

FINANCING FOR RENEWABLE ENERGY

The main barriers to the widespread use of renewable energy are the high up-front costs, particularly for installing equipment, plus the limited resources of the people—most often the rural poor—who need the technology. To some degree, strengthening capacity building, promoting enabling environments, developing policy frameworks, and improving demands for renewable energy technologies can help mitigate steep transaction costs and underdeveloped markets. But even if those barriers are removed, the up-front investment costs of renewable energy projects will still be higher than those of conventional technologies.

The Global Environment Facility (GEF) is the largest provider of funding for projects to support the use of small-scale, off-grid renewables, such as solar home systems, and make them more

affordable. The GEF has more than 30 such projects in 20 countries.

The GEF and its Implementing Agencies have tested different strategies to expand the use and improve the affordability of renewables. One approach, which was particularly suited to social services and small businesses, emphasized productive uses such as targeting renewable energy for income generation and social services that have direct economic benefits. Thus, this approach can contribute to local development and provide livelihoods to pay for improved energy services.

Another strategy that makes it easier to finance small- or larger-scale applications involves reforms of power sector policy frameworks. Those frameworks offer opportunities to reduce the risks



perceived by investors, for example, for grid-connected renewables, such as wind and small hydro.

Yet another GEF strategy tests the use of innovative approaches to increase access to local sources of financing. Over the past 10 years, the GEF has been an equity owner of company shares, has loaned money on commercial and subcommercial terms, has initiated microfinance schemes, has provided contingent financing for project preparation and investment, has mitigated renewables-specific project risks, and has ventured into the area of credit guarantees.

THE GEF AND SMALL BUSINESSES

Most renewable energy companies are small, underdeveloped, and not yet profitable. Particularly in rural areas—where millions of people are spending large amounts for lower quality fuels, but cannot afford the initial cost of renewable energies—the energy businesses need more effective business planning, better management skills, and greater access to finance and consumer credit.

In the mid-1990s, few renewable energy businesses in developing countries could function as role models for the build-up of local industries. To accelerate the financial viability of photovoltaic (PV) businesses in developing countries, especially for off-grid applications, the GEF designed the Photovoltaic Market Transformation Initiative (PVMTI), a financing facility with a variety of financial instruments. PVMTI seeks to fulfill its mandate by nurturing a few selected photovoltaic business models and providing them with an appropriate combination of technical assistance and loan financing, as well as providing guarantees and equity.

The GEF initially focused on India, Kenya, and Morocco. Investments in those markets are expected to provide sustainable business models that can ultimately be replicated in other countries. The PVMTI currently supports 12 businesses, representing a wide range of applications, including individual solar home systems and mini-grid type

applications. In the six years since its implementation, the project has provided equity financing to sellers and users of PV systems, in addition to loans and credit guarantees.

CONTINGENT LOANS AND GRANTS

Many businesses are willing to invest in renewable energy projects if the public sector shares the risks. Therefore, the GEF offers contingent loans and grants to mitigate the risks of investments and financing, as well as the high costs of project development. A contingent loan has an interest rate and payment schedule similar to a traditional loan, but the loan would be forgiven if certain conditions are met. One example is the large solar PV and hydro hybrid grid-connected power plant of the Philippine utility, CEPALCO. In this case, a GEF-financed contingent loan is providing funds for the costs of the PV systems; most importantly, the debt will be forgiven upon satisfactory completion of the project.

SUPPORTING PROJECT DEVELOPMENT COSTS

Up-front costs for project development can constitute up to 5 percent or more of the total capital needed for a project. To help with those up-front costs, including project preparation, the GEF Caribbean Renewable Energy Technical Assistance Facility (CRETAF) collaborates with the Caribbean Renewable Energy Fund, which is a GEF-sponsored loan facility. CRETAF, which will supply early-stage loans for preparing project proposals, is designed to mitigate the financial risks associated with early-stage development activities. The loans are contingently reimbursable, with repayment linked to financial closure. Public- or private-sector enterprises, plus not-for-profit institutions, such as schools, research institutes, or nongovernmental organizations, are eligible for CRETAF support.

HELPING BANKS UNDERSTAND RENEWABLES

One GEF project that uses partial guarantee facilities is the Hungary Energy Efficiency Cofinancing Program

(HEECP). While the main objective is to increase energy efficiency investments, this program has also developed a product line in biomass facilities, particularly for district heating. To facilitate commercial lending, the HEECP targets technical assistance to banks. It works with them to structure business deals, educates them on the special opportunities and risks of biomass investments, and provides partial risk guarantees that can serve as collateral for investment loans.

During its eight years, the HEECP has helped raise commercial funding for more than 40 investments. But its greatest effect has been in improving the capacity of banks to properly assess the risks of unusual types of energy projects. This enhanced risk assessment capability has increased the willingness of the financial sector to lend in the energy area. Currently, a follow-up program is providing such services in six countries in Eastern Europe, and further extensions are planned.

HEDGING AGAINST RESOURCE RISKS

Beyond the technology-neutral approaches, financing for renewables can help mitigate the risks that are specific to renewable energy projects. For geothermal plant development, the highest risk occurs when the first well is drilled, even if there has been surface-based geophysical exploration. GEF projects in Africa, the Caribbean, and Eastern Europe are developing financial mechanisms to insure investors against the geological and technical risks during development of geothermal projects.

COUNTRYWIDE INVESTMENT LENDING PROGRAMS

In many countries, financing for renewables is not available because the capital markets do not have sufficient liquidity and depth. A number of GEF projects provide loans to investors and users of renewable energy. Often, this funding triggers larger market development. For example, the GEF has given support to the Indian Renewable Energy Development Agency Limited (IREDA). IREDA then used the money to provide credit lines specifically for

wind and solar PV projects. The financing was accompanied by technical assistance and promotional activities. According to independent assessments, without devoted credit lines and the accompanying promotional activities—together with a set of tax breaks—no commercial credit lines to finance renewable energy would have been created in the private banking sector.

LENDING TO FINANCIAL INTERMEDIARIES

On a much smaller scale—and with much more targeted support—GEF's Small and Medium Enterprise (SME) program has helped finance one of the prime examples of microfinancing for renewable energy, the Grameen Shakti Bank in Bangladesh. Grameen Shakti is one of a group of companies under Grameen Bank. Its PV solar program represents by far the largest business line for the company.

Through that program, Grameen Shakti sells PV home energy systems to consumers in remote and underdeveloped areas, particularly those who have a low probability of receiving grid power within the next five years. A GEF investment loan allowed the company to continue expanding its business and to lend to more consumers.

For the GEF, working with lending financial intermediaries is of growing importance. The SME program has now been restructured as the Environmental Business Finance Program, which focuses exclusively on the work with financial intermediaries.

MICROFINANCING FOR CONSUMERS

Access to financing for small businesses is important, but in many developing countries, consumers also need access to credit to buy the hardware for their energy supplies. With the GEF's support, the Uganda Photovoltaic Pilot Project for Rural Electrification was implemented by the Ugandan Ministry of Energy and Mineral Development from 1998 to 2003. Its main objective was to establish the foundation for sustainable markets for PV technology in areas that

would not be reached by the national electricity grid in the foreseeable future.

The project sought to establish a financial mechanism that could provide consumers with the needed access to loans so they could afford a solar home energy system. To achieve this goal, a renewable energy village bank model with six rural microfinance institutions was developed. Each of the village banks was given a revolving fund, which was used for loans to consumers to purchase PV systems. The loans had reduced interest rates of 18 percent (compared to 48 percent), a repayment period of two years, and a flexible repayment schedule that took into account seasonal variations in consumers' incomes. In this way, more than 510 PV systems were installed in six locales in one and a half years; during the same period, the costs of the systems were reduced by 15 percent. Default rates on the loans at five of the six banks were under 5 percent.

LESSONS LEARNED

- There is a tremendous need for financing to create renewable energy projects.
- The policy environment is a crucial factor in the decisions of investors to make financial commitments to renewable energy projects.
- Support of private investment, together with backing from credit guarantee facilities and favorable market conditions, is key to sustainable market build-up.
- Financial intermediaries need help in understanding the ramifications of lending for new technologies and applications.
- Numerous options for technological and financial risk mitigation are already available, but more options need to be developed in the future.

FOR MORE INFORMATION

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