	105	135	165	195	225	255	295	315	345	375	405	435
24	AVERAGE KW / MONTH		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
25	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO. OF NEW MISCELLANEOUS	0	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4
27	NUMBER OF CONSUMERS		2	4	6	8	11	14	17	20	23	26	30	34	38	42	46
28	AVERAGE NUMBER OF CONSUMERS		1	3	5	7	10	13	16	19	22	25	28	32	36	40	44
29	AVERAGE KWH / MONTH		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000

STATEMENT OF OPERATIONS

(U.S. $ 1,00C)

LOCATION : BANTUL CENTRAL JAVA

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			338	671	939	1169	1464	1811	2223	2508	2840	3101	3441	3705	4027	4266	4391
2	LESS Cost of Power			223	431	665	743	980	1216	1574	1715	1960	2127	2450	2609	2954	3121	3312
3	Dist - A&G Expenses																	
4	Dist - O&M Expenses			79	97	113	155	167	181	221	226	231	270	287	291	334	336	338
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			59	70	80	88	95	100	103	105	107	112	116	117	118	119	122
8	Dist - Interest			39	47	53	59	63	67	69	70	98	102	106	107	108	109	112
9	TOTAL OPER EXPENSES			400	645	911	1045	1305	1564	1967	2116	2396	2611	2959	3124	3512	3685	3884
10	OPERATING MARGIN			(62)	26	28	124	159	247	256	392	444	490	482	581	513	81	507
11	PLUS Membership Fees (US $)											-						
12	Interest Income											-						
13	TOTAL ACCURAL MARGIN			(62)	26	28	124	159	247	256	392	444	490	482	581	513	581	507
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(62)	26	28	124	159	247	256	392	444	490	482	581	513	581	507
15	PLUS Dist - Depreciation			59	70	80	88	95	100	103	105	107	112	116	117	118	119	122
16	Gen - Depreciation		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Dist - Interest			39	47	53	59	63	67	69	70	98	102	106	107	108	109	112
18	Gen - Interest		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	GROSS CASH MARGIN			36	143	161	271	317	414	428	567	649	704	704	805	739	809	741
20	LESS Debt- Service			39	47	53	59	63	67	69	70	196	204	212	214	216	218	224
21	CASH- (After Debt Service)			(3)	96	108	212	254	347	359	427	453	500	492	591	523	591	517
	RATIOS																	
22	T.I.E.R.			(0.60)	1.55	1.53	3.10	3.52	4.68	4.71	6.60	5.53	5.80	5.55	6.43	5.75	6.33	5.53
23	D.S.C.											3.31	3.43	3.32	3.76	3.42	3.71	3.31

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : PEMALANG - PEKALONGAN

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			382	643	902	1,176	1,591	2,049	2,597	3,093	3,560	3,939	4,423	4,794	5,217	5,525	5,649
2	LESS: Cost of Power			238	407	569	715	974	1,291	1,652	1,978	2,308	2,575	2,956	3,219	3,604	3,856	4,072
3	Dist - A&G Expenses																	
4	Dist - O&M Expenses			186	202	219	287	305	328	403	417	430	507	530	538	617	621	622
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			129	140	151	162	172	182	189	196	201	207	214	216	218	219	222
8	Dist - Interest			86	93	100	108	115	121	126	130	184	190	196	198	200	201	204
9	TOTAL OPER EXPENSES			619	842	1,039	1,272	1,566	1,920	2,370	2,721	3,123	3,479	3,896	4,271	4,639	4,897	5,140
10	OPERATING MARGIN			(277)	(199)	(137)	(96)	25	129	227	372	437	460	527	523	578	628	509
11	PLUS Membership Fees (US $)																	
12	Interest Income																	
13	TOTAL ACCURAL MARGIN			(277)	(199)	(137)	(96)	25	129	227	372	437	460	527	523	578	628	509
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(277)	(199)	(137)	(96)	25	129	227	372	437	460	527	523	578	628	509
15	PLUS Dist - Depreciation			129	140	151	162	172	182	189	196	201	207	214	216	218	219	222
16	Gen - Depreciation			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Dist - Interest			86	93	100	108	115	121	126	130	184	190	196	198	200	201	204
18	Gen - Interest			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	GROSS CASH MARGIN			(62)	34	114	174	312	432	542	698	822	857	937	937	996	1,048	935
20	LESS Debt- Service			86	93	100	108	115	121	126	130	368	380	392	396	400	402	408
21	CASH - (After Debt Service)			(148)	(59)	14	66	197	311	416	568	454	477	545	541	596	646	527
	RATIOS																	
22	T.I.E.R.			(2.2)	(1.1)	(.37)	.11	1.2	2.1	2.8	3.86	3.4	3.4	3.7	3.6	3.9	4.1	3.5
23	D.S.C.											2.2	2.3	2.4	2.4	2.5	2.6	2.3

PROJECT ASSUMPTIONS

LOCATION: Pemalang/Pekalongan

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS		101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
2.	NO. OF NEW RESIDENTIAL CONSUMERS	3,000	5,000	6,000	6,000	5,300	4,800	4,300	3,600	3,000	2,400	2,100	1,700	1,300	700	300	100
3.	NUMBER OF CONSUMERS		8,000	14,000	20,000	25,300	30,100	34,400	38,000	41,000	42,400	44,500	462,0	47,500	48,300	48,600	48,700
4.	AVERAGE NUMBER OF CONSUMERS		5,500	11,000	17,000	22,650	27,700	32,250	36,200	39,500	41,700	43,450	45,350	46,850	47,900	48,450	48,650
5.	AVERAGE KWH / MONTH		20	20	20	20	24	28	33	37	41	44	48	51	55	58	59
6.	NO OF NEW COMMERCIAL CONSUMERS	300	600	400	200	185	165	150	125	105	85	65	40	20	15	10	5
7.	NUMBER OF CONSUMERS		900	1,300	1,500	1,685	1,840	1,990	2,115	2,220	2,305	2,370	2,410	2,430	2,445	2,455	2,460
8.	AVERAGE NUMBER OF CONSUMERS		600	1,100	1,250	1,593	1,763	1,915	2,053	2,168	2,263	2,338	2,390	2,420	2,438	2,450	2,458
9.	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	310	342	360	360
10.	NUMBER OF STREET LIGHTS / DESA		7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11.	NO. OF NEW IRRIGATION CONSUMERS	0	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12.	NUMBER OF PUMPS		2	4	6	8	10	12	14	16	18	20	23	26	29	32	35
13.	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14.	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15.	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16.	NO. OF NEW GRAIN MILLS	5	5	5	5	2	1	0	1	0	1	0	1	0	1	0	1
17.	NUMBER OF MILLS		10	15	20	22	23	23	24	24	25	25	26	26	27	27	28
18.	AVERAGE NUMBER OF MILLS		7	12	17	21	21	23	23	24	24	25	25	26	26	27	27
19.	AVERAGE KW / MONTH		12	12	13	13	14	14	15	15	16	16	17	17	18	18	18
20.	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21.	NO. OF NEW WATER SYSTEMS	0	51	50	51	50	51	50	51	50	51	50	51	50	51	50	51
22.	NUMBER OF SYSTEMS		51	101	152	202	253	303	354	404	455	505	556	606	657	707	758
23.	AVERAGE NUMBER OF SYSTEMS		26	76	126	172	227	274	329	379	429	480	530	581	631	682	732
24.	AVERAGE KW / MONTH		.4	.4	.4	.4	4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25.	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26.	NO OF NEW MISCELLANEOUS	0	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4
27.	NUMBER OF CONSUMERS		2	4	6	8	11	14	17	20	23	26	30	34	38	42	46
28.	AVERAGE NUMBER OF CONSUMERS		1	3	5	7	9	12	15	18	22	25	28	32	36	40	44
29.	AVERAGE KWH / MONTH		5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000

PROJECT ASSUMPTIONS

LOCATION: MAGELANG

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	NUMBER OF DESAS	83															
2	NO OF NEW RESIDENTIAL CONSUMERS	2000	7000	6000	5000	3800	2150	2300	1950	1500	1050	700	550	450	300	150	100
3	NUMBER OF CONSUMERS	2000	9000	15000	20000	23800	27300	24600	31550	33050	34100	34800	35350	35800	36100	36250	36350
4	AVERAGE NUMBER OF CONSUMERS		5500	12000	17500	[illegible]	25375	28450	30575	32300	33575	34450	35075	35575	35950	36175	36300
5	AVERAGE KWH / MONTH		20	20	20	[illegible]	24	28	33	37	41	44	48	51	55	58	59
6	NO OF NEW COMMERCIAL CONSUMERS	240	480	240	240	200	140	110	90	80	70	40	20	15	10	15	10
7	NUMBER OF CONSUMERS	240	720	960	1200	1400	1540	1650	1740	1820	1820	1930	1950	1965	1975	1990	2000
8	AVERAGE NUMBER OF CONSUMERS		480	840	1080	1300	1470	1595	1695	1780	1855	1910	1940	1958	1970	1983	1995
9	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	310	342	360	360
10	NUMBER OF STREET LIGHTS / DESA	5	7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS	0	2	2		2	2	2	2	2		2	3	3	3	3	3
12	NUMBER OF PUMPS		2	4	6	8	10	12	14	16		20	23	26	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	21	25	28	31	34
14	AVERAGE KW / MONTH		11	11	11	11		11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16	NO OF NEW GRAIN MILLS	5	15	5	5		1		1		1		1		1		1
17	NUMBER OF MILLS	5	20	25	30	30	31	31	32	32	33	33	34	34	35	35	36
18	AVERAGE NUMBER OF MILLS		13	23	28	[illegible]	31	31	32	32	33	33	34	34	35	35	36
19	AVERAGE KW / MONTH		12	12	13	[illegible]	14	14	15	15	16	16	17	17	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21	NO OF NEW WATER SYSTEMS	0	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
22	NUMBER OF SYSTEMS		42	84	126	168	210	252	294	336	378	420	462	504	546	588	630
23	AVERAGE NUMBER OF SYSTEMS		21	63	105	147	189	231	273	315	357	399	441	483	525	567	609
24	AVERAGE KW / MONTH		.4	.4	.4	.400	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO OF NEW MISCELLANEOUS	0	2	1		1			1			1			1		1
27	NUMBER OF CONSUMERS		2	3	3	4	4	4	5	5	5	6	6	6	7	7	8
28	AVERAGE NUMBER OF CONSUMERS		1	3	3	4	4	4	5	5	5	6	6	6	7	7	8
29	AVERAGE KWH / MONTH		6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : MACELANG

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			327	645	904	1,107	1,454	1,814	2,228	2,577	2,934	3,203	3,527	3,766	4,063	4,295	4,684
2	LESS Cost of Power			202	392	549	670	891	1,141	1,423	1,664	1,921	2,114	2,390	2,565	2,854	3,038	3,205
3	Dist - A&G Expenses																	
4	Dist - O&M Expenses			138	158	177	233	247	262	320	328	134	391	408	410	467	469	470
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			99	112	123	131	139	145	149	153	155	160	163	165	165	166	169
8	Dist - Interest			66	75	82	87	93	97	100	102	142	146	150	151	151	152	154
9	TOTAL OPER EXPENSES			505	737	931	1,121	1,370	1,645	1,992	2,247	2,552	2,811	3,111	3,291	3,637	3,825	3,998
10	OPERATING MARGIN			(178)	(92)	(27)	(14)	84	169	236	330	382	392	416	475	426	470	486
11	PLUS Membership Fees (US $)																	
12	Interest Income																	
13	TOTAL ACCURAL MARGIN			(178)	(92)	(27)	(14)	84	169	236	330	382	392	416	475	426	470	486
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(178)	(92)	(27)	(14)	84	169	236	330	382	392	416	475	426	470	486
15	PLUS Dist - Depreciation			99	112	123	131	139	145	149	153	155	160	163	165	165	166	169
16	Gen - Depreciation																	
17	Dist - Interest			66	75	82	87	93	97	100	102	142	146	150	151	151	152	154
18	Gen - Interest																	
19	GROSS CASH MARGIN			(13)	95	278	304	316	411	485	585	679	698	729	791	742	788	809
20	LESS Debt - Service			66	75	82	87	93	97	100	102	284	292	300	302	302	304	308
21	CASH - (After Debt Service)			(79)	20	195	217	223	314	385	483	395	406	429	489	440	484	501
	RATIOS								Amortization = Interest 9 thru 15									
22	T.I.E.R.			(1.70)	(0.23)	0.67	0.84	1.90	2.74	3.36	4.24	3.69	3.68	3.77	4.15	3.82	4.09	4.16
23	D.S.C.											2.39	2.39	2.43	2.62	2.46	2.59	2.63

PROJECT ASSUMPTIONS

LOCATION : BANYUMAS & CILACAP (PURWOKERTO)

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
2	NO. OF NEW RESIDENTIAL CONSUMERS		4,000	5,000	4,000	3,600	3,000	1,800	1,000	500	450	400	350	300	250	200	150
3	NUMBER OF CONSUMERS	2,000	6,000	11,000	15,000	18,600	21,600	23,400	24,400	24,900	25,350	25,750	26,100	26,400	26,500	26,800	27,000
4.	AVERAGE NUMBER OF CONSUMERS		4,000	7,250	13,000	16,800	20,100	22,500	23,900	24,650	25,125	25,550	25,925	26,250	26,450	26,650	26,900
5.	AVERAGE KWH / MONTH		20	20	20	20	24	28	33	37	41	44	48	51	55	58	59
6.	NO. OF NEW COMMERCIAL CONSUMERS		500	150	100	100	90	75	60	50	45	40	35	30	25	20	15
7.	NUMBER OF CONSUMERS	150	650	800	900	1000	1090	1165	1,225	1,275	1,320	1,360	1395	1425	1450	1470	1485
8	AVERAGE NUMBER OF CONSUMERS		400	725	850	950	1045	1127	1,195	1,250	1,297	1,340	1,377	1,410	1,437	1,460	1,477
9.	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	310	342	360	360
10.	NUMBER OF STREET LIGHTS / DESA		5	7	9	11	12	13	14	15	16	17	18	19	20	21	22
11.	NO. OF NEW IRRIGATION CONSUMERS	0	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12	NUMBER OF PUMPS		2	4	6	8	10	12	14	16	18	20	23	26	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14.	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16.	NO. OF NEW GRAIN MILLS		10	5	3	-	-	1	-	-	1	-	1	-	1	-	1
17.	NUMBER OF MILLS	5	15	20	23	23	23	24	24	24	25	25	26	26	27	27	28
18	AVERAGE NUMBER OF MILLS		10	18	21	23	23	23.5	24	24	24.5	25	25.5	26	26.5	27	27.5
19.	AVERAGE KW / MONTH / CONSUMER		12	12	13	13	14	14	15	15	16	16	17	17	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21.	NO. OF NEW WATER SYSTEMS	0	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
22.	NUMBER OF SYSTEMS		18	36	54	72	90	108	126	144	162	180	198	216	234	252	270
23.	AVERAGE NUMBER OF SYSTEMS		9	27	43	63	81	99	117	135	153	171	189	207	225	243	261
24.	AVERAGE KW / MONTH		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25.	NUMBER OF HOURS / MONTH / CONSUMER		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO. OF NEW MISCELLANEOUS		2	2	2	2	3	3	3	3	3	3	4	4	4	4	4
27.	NUMBER OF CONSUMERS		2	4	6	8	11	14	17	20	23	26	30	34	38	42	46
28.	AVERAGE NUMBER OF CONSUMERS		1	3	5	7	9	12	15	18	22	25	28	32	36	40	44
29.	AVERAGE KWH / MONTH / CONSUMER		5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

BANYUMAS & CILACAP

LOCATION : (PURWOKERTO)

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			235.4	428.6	714.1	824.7	110.5	1,382.6	1,685.6	1,918.8	2,115.0	2,337.7	2,579.4	2,771.7	2,982.0	3,155.0	3,248.
2	LESS Cost of Power		-	146	270	409	506	683	883	1,090	1,253	1,330	1,588	1,805	1,928	2,144	2,292	2,436
3	Dist. - A&G Expenses																	
4	Dist - O&M Expenses		-	87	99	112	150	161	174	213	217	219	255	268	270	307	309	310
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			62	70	78	85	92	97	99	101	102	105	108	108	109	109	112
8	Dist - Interest			41	47	52	57	61	64	66	67	93	96	99	99	100	100	102
9	TOTAL OPER EXPENSES			336	486	651	798	997	1,218	1,468	1,638	1,744	2,044	2,280	2,405	2,660	2,810	2,960
10	OPERATING MARGIN			(101)	(57)	63	27	108	165	218	281	411	294	299	367	322	345	288
11	PLUS Membership Fees (US$)																	
12	Interest Income																	
13	TOTAL ACCURAL MARGIN			(101)	(57)	63	27	108	165	218	281	411	294	299	367	322	345	288
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(101)	(57)	63	27	108	165	218	281	411	294	299	367	322	345	288
15	PLUS Dist - Depreciation			62	70	78	85	92	97	99	101	102	105	108	108	109	109	112
16	Gen - Depreciation			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Dist - Interest			41	47	52	57	61	64	66	67	93	96	99	99	100	100	102
18	Gen - Interest			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	GROSS CASH MARGIN			3	60	193	169	261	326	383	449	606	496	506	576	531	554	502
20	LESS Debt- Service			41	47	52	57	61	64	66	67	186	192	198	198	200	200	204
21	CASH- (After Debt Service)			(39)	20	141	112	200	262	317	382	420	304	308	376	331	354	298
	RATIOS																	
22	T.I.E.R.			(1.4)	(.1)	2.2	1.5	2.8	5.6	4.2	5.2	5.4	4.1	4.0	4.7	4.22	4.45	3.88
23	D.S.C.											3.3	2.6	2.6	2.9	1.6	2.77	2.5

PROJECT ASSUMPTIONS

LOCATION : WONOGIRI CENTRAL JAVA

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS	74															
2	NO. OF NEW RESIDENTIAL CONSUMERS	2000	5000	4000	4000	3000	3000	1500	1500	1500	1500	600	600	600	600	300	300
3.	NUMBER OF CONSUMERS		7000	11000	15000	18000	21000	22500	24000	25500	27000	27600	28200	28800	29400	29700	30000
4.	AVERAGE NUMBER OF CONSUMERS		4500	9000	13000	16000	19500	21750	23250	24750	26250	27300	27900	28500	29100	29550	29850
5.	AVERAGE KWH / MONTH		18	18	18	18	22	25	31	35	39	42	46	49	53	55	57
6	NO. OF NEW COMMERCIAL CONSUMERS	200	400	200	150	125	95	75	60	50	45	40	35	30	25	20	15
7.	NUMBER OF CONSUMERS		600	800	950	1075	1170	1245	1305	1355	1400	1440	1475	1505	1530	1550	1565
8	AVERAGE NUMBER OF CONSUMERS		400	700	875	1013	1125	1208	1275	1330	1375	1420	1458	1490	1517	1540	1557
9.	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	231	158	√2,176	300	310	342	360	366
10.	NUMBER OF STREET LIGHTS / DESA	5	7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS	0	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12	NUMBER OF PUMPS		2	4	6	8	10	12	14	16	18	20	23	24	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14.	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16.	NO. OF NEW GRAIN MILLS	5	10	5	3	1		1			1		1		1		1
17.	NUMBER OF MILLS		15	20	23	24	24	25	25	25	26	26	27	27	28	28	29
18	AVERAGE NUMBER OF MILLS		7	17	22	24	24	25	25	25	26	26	27	27	28	28	29
19	AVERAGE KW / MONTH		12	12	13	13	14	14	15	15	16	16	17	17	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21.	NO. OF NEW WATER SYSTEMS	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
22.	NUMBER OF SYSTEMS		74	111	148	185	222	259	296	333	370	407	444	481	518	555	592
23.	AVERAGE NUMBER OF SYSTEMS		55	93	129	167	204	240	278	315	352	389	426	463	500	537	574
24.	AVERAGE KW / MONTH		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
25.	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26.	NO. OF NEW MISCELLANEOUS	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
27.	NUMBER OF CONSUMERS		3	7	13	21	31	43	57	73	91	111	133	157	180	208	238
28.	AVERAGE NUMBER OF CONSUMERS		2	5	10	17	26	37	50	65	82	101	122	130	169	194	223
29	AVERAGE KWH / MONTH																

STATEMENT OF OPERATIONS

(U.S. $ '000)

LOCATION : MONOCTRI

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			252	476	659	792	1195	1349	1654	1879	2258	2545	2794	3043	3309	3488	3666
2	LESS: Cost of Power		-	136	252	427	443	638	827	1048	1302	1487	1529	1910	2090	2377	2556	2796
3	Dist - A&G Expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Dist - O&M Expenses		-	138	152	166	214	223	237	286	292	298	351	376	368	420	423	424
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			97	105	113	119	126	131	133	136	139	143	146	148	149	150	152
8	Dist. - Interest			65	70	75	79	84	87	89	91	127	131	134	135	136	137	140
9	TOTAL OPER EXPENSES			436	579	779	855	1071	1282	1556	1821	2051	2154	2555	2741	3082	3266	3512
10	OPERATING MARGIN			(184)	(103)	(120)	(63)	124	67	98	58	207	391	239	302	227	222	154
11	PLUS: Membership Fees (US $)																	
12	Interest Income																	
13	TOTAL ACCURAL MARGIN			(184)	(103)	(120)	(63)	124	67	98	58	207	391	239	302	227	222	154
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(184)	(103)	(120)	(63)	124	67	98	58	207	391	239	302	227	222	154
15	PLUS: Dist - Depreciation			97	105	113	119	126	131	133	136	139	143	146	148	149	150	152
16	Gen. - Depreciation																	
17	Dist. - Interest			65	70	75	79	84	87	89	91	127	131	134	135	136	137	140
18	Gen. - Interest																	
19	GROSS CASH MARGIN			(22)	68	68	135	334	289	320	605	473	665	1184	585	512	509	445
20	LESS: Debt- Service			65	70	75	79	84	87	89	91	127	131	134	135	136	137	140
21	CASH-(After Debt Service)			(87)	(2)	(7)	156	250	202	231	514	346	534	1050	450	376	372	305
	RATIOS																	
22	T.I.E.R.			(1.8)	(1.4)	(0.6)	(.2)	2.5	1.8	2.1	1.6	2.6	4.0	2.8	3.2	2.6	2.6	2.1
23	D.S.C.			(0.33)	0.91	0.93	1.71	3.96	3.31	4.60	6.65	3.72	5.08	8.84	4.33	3.77	3.72	3.18

PROJECT ASSUMPTIONS

LOCATION : SRAGEN - CENTRAL JAVA

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS	47															
2	NO. OF NEW RESIDENTIAL CONSUMERS		5000	4000	3500	2400	1200	1200	1200	900	900	900	900	600	600	600	600
3	NUMBER OF CONSUMERS	2500	7500	11500	15000	17400	18600	19800	21000	21900	22800	23700	24600	25200	25800	26400	27000
4	AVERAGE NUMBER OF CONSUMERS		6250	9500	13250	16200	18000	19200	20400	21450	22350	23250	24150	24900	25500	26100	26700
5	AVERAGE KWH / MONTH		18	18	18	18	22	26	31	35	39	42	46	49	53	55	57
6	NO. OF NEW COMMERCIAL CONSUMERS		350	200	150	125	105	90	75	60	45	30	30	30	30	15	15
7	NUMBER OF CONSUMERS	150	500	700	850	975	1080	1170	1245	1305	1350	1380	1410	1440	1470	1485	1500
8	AVERAGE NUMBER OF CONSUMERS		325	600	775	913	1028	1125	1208	1275	1328	1365	1395	1425	1455	1478	1493
9	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	310	342	360	360
10	NUMBER OF STREET LIGHTS / DESA	5	7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12	NUMBER OF PUMPS	0	2	4	6	8	10	12	14	16	18	20	23	26	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16	NO. OF NEW GRAIN MILLS		7	4	2	1	1		1		1		1		1	1	1
17	NUMBER OF MILLS	4	11	15	17	18	19	19	20	20	21	21	22	22	23	24	25
18	AVERAGE NUMBER OF MILLS		8	13	16	18	19	19	20	20	21	21	22	22	23	24	25
19	AVERAGE KW / MONTH		12	12	13	13	14	15	15	16	16	17	17	18	18	18	18
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21	NO. OF NEW WATER SYSTEMS		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
22	NUMBER OF SYSTEMS	47	71	95	119	143	167	191	215	239	263	287	311	335	359	383	407
23	AVERAGE NUMBER OF SYSTEMS		59	83	107	131	155	179	203	227	251	275	299	323	347	371	395
24	AVERAGE KW / MONTH		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO. OF NEW MISCELLANEOUS		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
27	NUMBER OF CONSUMERS	1	3	7	13	21	31	43	57	73	91	111	133	157	180	208	238
28	AVERAGE NUMBER OF CONSUMERS		2	5	10	17	26	37	50	65	82	101	122	130	169	194	223
29	AVERAGE KWH / MONTH		2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : SRAGEN CENTRAL JAVA

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			283	477	644	779	1006	1225	1496	1756	2012	2232	2551	2752	3006	3203	3393
2	LESS Cost of Power			158	264	351	434	583	751	949	1134	1327	1503	1772	1897	2193	2374	2607
3	Dist - A&G Expenses																	
4	Dist - O&M Expenses			102	116	127	167	174	183	220	225	229	268	372	276	318	219	322
5	Dist - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			48	81	88	93	97	101	103	105	106	108	110	111	112	113	114
8	Dist - Interest			49	54	59	62	65	67	69	70	97	99	100	102	103	104	105
9	TOTAL OPER EXPENSES			357	515	625	756	919	1102	1341	1534	1759	1978	2354	2386	2724	2910	3148
10	OPERATING MARGIN			(74)	(38)	19	23	87	123	155	222	253	254	197	366	282	293	245
11	PLUS Membership Fees (US $)																	
12	Interest Income																	
13	TOTAL ACCURAL MARGIN			(74)	(38)	19	23	87	123	155	222	253	254	197	366	282	293	245
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(74)	(38)	19	23	87	123	155	222	253	254	197	366	282	293	245
15	PLUS Dist - Depreciation			48	81	88	93	97	101	103	105	106	108	110	111	112	113	114
16	Gen - Depreciation			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Dist - Interest			49	54	59	62	65	67	69	70	97	99	100	102	103	104	105
18	Gen - Interest			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	GROSS CASH MARGIN			23	97	166	178	249	291	307	397	456	461	407	559	497	510	464
20	LESS Debt- Service			49	54	59	67	65	67	69	70	196	198	200	204	204	208	210
21	CASH - (After Debt Service)			(76)	-3	107	116	184	274	253	377	262	263	207	355	291	302	254
	RATIOS																	
22	T.I.E.R.			(0.51)	0.30	1.32	1.33	2.34	2.84	3.25	4.17	3.61	3.57	2.97	4.39	3.7	3.82	3.33
23	D.S.C.											2.35	2.33	2.04	2.74	2.41	2.45	2.21

PROJECT ASSUMPTIONS

LOCATION: LAMPUNG

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS		108	108	108	108	108	108	108	108	10.	108	108	108	108	108	108
2	NO. OF NEW RESIDENTIAL CONSUMERS	2,500	6,500	7,500	7,000	3,500	2,500	2,500	2,000	2,000	1,500	1,500	1,000	1,000	1,000	1,000	1,000
3	NUMBER OF CONSUMERS		9,000	16,500	23,500	27,000	29,500	32,000	34,000	36,000	37,500	39,000	40,000	41,000	42,000	43,000	44,000
4	AVERAGE NUMBER OF CONSUMERS		5,250	12,750	20,000	25,250	28,250	30,750	33,000	35,000	36,000	38,250	39,500	40,500	41,500	42,500	43,500
5	AVERAGE KWH / MONTH		20	20	20	20	24	28	33	37	41	44	48	51	55	58	59
6	NO. OF NEW COMMERCIAL CONSUMERS	320	1,000	300	130	100	100	60	60	60	60	60	50	50	50	50	40
7	NUMBER OF CONSUMERS		1,320	1,620	1,750	1,850	1,950	2,010	2,070	2,130	2,190	2,250	2,300	2,350	2,400	2,450	2,490
8	AVERAGE NUMBER OF CONSUMERS		820	1,470	1,685	1,800	1,900	1,980	2,040	2,100	2,160	2,220	2,275	2,325	2,375	2,425	2,470
9	AVERAGE KWH / MONTH		132	132	132	132	156	180	210	234	258	276	300	318	342	360	366
10	NUMBER OF STREET LIGHTS / DESA	5	7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
11	NO. OF NEW IRRIGATION CONSUMERS	-	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12	NUMBER OF PUMPS		2	4	6	9	10	12	14	16	18	20	23	26	29	32	35
13	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16	NO. OF NEW GRAIN MILLS	128	30	30	30	30	14	14	14	14	14	14	14	14	14	14	14
17	NUMBER OF MILLS		42	72	102	132	146	160	174	188	202	216	230	244	258	272	286
18	AVERAGE NUMBER OF MILLS		27	57	87	117	139	153	167	181	195	209	223	237	251	265	279
19	AVERAGE KW / MONTH		7.5	7.5	7.5	7.5	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1
20	NUMBER OF HOURS / MONTH		250	255	260	265	270	275	280	285	290	295	300	305	310	315	320
21	NO. OF NEW WATER SYSTEMS	-	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
22	NUMBER OF SYSTEMS		54	108	162	216	270	324	378	432	486	540	594	648	702	756	810
23	AVERAGE NUMBER OF SYSTEMS		27	81	135	189	243	297	351	405	459	513	567	621	675	729	783
24	AVERAGE KW / MONTH		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
25	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26	NO. OF NEW MISCELLANEOUS	1	3	3	3	3	3	4	4	4	4	4	5	5	5	5	5
27	NUMBER OF CONSUMERS		4	7	10	13	16	20	24	28	32	36	41	46	51	56	61
28	AVERAGE NUMBER OF CONSUMERS		2	5	8	11	14	18	22	26	30	34	39	44	49	54	59
29	AVERAGE KWH / MONTH		6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	7,500

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : LANDING

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			362	755	1,078	1,334	1,696	2,054	2,396	2,872	3,236	3,639	3,972	4,319	4,706	5,055	5,320
2	LESS Cost of Power			384	709	1,008	1,203	1,212	1,813	1,825	1,929	2,010	2,245	2,390	2,463	2,696	2,867	2,918
3	Dist - A&G Expenses			44	50	57	77	82	86	106	109	112	133	140	143	165	167	170
4	Dist - O&M Expenses			52	60	68	93	98	103	126	131	135	159	169	172	198	201	204
5	Dist - Cons Expenses			70	80	91	124	131	138	169	174	180	213	225	229	264	268	272
6	Sales Expenses			9	10	11	15	16	17	21	22	22	27	28	29	33	34	34
7	Dist - Depreciation			125	143	160	173	183	191	198	204	210	219	227	231	234	238	244
8	Dist - Interest			84	95	107	116	122	128	132	136	182	189	180	174	164	167	158
9	TOTAL OPER EXPENSES			768	1,147	1,502	1,801	1,844	2,466	2,577	2,705	2,851	3,185	3,359	3,441	3,754	3,942	4,000
10	OPERATING MARGIN			(406)	(392)	(424)	(467)	(148)	(412)	(181)	167	385	454	613	878	952	1,113	1,320
11	PLUS Membership Fee (US $)			26	47	38	27	15	13	11	9	5	11	6	5	5	5	5
12	Interest Incon			-	-	-	-	-	-	-	-	108	160	54	125	216	167	272
13	TOTAL ACCURAL MARGIN			(380)	(345)	(386)	(440)	(133)	(399)	(170)	176	498	625	673	1,008	1,173	1,285	1,597
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(380)	(345)	(386)	(440)	(133)	(399)	(170)	176	498	625	673	1,008	1,173	1,285	1,597
15	PLUS Dist - Depreciation			125	143	160	173	183	191	198	204	210	219	227	231	234	238	244
16	Gen - Depreciation			143	255	368	428	489	549	610	610	610	670	731	731	792	850	850
17	Dist - Interest			84	95	107	116	122	128	132	136	182	189	180	174	164	167	158
18	Gen - Interest			57	102	147	171	195	220	264	244	268	309	297	290	279	316	300
19	GROSS CASH MARGIN			29	250	396	448	856	689	1,014	1,370	1,768	2,012	2,108	2,434	2,642	2,836	3,149
20	LESS Debt Service			141	197	254	287	317	348	376	380	723	786	786	786	786	973	973
21	CASH (After Debt Service)			(112)	53	142	161	539	341	638	990	1,045	1,226	1,322	1,648	1,856	1,883	2,176
	RATIOS																	
22	T.I.E.R.			(1.70)	(0.75)	(0.52)	(0.53)	0.58	(0.14)	0.55	1.46	2.11	2.23	2.41	3.11	3.65	3.66	4.49
23	D.S.C.											2.45	2.36	2.65	3.10	3.36	2.94	3.24

PROJECT ASSUMPTIONS

LOCATION: LOMBOK

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS		34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
2.	NO. OF NEW RESIDENTIAL CONSUMERS	2500	6000	9000	9000	5000	2000	1500	1500	1500	1500	1200	1000	900	850	800	750
3.	NUMBER OF CONSUMERS		8,500	15,500	24,500	29,500	31,500	33,000	34,500	37,000	38,500	39,700	40,700	41,600	42,450	43,250	44,000
4.	AVERAGE NUMBER OF CONSUMERS		5,500	12,000	20,000	27,000	30,500	32,250	33,750	36,250	37,750	39,100	40,200	41,150	42,025	42,850	43,625
5.	AVERAGE KWH / MONTH		19	19	19	19	20	23	27	32	36	40	43	47	50	54	57
6.	NO. OF NEW COMMERCIAL CONSUMERS	200	600	300	200	150	100	80	80	80	70	70	70	50	50	50	50
7.	NUMBER OF CONSUMERS		800	1100	1300	1450	1550	1630	1710	1790	1860	1930	2000	2050	2100	2150	2200
8.	AVERAGE NUMBER OF CONSUMERS		500	950	1200	1375	1500	1590	1670	1750	1825	1895	1965	2025	2075	2125	2175
9.	AVERAGE KWH / MONTH																
			7	9	11	12	13	14	15	16	17	18	19	20	21	22	23
10.	NUMBER OF STREET LIGHTS / DESA	5	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
11.	NO. OF NEW IRRIGATION CONSUMERS	0	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12.	NUMBER OF PUMPS		2	4	6	8	10	12	14	16	18	20	23	26	29	32	35
13.	AVERAGE NUMBER OF PUMPS		1	3	5	7	9	11	13	15	17	19	22	25	28	31	34
14.	AVERAGE KW / MONTH		11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
15.	NUMBER OF HOURS / MONTH		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
16.	NO. OF NEW GRAIN MILLS		20	30	30	20	15	15	15	10	10	10	10	10	10	10	10
17.	NUMBER OF MILLS		30	60	90	110	125	140	155	165	175	185	195	200	210	220	230
18.	AVERAGE NUMBER OF MILLS		20	45	75	100	118	133	148	160	170	180	190	195	205	215	225
19.	AVERAGE KW / MONTH		7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8	5	8	8.0	6.5	6.5	5.5
20.	NUMBER OF HOURS / MONTH		200	205	210	215	220	225	230	235	240	245	250	255	260	265	270
21.	NO. OF NEW WATER SYSTEMS		2	3	6	9	14	18	22	26	30	34	40	46	55	65	75
22.	NUMBER OF SYSTEMS		2	5	11	20	34	52	74	100	130	164	204	250	305	370	445
23.	AVERAGE NUMBER OF SYSTEMS		1	3	8	15	27	43	63	87	115	147	184	227	278	337	408
24.	AVERAGE KW / MONTH		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25.	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26.	NO. OF NEW MISCELLANEOUS		2	2	3	3	3	3	3	4	4	4	4	4	5	5	5
27.	NUMBER OF CONSUMERS		3	5	8	11	14	17	20	24	28	32	36	40	45	50	55
28.	AVERAGE NUMBER OF CONSUMERS		2	4	7	10	13	16	19	22	26	30	34	38	43	48	53
29.	AVERAGE KWH / MONTH		3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : LOMBOK

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			259	545	863	1,140	1,306	1,546	1,842	2,244	2,592	2,944	3,206	3,497	3,777	4,082	4,353
2	LESS Cost of Power			356	643	943	1,001	1,039	1,089	1,284	1,492	1,711	1,826	2,003	2,042	2,089	2,165	2,246
3	Dist. - A&G Expenses																	
4	Dist - O&M Expenses			137	163	194	265	283	294	355	362	370	444	460	466	534	539	545
5	Dist. - Cons Expenses																	
6	Sales Expenses																	
7	Dist - Depreciation			92	109	129	145	155	160	164	167	170	178	184	186	188	190	192
8	Dist - Interest			62	75	90	100	100	100	100	100	152	142	131	120	110	101	93
9	TOTAL OPER EXPENSES			647	990	1,356	1,511	1,577	1,643	1,903	2,121	2,403	2,590	2,778	2,814	2,921	2,975	3,076
10	OPERATING MARGIN	-	-	(388)	(445)	(493)	(371)	(271)	(97)	(51)	123	189	354	428	683	856	1,107	1,277
11	PLUS Membership Fees (US.$)	-	-	42	35	45	25	10	8	8	8	8	6	5	4	4	4	4
12	Interest Income							-	-	-	-	-	-	-	-	-	-	-
13	TOTAL ACCURAL MARGIN	-	-	(346)	(410)	(448)	(346)	(261)	(89)	(53)	131	197	348	433	687	860	1,111	1,281
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN			(346)	(410)	(448)	(346)	(261)	(89)	(53)	135	197	348	433	687	860	1,111	1,281
15	PLUS Dist - Depreciation			92	109	129	145	155	160	164	167	170	178	184	186	188	190	192
16	Gen - Depreciation		-	143	257	370	370	370	370	432	485	493	554	618	618	618	618	677
17	Dist - Interest	-	-	62	75	90	100	100	100	100	100	162	142	131	120	110	101	93
18	Gen - Interest	-	-	57	103	148	148	148	148	173	197	345	256	247	223	207	192	179
19	GROSS CASH MARGIN	-	-	8	134	239	417	602	689	416	1,088	1,357	1,502	1,613	1,834	1,983	2,212	2,423
20	LESS Debt- Service			119	178	238	248	248	248	273	297	753	679	675	679	679	687	688
21	CASH - (After Debt Service)			(111)	(44)	51	169	254	441	543	791	604	823	938	1,155	1,304	1,525	1,733
	RATIOS																	
22	T.I.E.R.			(1.91)	(1.31)	(0.88)	(0.39)	(0.05)	0.64	0.80	1.44	1.40	1.87	2.15	3.01	3.71	4.79	5.71
23	D.S.C.											1.80	2.21	2.39	2.70	2.92	3.22	3.52

PROJECT ASSUMPTIONS

LOCATION: LUWU

	ITEM	INITIAL PROJECT	YEAR OF OPERATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	NUMBER OF DESAS																
2.	NO. OF NEW RESIDENTIAL CONSUMERS	4,000	4,000	4,000	4,000	2,000	2,000	2,000	2,000	2,000	1,000	1,000	1,000	1,000	1,000	11,000	1,000
3.	NUMBER OF CONSUMERS		8,000	12,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	29,000	30,000	31,000	32,000	33,000	34,000
4.	AVERAGE NUMBER OF CONSUMERS		6,000	10,000	14,000	17,000	19,000	21,000	23,000	25,000	27,000	28,500	29,500	30,500	31,500	32,500	33,500
5.	AVERAGE KWH / MONTH		18	18	18	18	19	22	25	29	39	37	41	45	49	52	55
6.	NO. OF NEW COMMERCIAL CONSUMERS	60	100	100	100	100	100	80	40	40	40	40	40	40	40	40	40
7.	NUMBER OF CONSUMERS		160	260	360	460	560	640	680	720	760	800	840	880	920	960	1,000
8.	AVERAGE NUMBER OF CONSUMERS		110	210	310	410	510	600	660	700	740	8,780	820	860	900	940	980
9.	AVERAGE KWH / MONTH		90	90	90	90	95	110	125	145	165	185	205	225	245	260	275
10.	NUMBER OF STREET LIGHTS / DESA																
11.	NO. OF NEW IRRIGATION CONSUMERS																
12.	NUMBER OF PUMPS																
13.	AVERAGE NUMBER OF PUMPS																
14.	AVERAGE KW / MONTH																
15.	NUMBER OF HOURS / MONTH																
16.	NO. OF NEW GRAIN MILLS	5	10	15	15	10	8	8	8	5	5	5	5	5	5	5	5
17.	NUMBER OF MILLS		15	30	45	55	63	71	79	84	89	94	99	104	109	114	119
18.	AVERAGE NUMBER OF MILLS		10	23	38	50	59	67	75	82	87	92	97	102	105	112	117
19.	AVERAGE KW / MONTH		7.5	7.5	7.5	7.5	7,5	7,5	7,5	7,5	8	8	8	8,5	8,5	8,5	8,5
20.	NUMBER OF HOURS / MONTH		200	205	210	215	220	225	230	235	240	245	250	255	260	265	270
21.	NO. OF NEW WATER SYSTEMS	- 0 -	2	2	2	4	6	8	10	12	14	16	18	20	22	24	26
22.	NUMBER OF SYSTEMS		2	4	6	10	16	24	34	46	60	76	94	114	136	160	186
23.	AVERAGE NUMBER OF SYSTEMS		1	3	5	.8	13	20	29	40	53	68	85	104	125	148	173
24.	AVERAGE KW / MONTH		.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
25.	NUMBER OF HOURS / MONTH		90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
26.	NO. OF NEW MISCELLANEOUS	- 0 -	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4
27.	NUMBER OF CONSUMERS		2	4	6	8	11	14	17	20	23	26	30	34	38	42	46
28.	AVERAGE NUMBER OF CONSUMERS		1	3	5	7	.9	12	15	18	22	25	28	32	36	40	44
29.	AVERAGE KWH / MONTH 10 kw 1250		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500

STATEMENT OF OPERATIONS

(U.S. $ 1,000)

LOCATION : LUVU

	ITEM	PLANNING YEAR -2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ACCURAL BASIS																	
1	OPERATING REVENUE			230	399	573	710	918	990	1199	1461	1757	2055	2303	2557	2818	3056	3300
2	LESS- Cost of Power		-	370	410	465	599	1009	1075	1140	1222	1359	1468	1483	1675	1878	2034	2056
3	Dist. - A&G Expenses	-	-															
4	Dist - O&M Expenses		-															
5	Dist. - Cons Expenses			132	145	158	206	220	231	288	299	312	371	379	386	446	455	463
6	Sales Expenses	-	-															
7	Dist - Depreciation			88	97	105	113	120	126	132	138	144	148	152	155	158	160	164
8	Dist - Interest	-	-	88	74	79	84	88	92	94	94	134	126	116	108	99	98	89
9	TOTAL OPER EXPENSES	-	-	836	726	807	1002	1437	1524	1632	1753	1949	2117	2130	2324	2581	2747	2772
10	OPERATING MARGIN	-	-	(476)	(327)	(234)	(292)	(519)	(534)	(433)	(292)	(192)	(58)	173	233	237	309	528
11	PLUS Membership Fees (US $)	-	-	40	20	20	10	10	10	10	10	10	5	5	5	5	5	5
12	Interest Income			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	TOTAL ACCURAL MARGIN	-	-	(388)	(307)	(214)	(282)	(509)	(524)	(443)	(282)	(182)	(53)	178	238	242	314	533
	CASH BASIS																	
14	TOTAL ACCURAL MARGIN	-	-	(388)	(307)	(214)	(282)	(509)	(524)	(443)	(282)	(182)	(53)	178	238	242	314	533
15	PLUS Dist - Depreciation			88	97	105	113	120	126	132	138	144	148	152	155	158	160	164
16	Gen - Depreciation		-	143	143	143	257	370	370	370	370	370	370	370	427	484	484	484
17	Dist. - Interest	-	-	88	74	79	84	88	92	94	94	134	126	116	108	99	98	89
18	Gen - Interest	-	-	57	57	57	103	148	148	148	148	180	189	164	181	197	282	222
19	GROSS CASH MARGIN	-	-	(32)	64	170	275	217	212	301	468	646	760	980	1109	1180	1338	1492
20	LESS Debt- Service			123	131	136	187	236	240	262	262	624	456	456	478	501	707	664
21	CASH-(After Debt Service)			(155)	(67)	34	88	(19)	(28)	39	226	222	304	524	630	679	631	828
	RATIOS																	
22	T.I.E.R.			(2.14)	(1.34)	(0.57)	(0.51)	(1.16)	(1.18)	(0.83)	(0.16)	0.62	0.92	1.64	1.82	1.82	1.83	2.69
23	D.S.C.											1.32	1.62	1.87	2.31	2.35	1.89	2.25

261

ANNEX O

APR 77
WASHD
SY JAKARTA PRIOR [illegible] 6253 [illegible] 738 AM '77

CONTROL: [illegible]
RECD: 02 [illegible] 1977
0738

STATE 091582

VOLAG

AIDAC

E.O. 11652: N/A

TAGS:

WORKING PAPER

ACTION: AID-15
INFO: [illegible]
D/ADM [illegible]
CHF [illegible]

SUBJECT: UPAL ELECTRIFICATION PRP

REF: JAKARTA 5052

USAID ROUTING

TO	ACT	INFO
[illegible]		
U		
[illegible]		
[illegible]		
[illegible]		
[illegible]		
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A		
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JA	ADM	
[illegible]		
DS		
[illegible]		
[illegible]		
[illegible]		

1. APAC APPROVES SUBJECT PRP ON CONDITION THAT USAID CAN DEMONSTRATE TO AID/W SATISFACTION THAT FOLLOWING ISSUES CAN BE EFFECTIVELY ADDRESSED DURING FURTHER PROJECT DEVELOPMENT. CABLED DISCUSSION OF ABOVE, AS SUPPLEMENT TO PRP, WILL BE ACCEPTABLE.

A. EQUITY/INCOME CONSIDERATIONS - RURAL ELECTRIFICATION PROGRAM APPROPRIATE FOR AID-FINANCING ONLY TO EXTENT IT WILL BE ACCESSIBLE TO AND OFFERS HIGH-PROBABILITY OF GAINS IN PRODUCTIVE EMPLOYMENT/INCOME/QUALITY OF LIFE TO LOW-INCOME RURAL FAMILIES. IT IS NOT CLEAR FROM PRP THAT SUBJECT PROJECT CAN ACHIEVE SUFFICIENT SOCIETAL PENETRATION IN SERVICE AREAS TO BENEFIT LOW-INCOME RURAL FAMILIES. WE NEED BETTER UNDERSTANDING OF MANNER IN WHICH CONNECTION/METERING/HOUSE WIRING CHARGES ARE TO BE PAID BY CONSUMER, E.G. THROUGH INITIAL OR DEFERRED PAYMENTS, TARIFF STRUCTURE, GOVERNMENT SUBSIDY, OR COMBINATION THEREOF (SEE PARA B BELOW). CAN CAPITAL AND OPERATING COSTS BE REDUCED TO LEVEL WHERE ELECTRIC SERVICE IS AFFORDABLE BY LOW-INCOME FAMILIES? IS THE PLN WILLING/ABLE TO ALTER ITS POLICY ON USER CONNECTION CHARGES AND RATES TO BRING PROJECT BENEFITS WITHIN REACH OF LOW-INCOME FAMILIES?

→B. SITE SELECTION CRITERIA - REQUEST USAID DESCRIBE METHODOLOGY AND CRITERIA FOR SELECTING PROSPECTIVE SERVICE AREAS. AT A MINIMUM, SUCH CRITERIA SHOULD PROVIDE ASSURANCE THAT (A) LOW-INCOME BENEFICIARIES WILL BE REACHED AND (B) AREAS HAVE PRE-CONDITIONS FOR COST-EFFECTIVE INVESTMENT IN RURAL ELECTRIFICATION, E.G. SUFFICIENT POPULATION DENSITY, POTENTIAL FOR SIGNIFICANT INCREASES IN AGRICULTURAL PRODUCTION, SUPPORTING INFRASTRUCTURE ALREADY EXISTING OR SOON TO BE AVAILABLE, STRUCTURE OF LOCAL ECONOMY FAVORING MULTIPLE PRODUCTIVE USES OF POWER, ETC.

2. IN ADDITION TO ISSUES IN PARA 1 ABOVE, APAC IDENTIFIED FOLLOWING ISSUES TO BE ADDRESSED IN PP:

ABILITY OF LOAN - PP DOES NOT PROVIDE FULL JUSTIFICATION OF SCALE OF EFFORT AND AMOUNT OF FUNDING PROPOSED. PP IS AMBIVALENT CONCERNING WHETHER PROJECT WILL HAVE DEMONSTRATION CHARACTER OR IS EXTENSIVE APPLICATION OF WELL-TESTED CONCEPT. GREATER COMPLEXITY OF OUTER ISLAND PROGRAM WOULD APPEAR TO ARGUE FOR SMALLER SCALE, EXPERIMENTAL APPROACH FOR AT LEAST THAT ASPECT OF PROJECT. ADDITIONAL CONSIDERATION IS ABSORPTIVE CAPACITY OF IMPLEMENTING AGENCIES FOR LARGE-SCALE EFFORT PARTICULARLY DGC FOR WHICH RURAL ELECTRIFICATION IS TOTALLY NEW VENTURE REQUIRING MAJOR STAFF BUILD-UP. FINALLY, THERE IS SUGGESTION THAT FUNDING LEVEL IS PARTIALLY BASED ON DESIRE TO MAINTAIN PARITY BETWEEN DGC AND PLN. IS SUCH PARITY REASONABLE WHEN ONE AGENCY (PLN) HAS DECIDED INITIAL ADVANTAGE IN TECHNICAL EXPERTISE AND IMPLEMENTATION CAPABILITY? CONCERN HERE IS TO EMPHASIZE THAT PP MUST CLEARLY JUSTIFY PROPOSED LEVEL OF FUNDING, NOT IMPOSE ARBITRARY LIMIT ON FUNDING.

4. AVAILABILITY OF FUNDS - EVEN IF ISSUES DISCUSSED PARA 3 ABOVE ARE SATISFACTORILY ADDRESSED, UNCERTAIN AVAILABILITY OF FY 77 FUNDS MAY POSE LIMITING FACTOR. PROBLEM MAY BE RESOLVED IN SEVERAL WAYS, E.G., OTHER DONOR CONTRIBUTIONS, PROVIDING AID FUNDS OVER TWO FISCAL YEARS, ETC. RECOMMEND USAID STRUCTURE PROJECT DESIGN IN MANNER THAT WOULD PERMIT AUTHORIZATION OF SMALLER AMOUNT IN FY 77 FOR A SELF-SUSTAINING PROJECT; IF TOTAL FUNDING NOT AVAILABLE.

5. 611(A) REQUIREMENTS - UNCLEAR FROM PRP WHETHER FEASIBILITY STUDIES AND PRELIMINARY DESIGNS WILL BE COMPLETED FOR ALL PROPOSED SERVICE SYSTEMS PRIOR TO SUBMISSION OF PP TO SATISFY 611(A) REQUIREMENTS, BELIEVE THAT PP MUST, AT A MINIMUM, (A) ESTABLISH PRELIMINARY FEASIBILITY OF ALL SERVICE AREAS, (B) PROVIDE FEASIBILITY ANALYSES, PRELIMINARY DESIGN, AND DETAILED COST ESTIMATES FOR REPRESENTATIVE NUMBER OF SYSTEMS (E.G. MORE THAN ONE) FOR EACH ADMINISTRATIVE MODEL, (C) PROVIDE COST ESTIMATES FOR REMAINING AREAS WITHIN REASONABLE LEVELS OF CONFIDENCE BASED ON APPLICATION OF SAME METHODOLOGY AND PARTIAL RESULTS OF FEASIBILITY STUDY, WITH SIGNIFICANT DIFFERENCES FROM REPRESENTATIVE AREAS ACCOUNTED FOR IN ESTIMATES), AND SCHEDULE FOR EARLY COMPLETION OF DETAILED STUDY/PLANS FOLLOWING AUTHORIZATION.

6. TECHNICAL ASSISTANCE - ANOTHER FACTOR IN 611(A) DETERMINATION IS EXTENT OF PLANNING FOR TECHNICAL ASSISTANCE. SUCCESS OF DGC, ESPECIALLY, WILL REQUIRE EFFECTIVE LEVEL OF CONSULTING SERVICES TO PROVIDE TECHNICAL ORGANIZATIONAL, AND MANAGEMENT SKILLS THAT DGC CAN ONLY DEVELOP OVER TIME AS WELL AS ON-JOB-TRAINING TO ASSIST WITH STAFF DEVELOPMENT. PLN WILL ALSO HAVE CONSULTING NEEDS, THOUGH LESS EXTENSIVE. PP SHOULD PROVIDE THOROUGH ANALYSIS OF TECHNICAL ASSISTANCE/TRAINING REQUIREMENTS AND IMPLEMENTATION PLAN FOR TECHNICAL SERVICES.

7. PRODUCTIVE/ECONOMIC BENEFITS - PRP TENDS TO EMPHASIZE CONSUMPTION/QUALITY-OF-LIFE BENEFITS OF RURAL ELECTRIFICATION. PP SHOULD PROVIDE BALANCED TREATMENT OF [illegible]

[illegible] ELECTRIC POWER TO OTHER SOURCES OF [illegible] AND EMPLOYMENT FOR LOW-INCOME FAMILIES, BOTH ON [illegible] THE FARM. WE ARE LOOKING FOR MORE THAN ILLUSTRATIVE LISTING OF PRODUCTIVE APPLICATIONS THAT ARE MADE POSSIBLE BY RURAL ELECTRIFICATION. DISCUSSION SHOULD DEAL WITH PRODUCTIVE ACTIVITIES WITH HIGH PROBABILITY OF DEVELOPING IN SPECIFIC SERVICE AREAS, GIVEN THE EXISTENCE OF ESSENTIAL LEVELS OF CRITICAL PRECONDITIONS FOR SUCCESSFUL RURAL ELECTRIFICATION PROJECTS IN THOSE AREAS.

8. ROLE OF RURAL ELECTRIFICATION IN RURAL DEVELOPMENT STRATEGY - WE ARE ALSO CONCERNED THAT RURAL ELECTRIFICATION, BY ITSELF, MAY HAVE ONLY LIMITED EFFECT ON INCREASING INCOMES AND/OR PRODUCTIVITY OF TARGET GROUPS AND MAY NOT PROVIDE SUFFICIENT STIMULUS TO AGRICULTURAL DEVELOPMENT. FOR EACH SERVICE AREA, PP SHOULD ANALYZE EXTENT TO WHICH SUPPORTING SERVICES, E.G., AGRICULTURAL EXTENSION, SMALL INDUSTRY EXTENSION, AGRIBUSINESS PROMOTION, ETC. WILL BE EFFECTIVELY FOCUSSED ON AREA TO STIMULATE PRODUCTIVE USES OF ELECTRIC POWER AND TO MAXIMUM EXTENT FEASIBLE, DEMONSTRATE THAT PLANNING FOR SUCH SERVICES IS PROCEEDING APACE WITH RURAL ELECTRIFICATION. BROADLY RURAL ELECTRIFICATION MUST BE VIEWED AS ONLY ONE OF NUMEROUS CRITICAL ELEMENTS IN RURAL DEVELOPMENT STRATEGY, WITH ATTENTION

GIVEN TO NECESSARY PRECONDITIONS AND COMPLEMENTARY SERVICES/ACTIVITIES TO ASSURE INCREASED INCOMES/WELFARE FOR TARGET BENEFICIARIES.

9. SOCIAL ANALYSIS/EVALUATION - PER REFTEL WE ARE SEARCHING FOR CONSULTANTS TO ASSIST IN PERFORMING SOCIAL SOUNDNESS ANALYSIS FOR SUBJECT PROJECT. RELATED ISSUE IS MEANS OF DESIGNING EFFECTIVE EVALUATION PROGRAM TO DETERMINE WHAT BENEFICIARY GROUPS ARE BEING REACHED AND IN WHAT WAYS THEY BENEFIT (PRP IS RELATIVELY SILENT ON EVALUATION). PP SHOULD PROVIDE THOROUGH EVALUATION PLAN, INCLUDING MEANS OF COLLECTING BASE-LINE DATA, ESTABLISHING CONTROL AREAS, AND DEVELOPING BORROWER SKILLS IN DATA COLLECTION AND ANALYSIS. WE WOULD EXPECT SOCIAL SOUNDNESS CONSULTANTS TO ASSIST IN EVALUATION PLANNING.

10. FINANCIAL VIABILITY - INITIALLY THE CONCESSIONAL TERMS OF THE AID LOAN WILL MAKE POSSIBLE SUBSIDIZED COSTS FOR LOW-INCOME BENEFICIARIES (THROUGH SOME COMBINATION OF OUTRIGHT GRANT, DIFFERENTIAL TARIFFS ADJUSTED FOR INCOME LEVEL, AND/OR LONG-TERM LOW-INTEREST CREDIT). OVER THE LONG RUN, HOWEVER, WITH WIDE-SCALE REPLICATION OF THE RURAL ELECTRIFICATION PROGRAM, HOW WILL THE PLN AND DMC, RESPECTIVELY, BE ABLE TO SUSTAIN SUCH SUBSIDIES WITHOUT UNDERMINING THEIR OWN FINANCIAL STABILITY? PLN WOULD APPEAR TO HAVE GREATER RANGE OF OPTIONS BECAUSE OF MAGNITUDE AND VARIETY OF ITS OVERALL POWER PROGRAM BUT THERE ARE STILL ONLY LIMITED NUMBER OF WAYS OF MAINTAINING SOLVENCY OF SERVICE AGENCY AND COVERING CAPITAL AND OPERATING COSTS WITHOUT PASSING FULL COSTS ON TO CONSUMER. WITH EXPANSION OF PROGRAM, HOW WOULD MAINTENANCE OF SUCH SUBSIDIES AFFECT PLN'S FINANCIAL STABILIZATION PROGRAM WORKED OUT IN AGREEMENT WITH IBRD?

11. INSTITUTIONAL ARRANGEMENTS - NATURE AND EXTENT OF GOI ENDORSEMENT OF AND COMMITMENT TO BIFURCATED APPROACH TO RURAL ELECTRIFICATION NEEDS TO BE CLARIFIED IN PP. ANALYSIS SHOULD BE ABLE TO DEMONSTRATE SUBSTANTIAL AGREEMENT AND COOPERATIVE RELATIONSHIP BETWEEN PLN, DGC, AND SECTIONS OF BAPPENAS CONCERNED WITH RURAL ELECTRIFICATION, INCLUDING ESPECIALLY THAT OUTER ISLAND AREAS RELINQUISHED BY PLN TO DGC HAVE BASIC VIABILITY FOR RURAL ELECTRIFICATION. PP SHOULD PROVIDE DETAILED ANALYSES OF ADMINISTRATIVE CAPABILITIES OF BOTH PLN AND DGC AS REINFORCED BY CONSULTING SERVICES PER PARA 6 ABOVE. FOR DGC PROGRAM, PP SHOULD ALSO DISCUSS STRATEGY FOR DEVELOPING EFFECTIVE COOP MANAGEMENT AND MEMBERSHIP PARTICIPATION.

12. LONG-RANGE AID PROGRAMING - TO WHAT EXTENT DOES USAID FORESEE SERIES OF FOLLOW-ON LOANS TO ASSIST IN FINANCING EXPANSION OF RURAL ELECTRIFICATION PROGRAM? WHAT ARE THE PROSPECTS OF FINANCING FROM IBRD, ADB, AND OTHER BILATERAL DONORS FOR LATER-STAGE RURAL ELECTRIFICATION?

13. EXPANSION OF RURAL ELECTRIFICATION PROGRAM, PARTICULARLY OUTER ISLAND PROGRAM ESTABLISHING NEW DIESEL-GENERATING FACILITIES, WILL CREATE ADDITIONAL DEMAND ON INDONESIAN OIL RESOURCES. TO WHAT EXTENT HAS THIS IMPLICATION OF RURAL ELECTRIFICATION BEEN ADDRESSED IN LONG-RANGE ENERGY PLANNING BY GOI (GIVEN POSSIBILITY THAT INDONESIA MAY BECOME NET OIL-IMPORTER IN NEXT TEN-TWENTY YEARS?

14. SEPTEL FOLLOWS REGARDING POSSIBILITY OF ADVANCE GRANT FUNDING FOR A AND E SERVICES.

CHRISTOPHER