

PD-AAE-292

UNITED STATES GOVERNMENT

4970215001503 497-0215

2-Way Memo

Subject: Project Evaluation Summary No. 81-1 for
West Java Transmission I and II Projects No.
497-0215 and 0232.

From : MD/PAV
Room B-930, N.S.
Agency for International Development
Washington, D C. 20523

INSTRUCTIONS

Use routing symbols whenever possible.
SENDER (Originator of message):
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Reply below the message, keep one.
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DATE OF MESSAGE ROUTING SYMBOL

March 10, 1981

SIGNATURE OF ORIGINATOR

TITLE OF ORIGINATOR

Evaluation Officer

INITIAL MESSAGE

FOLD

Attached is a copy of subject PES for AID/W reproduction and distribution.

Attachment: PES

REPLY MESSAGE

AGENCY OF
INTERNATIONAL
DEVELOPMENT
MAR 23 10 04 AM '81
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To : Patrick A Gage
Evaluation Officer
USAID/PRO - US Embassy
Jakarta, Indonesia



DATE OF REPLY ROUTING SYMBOL

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4970215001503

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-147

1. PROJECT TITLE W. Java Transmission I and II	2. PROJECT NUMBER 497-0215/0232	3. MISSION/AID/W OFFICE Jakarta
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) <u>FY81-1</u>		<input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY <u>73</u> B. Final Obligation Expected FY <u>73</u> C. Final Input Delivery FY <u>82</u>	A. Total \$ <u>57,600</u> B. U.S. \$ <u>36,900</u>	From (month/yr.) <u>3/80</u> To (month/yr.) <u>2/81</u> Date of Evaluation Review <u>2/25/81</u>

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p>No actions to be taken.</p> <p><u>Clearances:</u></p> <p>PTE: RCJohnson <u>RCJ</u></p> <p>PRO: PAGage <u>PG</u></p> <p>PRO: RCohen <u>RC</u></p> <p>A/DIR: RCSimpson <u>RS</u></p> <p>* GOI is providing \$20,700,000 equivalent in local funds from their own sources.</p>		

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <table style="width: 100%; margin-top: 10px;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td></td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT <table style="width: 100%; margin-top: 10px;"> <tr> <td>A.</td> <td><input checked="" type="checkbox"/> Continue Project Without Change</td> </tr> <tr> <td>B.</td> <td><input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan</td> </tr> <tr> <td>C.</td> <td><input type="checkbox"/> Discontinue Project</td> </tr> </table>	A.	<input checked="" type="checkbox"/> Continue Project Without Change	B.	<input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan	C.	<input type="checkbox"/> Discontinue Project
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C.	<input type="checkbox"/> Discontinue Project																		
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title) <p>Mr. Robert C. Simpson, A/Dir; R.C. Johnson, P.O./PTE; Mr. Patrick <u>PG</u>, Gage, PRO; Mr. Douglas D. Robertson, LA; Edi Setianto, PTE; Mr. Donald Dowling, CT Main; Mr. Rick Malchow, CT Main; Mr. Jack Whitby, CT Main.</p>	12. Mission/AID/W Office Director Approval <table style="width: 100%; margin-top: 10px;"> <tr> <td>Signature</td> <td><u>RS</u></td> </tr> <tr> <td>Type of Name</td> <td>Robert C. Simpson</td> </tr> <tr> <td>Date</td> <td><u>Apr 6, 1981</u></td> </tr> </table>	Signature	<u>RS</u>	Type of Name	Robert C. Simpson	Date	<u>Apr 6, 1981</u>												
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II. Benefit Incidence*

A. Direct Beneficiaries

	(Number)	(Who)	(Where)
Income			
Labor	2500	Construction Workers	Central and West Java
Agricultural Production			
Education/Training/Management in transmission line and substation construction.	2500	Construction Workers	Central and West Java
Medical Treatment (Reduction of Disease, available facilities/services)			
Living Conditions Improved (water, housing, sanitation, nutrition, institutions, decrease cost of living)	500,000	New Consumers	Central and West Java
Provision of Power/Transportation	500,000	New Consumers	Central and West Java

Estimated Overall Total Without Double Counting 502,500

B. General Population in an Area that indirectly benefits from:

increased availability of food _____

increased mobility in area _____

general health improvement _____

or overall economic improvement X

Overall 1,000,000

C. People in Area not affected. Why? None

D. People in Area adversely affected. How? None

* Most of these figures are not mutually exclusive and many will include people who benefit in two or more ways.

PROJECT TITLE: W. JAVA I & II

I. Impact re Section 102(d) Criteria:

- Increase Agricultural Productivity - Electricity will facilitate the use of water pumping to irrigate land that cannot now be irrigated by gravity flow. Drying and processing of crops by the use of electricity may alleviate loss due to the time presently required to dry and process.
- Reduce Infant Mortality - The future use of refrigeration to preserve food and medicines and lighting at night in schools and meeting places will allow the educating of women regarding health, sanitation and nutrition; all of which will combine to improve health and decrease infant mortality.
- Control Population Growth - The introduction of electricity into an area has evidenced, within a reasonably short period, that the birth rate decreases. The educational process again plays a large part in this.
- Promote Greater Income Distribution - The availability of electricity will encourage the introduction of appropriate industry and will allow improved production in cottage industries thereby improving the economic status of individuals involved in such activities.
- Reduce Un-Under Employment - Approximately 2500 construction workers have participated in building the system. Of these, approximately 100 will become permanent employees of PLN. The remainder constitutes a skilled work force available within the economy to build future power systems or related works.

And related criteria:

- Strengthen/Create institutions which aid social/economic development
The lighting of schools, clinics and community centers will both strengthen and create institutions supporting the social, economic, educational and health sectors.
- Improve condition of women: Social/Economic/Political
Street lighting and community meeting place lighting will allow more social functions at night. Eventually, the acquiring of labor saving devices in the home will free women from much drudgery. Many improvements such as clean running water, refrigeration and labor saving devices for both industry and the home will have beneficial social/economic impact for women.

West Java I & II - PES

13. SUMMARY - The West Java Transmission Project consists of Phase I, financed by AID Loan 497-H-028 and Phase II, financed by AID Loan 497-W-032. When completed, a 150 KV transmission line will have been installed, with related substations, between Jakarta, Bogor, Bandung, Cirebon, and Tegal. Phase I includes the portion between Tegal and Bandung; Phase II between Jakarta and Bandung.

The construction of the project is approximately 80% completed. Transmission line construction is completed. Substations construction is 37% completed and approximately 99% of all project material has been received.

Bid documents for materials and equipment were issued by Chas T. Main Engineers in the spring and summer of 1977. Evaluation of bids was completed in approximately 6 months. Signing of contracts was completed by April, 1978, but requests for and issuance of L/COMMS and L/C's were very slow. The last L/COMM was issued in August, 1978. There has been considerable trouble experienced in securing right-of-way. Also, there was difficulty in getting the local contractors to adhere to specifications for the tower foundations. After a very slow start, those problems were overcome, and performance is generally good. The contractor on West Java II was considerably better qualified and did a much better job than the contractors on Phase I. However, all foundations have met specifications.

Additional problems resulted from changes in government procedure in awarding contracts. At last, in February 1980, the GOI decided to go on multi-year funding, which will allow PLN to sign contracts with the available budget for that year.

The training program has been very successful. Approximately 120 trainees have attended formalized courses in foundation inspection, tower erection, and conductor stringing. On-the-job training is to continue throughout the project.

C.T. Main has accomplished a most commendable feat in training the PLN substation erection crews consisting of approximately 25 men. These crews are working as a well organized, cohesive, smooth functioning team and are producing a great amount of exceptionally well finished work in a short period of time. In fact, the PLN crews are so efficient that the civil works contractors are holding up erection by not completing the civil works on schedule.

14. EVALUATION METHODOLOGY - Reason for the valuation is to measure progress. This is a normal periodic evaluation. Regular site inspections have been made, and bi-weekly project construction meetings have been attended at project sites in Bandung and Bogor. Other information for the review was obtained from files and discussions with the GOI counterpart (PLN), American Engineer (MAIN), and the Indonesian Contractors.

15. PURPOSE - The specific purpose of the project is to provide a 150 KV transmission tie between Tegal and Bandung (Phase I) and between Jakarta and Bandung (Phase II) complete with related substations. The total project will provide an interconnection between West and Central Java. Completion of construction is expected by the end of 1981. When completed, PLN will have power supply facilities to provide W. Java and Central Java reliable service until reinforced by a proposed 500 KV line.

Due to the urgent need to make use of the excess power available in Cirebon, PLN and GOI had placed high priority on completing the Cirebon-Tegal line section as soon as possible. However, budget constraints and difficulties associated with awarding contracts delayed construction of this section so that it was one of the last sections completed. Completion of the entire line from Jakarta to Tegal is vitally important for system reliability.

The project will complete the transmission grid connecting Jakarta, through W. Java, to Semarang in Central Java. (The link between Pekalongan and Semarang was financed by West Germany, and that between Pekalongan and Tegal by AID Loan 024). When completed, this will permit transfer of power from generating facilities in Central Java to Jakarta and vice-versa as needs dictate. Transfer in this manner was calculated to give an economic rate of return of 19%. This is based on value of increased usage permitted by the project with 50 MW optimum transfer. Incremental costs used in arriving at this figure included deterrent of additional power/generation facilities as a result of the project.

16. EXTERNAL FACTORS - Originally the project included distribution rehabilitation in Cirebon and Bandung. Initial effort was devoted to engineering for this portion of the project. However, estimates on the costs after engineering was finished disclosed that there were insufficient funds in the Loan for transmission, substations, and distribution. Therefore, the distribution was eliminated from the project (this is now being financed by ADB). Attention was then focused on the transmission lines and substations.

Design of substations had to be altered slightly due to the necessity of incorporating American protection and communication technique/methodology/equipment into existing and planned French designed systems on the PLN transmission grid. Transmission routing had to be changed a number of times to satisfy military and local government requirements, and the usual complications were experienced in securing right-of-way from land owners. PLN cannot resort to condemnation; so persuasion and sufficient compensation for loss of productive land are the only tools that could be used to obtain the necessary property for tower foundations. Refusal to sell requires a new survey with the additional loss of time and effort.

Due to delays in the project, the rupiah devaluation in November, 1978 and the inflation through the intervening years, local costs have increased materially (with a sharp rise in late 1978 and early 1979). This has increased budgeting and funding problems which, in some cases, precluded letting contracts or continuing construction until a new year's budget was approved and funds allocated. This problem has now been alleviated, to a great degree, by the adoption of multi-year budgeting and funding for large projects.

17. INPUTS - AID is financing \$17,200,000 for design, supply and supervision of construction of the double circuit 150 KV line and related substations between Tegal and Bandung (Phase I). For the section between Jakarta and Bandung (Phase II), AID is financing \$19,700,000 for design, supply and supervision of construction of the transmission line and related substations, and also the contract for the construction of the line, only. Construction of the line completed and substations in both Phase I and II are being constructed by PLN under force account and by local contractors financed with local currency.

The GOI is providing equivalent local currency of \$12,380,000 for Phase I and \$8,320,000 for Phase II. There were insufficient funds remaining in the Loan to finance the balance of the Consultant's costs so PLN is financing such costs from their own resources.

The normal problems regarding commodities and deliveries have been experienced and one abnormal problem of having a shipment of conductor immersed in salt water occurred. Technical services and training have been timely and adequate to date. A considerable handicap of not being able to effectively supervise field forces and inspect work in progress resulted from a shortage of vehicles for use by PLN inspectors and C.T. Main field forces until the problem was alleviated by furnishing additional but still not a sufficient quantity of vehicles. This obviously reduces efficiency which has great impact on schedules. Training of inspectors and crews for tower erection, wire stringing and substation erection has been excellent.

18. OUTPUTS - The completed work is:

1. One hundred percent of the projects 316 Km of 150 KV double circuit transmission line and 37% of the projects substation work.
2. Formal training for 120 Indonesian workmen.
3. On-the-job training for 2380 Indonesian workmen.

The project is approximately 80% completed. All consulting services are expected to be completed by June, 1982. The reasons for delay are discussed in the following paragraphs. Due to the original concentration on distribution, the starting date of the transmission portion of the project was delayed. A further slippage developed as a result of the length of time between opening of bids and awarding of contracts, and contractors' performance.

There was also an unreasonably long delay in issuing L/COMMs and L/Cs after contracts had been signed. However, during this period, final staking on most of the route was completed and tower foundation poured.

A contributing factor to the erratic progress has been the turnover of the Engineer's Project Managers. The first manager was appointed on an interim basis until a permanent manager was available. The second was killed on the job. The third is now in Boston, and his replacement is the fourth and, hopefully, will be the last.

The procedure used in routing lines and procuring right-of-way have inherent built in pitfalls. Routing approval is subject to approval by the Regional Planning Board and, in some cases, by the Military. An early step in route selection and locating, prior to surveying or staking, should be the contacting of the concerned parties having approval powers to ensure that disapproval will not be forthcoming. Such procedures have not been followed. Right-of-way procurement procedures, presumably dictated by budgeting, has been to purchase tower locations throughout an area, then return at a later date to purchase land rights for the right-of-way between towers for conductor stringing. Tower foundations may be installed before right-of-way is purchased. If the right-of-way cannot be purchased, the line must be relocated and the cost of abandoned foundations is lost. Purchasing all rights in a location at one time would reveal the inability to acquire any needed right and would also allow construction to proceed in an orderly fashion in that all phases of construction; i.e., foundations, tower erection, clearing and conductor stringing; could be sequentially completed.

19. GOAL/SUBGOAL - The sector goal of PLN and GOI is to establish an inter-connected transmission system with sufficient power supply and distribution facilities to provide reliable electric service to every existing and potential customer on Java at a reasonable rate.

In the near future, PLN will install a backbone 500 KV transmission line reaching from the western edge of W. Java to the eastern edge of East Java. This line will connect the 2000 MW coal-fired Suralaya Power Plant on the west tip of Java to a proposed nuclear power plant in the proximity of the East Java - Central Java boundary. Tentative plans indicate there will be intermediate step-down substations connecting the 500 KV to the 150 KV systems at Semarang, Cibinong, Bandung and Jakarta.

20. BENEFICIARIES - This project will allow interchange of power/energy between Central Java and W. Java thru the project transmission lines and substations which will serve as the inter-connection facility. The beneficiaries who are most directly affected are the 500,000 additional customers and the 2500 Indonesian employees required for construction of the project. Of the Indonesians employed during construction, probably 100 or more will be placed on the permanent pay of PLN as operators, linemen, electricians, office workers and maintenance men. Indirectly, the local suppliers, and

their employees, of the local materials and services used during the course of construction of the project will benefit. All customers will benefit from having the additional power available and the improved system reliability resulting from the addition of these facilities. Indirectly, the entire economy will benefit from increased production as a result of this available power which should generate additional revenue of over \$10,000,000 per year within the region. The effect on agriculture, infant mortality, population growth control and income equality is impossible to determine at this time.

21. UNPLANNED EFFECTS - The project has had no unexpected impact as yet. It is unlikely there will be any noticeable effects on social structure, or environment. However, as an integral part of Java's power supply, the project will have a part in bolstering the economy by making available additional power and energy for the newly launched rural electrification program, and also for industry.

22. LESSONS LEARNED

a. Acquisition of land and right-of-way for the construction of transmission lines in Indonesia takes long periods of time and construction cannot begin until compensation issues are resolved. Any future projects of this nature should contain conditions precedent that require the GOI/PLN to take all necessary steps to complete land and right-of-way acquisition early in the project schedule.

b. There is need to have more assurance that both the Engineer and Contractor will hold the turnover of key personnel to the minimum and that qualified replacements will be forthcoming promptly. Just as this project was picking up momentum, and organization patterns were being developed, the Engineering Consultant's Project Manager was suddenly, and with only a one-month notice, taken off the job and transferred to the Home Office. No replacement was made available for overlap. Such an action results in a definite slow-down on the project and inevitable confusion. On the W. Java Project, turnover of the Project Manager has occurred three times and, obviously, sluggish implementation was the result.

c. Sufficient transportation must be provided for the Engineer's field staff, inspectors and supervisors. If necessary, the Engineer should be authorized to procure the required vehicles. Lack of sufficient transportation for the Engineer's staff has been a serious handicap on this project.

d. The prequalification of local contractors by the GOI is not always comprehensive enough to assure that a prequalified contractor has adequate financing, qualified personnel, and the expertise required to plan, schedule and manage construction works to ensure timely completion. Consequently, some of the contractors do not perform satisfactorily and the work falls behind schedule. Although the contracts contain penalty and damage clauses,

the enforcement of such clauses is not yet a common practice in Indonesia. It is essential that the GOI develop more effective contracting controls rather than continue the practice of rescheduling work and extending the date of completion. Current practices require very close monitoring of the contractor's performance in order to apply maximum managerial guidance in such situations.

23. SPECIAL COMMENTS/REMARKS - The past procedures of GOI and PLN regarding budgeting, funding, right-of-way and contracting procedures have been time consuming thereby exacerbating the project delays. Procedures in budgeting and funding have been changed to allow multi-year funding thereby alleviating some of the problems. Suggestions regarding right-of-way and contracting procedures have been made to PLN but, to date, there is no indication that existing procedures will be changed.

The TDDAs and TDD's have been extended to 6/30/81 and 3/31/82 respectively in order to complete the substation construction. PLN complied with all of the required conditions before the extensions were granted. PLN has contracted with the Consultant for continuation of consulting services required beyond the funds allocated in the Loan for such services.

Attachments: 150 KV System Map
Project CPM

RCJ/jm

BEST AVAILABLE DOCUMENT

USAID LOANS 497-H-028 and 497-W-032 WEST JAVA ELECTRIC TRANSMISSION PROJECTS I and II



