

PD-AR-445
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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE Alternative Energy Resources Development			2. PROJECT NUMBER 386-0474	3. MISSION/AID/W OFFICE Office of Project Design and Portfolio Management
5. KEY PROJECT IMPLEMENTATION DATES			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>85-1</u>	
A. First PRO-AG or Equivalent FY <u>82</u>	B. Final Obligation Expected FY <u>82</u>	C. Final Input Delivery FY <u>87</u>	<input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION 6. ESTIMATED PROJECT FUNDING A. Total \$ <u>7,285,000</u> B. U.S. \$ <u>5,000,000</u>	
			7. PERIOD COVERED BY EVALUATION From (month/yr.) <u>06/82</u> To (month/yr.) <u>09/87</u> Date of Evaluation Review <u>October 16, 1984</u>	

B. 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
1. Biomass Production - Receipt of 2 proposals from DNES - Prepare and send Scope of Work to AID/W for action - PASA to be signed with USDA Forest Service	DNES Charles Hatch AID/W	11/9/84 11/16/84 1/10/85
2. PYRENCO Gasifier - ST/EY to work with Mission and Gujarat Dairy Development Board to finalize gasifier proposal - Send Scope of Work to AID/W for action - Contract signed	ST/EY Diana Swain AID/W	11/30/84 12/15/84 02/15/85
3. Approval of final Coal Conversion sub-project	DNES	11/30/84

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS NONE	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT
<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"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P	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

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title)	12. Mission/AID/W Office Director Approval
Diana Swain Assistant Project Development Officer Peter Inhorn Mission Evaluation Officer	Signature _____ Typed Name <u>Owen Cylke</u> Date <u>October 18, 1984</u>

USAID/India
Project Evaluation Summary (PES) - Part II

Alternative Energy Resources Development (386-0474)

13. Summary

The Alternative Energy Resources Development project will expand India's technical capacity to exploit alternative energy resources and develop selected energy technologies to the application stage. Four areas for research and development have been selected, including coal and biomass conversion, biomass production, information exchange in new and renewable energy technology, and energy efficiency in industry and transportation. Collaborative sub-projects between U.S. and Indian public and private sector organizations are being implemented in each of these four areas in order to transfer existing technologies to India and develop new ones.

Long lead time required to receive GOI sub-project approval and slow AID/W action have posed problems for the project. Initial delays caused by the creation of a new implementing agency, the Department of Non-Conventional Energy Sources (DNES), have been resolved and the pace of implementation is now beginning to speed up. Although the project is still behind schedule (necessitating a one year PACD extension), substantial movement is taking place in eight sub-projects under the biomass and coal conversion components, and two sub-projects under the information exchange component.

The following summarizes project progress to date

- Coal and Biomass Conversion: Three biomass conversion and five coal conversion sub-projects have been active since early 1984. The final coal conversion sub-project has not yet been submitted by the participating Indian institution for GOI approval. A successful coal and biomass conversion workshop was sponsored in November 1983. A second workshop is planned for November 1984. This component is being implemented through a PASA with the Pittsburgh Energy Technology Center.
- Biomass Production: Approval of the proposals for this component has been delayed by the GOI since September 1982. The National Botanical Research Institute and Madurai Kamraj University, the participating Indian institutions, submitted revised proposals to the GOI in the summer of 1984. These proposals have been approved by DNES and forwarded for further GOI approval to a ministerial secretariat. Final approval is expected by mid-November. AID anticipates a PASA with the U.S. Forest Service for this component.

- Energy Efficiency in Industry and Transportation: GOI approval of this component took approximately one and a half years. Progress was further delayed by slow Washington action in processing a grant to the National Academy of Science (NAS). The grant was signed late September 1984. NAS and the Association of Indian Engineering Industries are now beginning to plan energy efficiency workshops.
- Information Exchange in New and Renewable Energy: Two sub-projects under this component are fully underway, the first being an effort between Brookhaven National Laboratory (BNL) and the Solar Thermal Energy Center for field testing of a polymer film collector and the second being an effort between Boston and Koorkee Universities to develop a mini and low head hybrid hydro electric system. A PASA was recently signed with BNL to undertake a collaborative effort with the Tata Energy Research Institute to develop a national planning model for non-conventional energy in India. The feasibility of a proposal from the Gujarat Dairy Development Corporation to test a biomass gasifier will be assessed later this year.

14. Evaluation Methodology

Evaluator reviewed project files and quarterly reports, and spoke with the project officers to gain insight into problems and status.

15. External Factors

At the time the project was designed, it was intended that the GOI Commission for Additional Sources of Energy would be the primary implementing agency. However, three months after the project agreement was signed, DNES was created and assigned responsibility for the project. Like any new organization, DNES has taken time to build an adequate staff, define responsibilities, determine priorities, and establish procedures. Unfortunately, because of this institutional immaturity, DNES has not been able to respond as quickly to the requirements of the project as we or they would have liked.

Also contributing to slow implementation has been AID/W's general sluggishness in responding to Mission requests for assistance. It took Washington five months to process the NAS grant and six months to comment on the Pyrenco gasifier proposal.

16. Inputs

A.I.D. inputs consist of financing technical assistance, study tours and commodities. There have been no significant problems, providing TA or commodities once the GOI approval hurdles have been

jumped and AID/W processing of grants and PASAs achieved. There have been, however, some internal GOI problems regarding approval of U.S. study tours.

17. Outputs

Output indicators in the log frame are specified as the number of sub-projects identified and implemented. A total of twenty sub-projects were to be established. To date, twelve sub-projects are active.

18. Project Purpose

"Expand India's technical capability to exploit its alternative energy resources and to develop selected energy technologies up to a stage of application." While none of the targets has as yet been achieved, substantial movement is evident. As outlined in the summary (no. 13), efforts are underway to field test a polymer film collector and a mini and low head hybrid hydro electric system. A national planning model for non-conventional energy in India is in the design stage and the testing of a biomass gasifier will begin early in the new year. Workshops in coal and biomass conversion and energy efficiency are being held with more scheduled for this fiscal year.

19. Goal

Project goals are threefold: "1) reduce India's dependence on oil imports; 2) reduce the rate of deforestation and; 3) increase energy efficiencies in transport and industrial sectors."

In the short term it is difficult, if not impossible, to state what progress has been made in attaining the first of these three goals. The EOPS indicator states that "R&D work in this project will have measurable impact on goal attainment in the long run (emphasis added) once technologies being developed reach a stage of commercial application." Preliminary R&D is presently underway with progress slow but steady after two full years.

There has been no movement toward attainment of the second objective since the biomass production component (under which it falls) has not yet been approved by the GOI.

The recent signing of the NAS grant should lead to the sponsorship of three joint conferences which should have a positive impact on the third goal.

20. Beneficiaries

The average Indian consumer will benefit from the development of more cost and fuel-efficient energy systems leading to a decrease in energy consumption costs. In addition, the poor, who are heavily dependent on wood as a fuel source, will benefit from adoption of new and appropriate tree varieties developed as a result of project sponsored research. Women, who are the main gatherers and users of forest products, will primarily benefit through increased availability of wood. Industry will benefit from energy efficiency measures introduced under the project. Finally, Indian scientists benefit from the exchange of information on new and renewable energy technologies.

21. Unplanned Effects

None

22. Lessons Learned

Upon brief observation, several points can be made:

1. Coordination with AID/W should be tighter. Unnecessary delays may be averted if AID/W is given strong direction and guidance as to the importance of the tasks requested of them by the Mission.
2. It is not unusual to receive GOI sub-project approval two or more years after project approval. Therefore, unrealistic goals must not be set during the first few years. Given the circumstances, it should be understood and stated from the outset that implementation may be initially laggard.

23. Special Comments or Remarks

A follow-on project will be considered by the Mission at the appropriate time.

Title of Attachments

A. Request for PACD Extension

Clearance:
RKBerry (draft)

Draft: PS: EK²vitashvili/DS^Nain: 10/13/84