ICRR 11123
Report Number : ICRR11123

ICR Review
Operations Evaluation Department

1. Project Data: Date Posted : 11/11/2001

PROJ ID : P035544		Appraisal	Actual
Project Name : Solar Home Systems		Project Costs (US$M)	118.1	3.4
Country : Indonesia		Loan/ Loan /Credit (US$M)	20	0.1
Sector (s): Board: EMT - Renewable energy (100%)		Cofinancing (US$M)	24.3	2.3
L/C Number : L4132		Board Approval (FY)	97	
Partners involved : GEF		Closing Date	04/30/2002	01/31/2001

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2. Project Objectives and Components

a. Objectives

The project's objectives are to :
(1) Provide the modern energy form of electricity to rural customers who cannot be served economically or in a timely
manner by conventional rural electrification;
(2) Facilitate participation by the private sector in advancing renewable energy commercialization;
(3) Promote environmentally sound energy resource development in Indonesia and reduce the energy sector's
dependence on fossil fuels;
(4) Strengthen Indonesia's institutional capacity to support and sustain decentralized rural electrification using solar
photovoltaics (PVs); and
(5) Mitigate emissions of C02 in Indonesia.
Project objectives were not revised during project implementation .

b. Components

Original components :
(1) Provision of credit through participating local commercial banks (PBs) to private Solar Homes Systems (SHS)
dealers for the sale and installation of 200,000 solar PV systems for homes and commercial establishments such as
small shops. This would give access to electricity to about 1 million rural people in three provinces . The GEF grant
would be provided to the SHS dealers on a per SHS unit basis, after a unit had been sold and installed .
(2) Technical assistance (TA) to (i) establish a Project Support Group (PSG) to provide assistance to SHS dealers
and end-users, to monitor and evaluate project progress, and to conduct limited SHS related training to government
officials and private sector organizations; (ii) prepare a Decentralized Rural Electrification Strategy Study and SHS

Action Plan; and (iii) assist GOI in building Indonesia's institutional capabilities for the dissemination of solar PV
technology.

Revised components : In response to the severe financial crisis that hit Indonesia at the time of project effectiveness,
the following changes were made:
(1) Sales targets were reduced from 200,000 units of minimum 50Wp to 70,000 units of 30Wp;
(2) The TA for a Decentralized Rural Electrification Study and the SHS Action Plan was replaced by TA for a
Renewable Energy for Rural Transformation Study and Action Plan . This change, arising from the increasing focus in
Indonesia and the Bank on poverty reduction, will focus the study and plan on utilizing renewable energy for social
and economic development of rural communities .

c. Comments on Project Cost, Financing and Dates

Actual project costs were US$3.4 million, only about 3% of the original estimate at appraisal of US$ 118.1 million.
Total actual costs consist of : US$0.1 million of the IBRD loan, US$2.3 million of GEF grant, US$0.3 million of
GOI/BPPT contribution, US$0.1 million from participating banks, and US$ 0.6 million from dealers and end-users. The
IBRD loan was closed on January 31, 2001, fifteen months ahead of schedule . The project was reconfigured as a
stand-alone GEF project with the GEF grant reduced from US$ 24.3 million to US$11 million, and the project closing
extended by two years to April 30, 2004.

3. Achievement of Relevant Objectives:

(1) Provide the modern energy form of electricity to rural customers who cannot be served economically or in a
timely manner by conventional rural electrification : This objective was negligibly achieved . As of the end 2000, only
1,349 units were installed, serving about 6,000 people compared to appraisal targets of 200,000 units serving about
1 million people.
(2) Facilitate participation by the private sector in advancing renewable energy commercialization : This objective
was modestly achieved. Only one dealer, compared to the 5-6 dealers identified at appraisal, carried out the
installations. However, the project provided assistance and training to potential dealers on business development
plans, direct sales, financial management, inventory controls and other good business practices . The project also
encouraged local Indonesian firms to manufacture "balance of systems" components of SHS, had them tested on a
grant basis at international laboratories to check whether they met the project's technical specifications, and
arranged for technical support from interested international organizations to improve their quality .
(3) Promote environmentally sound energy resource development in Indonesia and reduce the energy sector's
dependence on fossil fuels : This objective was negligibly achieved . As a result of the low number of unit installations, only 3707 kiloliters of fossil fuel is expected to be conserved, compared to an estimate of 546,720
kiloliters at appraisal.
(4) Strengthen Indonesia's institutional capacity to support and sustain decentralized rural electrification using

solar photovoltaics : This objective was substantially achieved . Strict technical criteria and procedures for testing and
certification of SHS units were established . Domestic testing and certification capabilities were developed through
staff training and installation of state -of-the-art facilities within the Technical Implementation Unit and Energy
Technology Laboratory (LSDE) of the Indonesian Agency for Assessment and Application of Technology (BPPT). As
a result, LSDE was awarded ISO 25 accreditation. Furthermore, participating banks have benefited from TA to help
familiarize them with SHS technology and markets and how to handle loans for SHS vendors and isolated rural
end-users. SHS dealers and suppliers were instructed on market and business development .
(5) Mitigate emissions of CO 2 in Indonesia : This objective was negligibly achieved . Only 9,000 tons of CO2 were
abated, compared to the appraisal target of 1.3 million tons.
4. Significant Outcomes/Impacts:
(1) Some of the innovative design features of the project have been utilized in other Bank /GEF projects. These
include end-user audits, the provision of business development services to dealers, and an administrative system for
calculating and paying GEF grants to dealers, linked to marked based sales performance and having a project scale
that enables a clear commercial exit strategy .
(2) The technical standards formulated for this project are now being used, with adaptations, in a number of other
countries. They are also being used by the Photovoltaic Global Approval Program that is developing a widely
accepted Seal and Mark of quality .
5. Significant Shortcomings (including non-compliance with safeguard policies):
(1) The banking sector crisis prevented two of the four PBs identified at appraisal from entering into credit
agreements with SHS dealers. The other two imposed a credit agreement condition of a cash deposit equivalent to
100% of the face value of the credit, which only one dealer was able to meet .
(2) The sharp depreciation of the Rupiah led to significant increases in the retail prices of SHS units as well as
consumer essentials, greatly reducing consumer willingness and ability to pay for units .

6. Ratings :	ICR	OED Review	Reason for Disagreement /Comments
	Outcome : Unsatisfactory	Unsatisfactory	
	Institutional Dev .: High	Substantial	The ICR rates IDI as 'high' in Section 2. Principal Performance Ratings but as 'substantial' in the text of Section 4.5.1 IDI. OED has downgraded IDI to 'substantial' for the following reasons : While the project has significantly strengthened the national technical capacity for testing and certification of SHS units, only a very limited number of dealers and participating banks have benefited from the market and business development services. Nonetheless, the project has strong demonstration potential, that is now partly being realized with recent increases in the number of

			dealers. However, for a rating of 'high,' broader and deeper institutional development impacts need to be demonstrated.
□	Sustainability : Likely	Non-evaluable	Project sustainability has been rated 'non-evaluable' because GEF grants are still provided to the dealer for each sale of a SHS. The financial sustainability of the project cannot be evaluated until the SHS market is functioning without grant assistance.
	Bank Performance : Highly Satisfactory	Highly Satisfactory	With only limited Bank experience in PV projects to draw on, Bank staff successfully designed a relatively innovative project that now serves as a model for other PV projects. With the onset of the Asian financial crisis, Bank staff showed flexibility in continuing to work toward the institutional and market development objectives and, once market conditions improved, restructured the project as a stand-alone GEF project. QAG rated project supervision as 'Superior' in FY98 and as 'Highly Satisfactory' in FY00.
	Borrower Perf .: Satisfactory	Satisfactory	
	Quality of ICR :	Satisfactory	

NOTE:

NOTE ICR rating values flagged with ' * ' don't comply with OP/BP 13.55, but are listed for completeness.

7. Lessons of Broad Applicability:

(1) The competitiveness of SHS units may depend on the level of Government intervention in the rural energy market to promote access to some energy sources . In this case, nominal retail prices of SHS units rose by about 400% over about two years as a result of currency depreciation but continuing subsidies for kerosene and diesel softened their price hikes to only 12% and 58%, respectively. This significantly lowered the competitiveness of SHS .

(2) To develop a new SHS market and encourage the participation of new dealers, significant upstream support for market development and business planning is needed, in part to reduce perceived commercial risks . This support must also be extended to participating financial organizations who also face high information and other market entry costs.

(3) Market-based projects need to be flexible enough to allow for the adjustment of product lines and business models in response to changing market signals .

8. Assessment Recommended? Yes No

9. Comments on Quality of ICR:

The ICR is well-written and provides a frank and comprehensive assessment of project performance . It includes a well-considered set of lessons learned and a thoughtful analysis of the underlying factors of project outcome .

Nonetheless, the reason given for not calculating an IERR (that on an annual basis there were no initial negative

cash flows) is not entirely sound.