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Finance

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Winrock International receives support for the REPSO network from the U.S. Agency for International Development

Photovoltaic Credit Programs: the Greatest Good to the Greatest Number

By Laura Wides, *Fundación Solar*

While the idea of a credit option for the entire cost of a photovoltaic (PV) system is new, community-based solar energy projects are not. *Fundación Solar's* current credit projects represent the culmination of four years of program development.

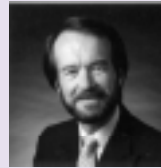
In its early pilot projects, the *Fundación Solar*, which manages WI's Central America REPSO, helped communities create revolving funds to pay for the replacement of the batteries for PV systems they received. But for two significant reasons the private developmental organizations soon realized the need to increase community financial participation.

The Need for Credit Programs

Economic Necessity: in recent years the flow of international moneys into the country has decreased significantly. The

(See Guatemala, Page 13)

Philip LaRocco is the founder of LaRocco Associates, a seven-person firm in Bloomfield NJ. He has been involved in projects in more than a dozen developing countries on behalf of organizations such as E&Co, the Rockefeller Group, the International Fund Energy Efficiency, and (ECHCO). LaRocco has spent and financing activities that private sector and he strongly suspects that over those three decades he has made most mistakes at least once. Contact him at



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Renewable Energy, Finance, and Infectious Diseases

Three potentially fatal diseases can infect the merger of renewable energy enterprises and the subject of finance.

The first disease is FEAR of finance as some higher form of mathematics (or modern day alchemy) that cannot be mastered and should therefore be ignored until much later in project design.

The second disease is SMOOTHNESS: the belief that finance is but a fluid putting together of spreadsheets and overheads on an as-needed basis.

The third is CERTAINTY of what finance means and what are the only correct answers and appropriate project design mechanisms.

Finance is not a journey to the moon reserved for only the most trained and prepared. But it also isn't a walk in the park on the way to the bank. And it certainly isn't some ancient wisdom where rules rule and if you "connect all the dots" you win and if you miss some dots you lose. Yet in much of our work we find that these three infections persist.

Don't Be Afraid - It Isn't A Journey to the Moon

The first disease has its origin in the belief that finance is so esoteric and complex that you cannot deal with it. The result is one-off demonstration projects and portfolios of project "opportunities" that never see the light of day. These "opportunities" have been studied technically, socially, environmentally, and politically but have been largely ignored as financial endeavors. This is crazy, yet it persists.

During the infancy of renewable energy this might have made sense, but as large blocks of technology

(See LaRocco, Page 15)



Without initial training and follow-up there is a good likelihood that equipment will be used below optimum capacity.

Interview

Mason Willrich and

Mason Willrich is chairman of the board of EnergyWorks, L.L.C., a joint venture of PacifiCorp and Bechtel, which provides distributed energy systems and services to industrial and commercial customers worldwide. He is also a principal of Nth Power Technologies, Inc., a venture capital limited partnership which invests in early-stage companies offering new products and services to energy utilities, their customers and suppliers. Mr. Willrich is the author or co-author of nine books and numerous articles on energy policy and international security issues. In 1994-95 he served as vice chair of the U.S. Department of Energy Task Force on Strategic Energy R&D. Mason Willrich recently joined Winrock International's Board of Directors.

John Kadyszewski, Leader of the Renewable Energy Group at Winrock, is a regular contributor to REPSource. He was recently profiled in REPSO Vision, a publication of REPSO-India.

Willrich and Kadyszewski took time recently to discuss renewable energy financing with REPSource Managing Director Andrea Collins.

AC: How have you seen renewable energy financing trends change in the past 20 years?

JK: The availability of funds for renewable energy projects has dramatically increased. I think that now there is a general perception that renewable energy investments can make sense, and people are willing to put money into them. The bigger issues become having the right enabling environment in which a financial institution can complete a transaction.

MW: The policy environment in the U.S. that really got this kicked off was the enactment of the Public Utilities Regulatory Policy Act (PURPA). It was oriented towards individual projects and project finance. It also provided a device for a lot of speculative money to get into the business, and that created a lot of projects. But the economic foundation for those projects in many cases was not all that great, and as a result many projects collapsed.

This is one of the things that you see around the world when countries create markets that are, in a sense, promotional markets. You get a lot of finance opportunities and projects to develop, but you have to be prepared for the fact that it is pretty speculative and therefore does not necessarily lead to renewable energy becoming a self-sustaining business.

The other thing that's happening is that research and development money is getting smarter in the sense of coupling more to the market rather than less.

AC: Creative or innovative renewable energy financing: what is the broad set of elements necessary for success?

MW: The main thing that you need are attractive opportunities.

JK: I think that the challenge for the renewable business, and it is also a development challenge for us as an institution, is *how do you get more of these projects financed out of retained earnings?*

We want to make rural markets visible. Because the fact is that a large amount of money is spent by rural families on things like kerosene and batteries and other kinds of energy. You total up those dollars and they represent a substantial revenue stream. But there isn't very much new in the marketplace trying to capture those revenue streams. In order

for us to bring to rural populations renewable energy choices, we must make those markets visible to the kinds of people who are investing in renewable energy innovation.

MW: There's nothing unique about renewable energy finance: it's finance. But the transaction costs for a small project can be very high relative to a project's value, so you need to find ways of aggregating projects into something big enough to get the economies of scale that financing needs. You want to finance a whole portfolio of projects, not a single project, or you will not be efficient in your financing.

AC: What are the most important financial policy issues related to bringing about sustainable future vis-a-vis renewable energy?

MW: Getting energy prices right.

JK: Unless you can find a way to get the price that is paid for energy to reflect the real costs of the energy, it won't be sustainable. In most markets where we work, policy sets prices below cost, which discourages private players from getting into the market.

These policies give the illusion of helping rural people but severely limit the number of customers that can be served and the quality of service.

MW: Number two would be getting the policies going forward in a framework where finance will be attracted because you have sufficient legal background, so that bankers will lend and people will invest.

JK: In the past few years many countries have begun the process of privatizing their power sectors. Most of the attention has gone to existing distribution systems and to large, central plants based on fossil fuels. Extension of energy sources to unserved rural areas has been largely overlooked in the privatization movement. We are struggling to make political leaders aware of the need to pay attention to the policy framework required to attract private capital to rural areas.

MW: Anyway, a lot of renewable energy project financing has been public sector-driven finance in the past. In the future, it's got to be dominated by private sector.

Winrock International's REPSOs have, I believe, potential value to the business community. REPSOs can provide to the private

John Kadyszewski

sector a mechanism for effective engagement of business with the problems at hand.

In REPSOs, which are located in major countries with major markets, you have created two things that the renewables business community really needs if it's going to be successful in developing countries, particularly in the rural sector, the biggest market for renewable energy products and services.

One is experience with operations and people who are in the field trying to develop these projects and having contact with the market. To get really good information about the markets or the potential markets is difficult. I really think that you are onto something that is creating a lot of value in the approach of the REPSOs and the basic decentralized, multi-local approach to renewable energy facilitation, promotions, and development.

All of the companies out there can see a common value in having a forum, a convener, that's in place, on the ground, out there and connected to the market. It keeps coming back to that, and Winrock can really preserve its own principles and identity and values, and in fact you get much more powerful response when you do that.

The second is a concern for the creation of policy mechanisms that will accelerate development in the rural sector in environmentally sustainable ways.

Winrock has a capacity to really help development people understand rural markets better so as to be able to put in the policy infrastructure that is needed in order to have renewable development really take hold.

My third point is that Winrock has the opportunity to consider not just renewable energy but the role of renewable energy in economic development in these areas as a whole. That is just a very powerful kind of a focus.

The real value you offer is the people you all represent—yourselves and the people you've got in place who are doing things. Now it takes money to mobilize those people, but it's really a people issue, I think that's where your leverage comes.

AC: What is on the horizon for renewable energy financing after Kyoto?

JK: Global climate change is not a big priority for governments in the countries where we work. Other issues are far more important. But there is an opportunity to marry access to innovation and technology with broader development and environment concerns. This marriage can lead to major impacts on the infrastructure investments now being made in the developing world which, after all, will determine future emissions.

MW: My simple answer is not so simple. I have somewhat of an iconoclastic set of questions about the market-based

approach to getting there with global carbon reductions. The cost of putting together these trades, especially cross-border trades, is going to be enormous per transaction.



Mason Willich (left) and John Kadyszewski, of Winrock International

Kyoto will have a role. But I wouldn't wait, in terms of a good renewable energy project, to try to fit it into one of those global warming buckets, hoping for some kind of subsidy element out of that, because I think they are going to be difficult transactions to put together.

Obviously the easiest approach to financing the work that is to be done is to levy a charge on carbon consumption.

AC: Why not production?

MW: For a couple of reasons. The consumer will understand that there's something happening if you consume too much from the environment. And then you recycle the revenues. So you're not increasing the tax burden, but you're allocating the tax burden towards getting the prices right, and getting fossil fuels pricing to incorporate externalities.


And then the market will adjust and that's the end of it. If you don't like the results you're getting, you increase or lower the price.

The second is a concern for the creation of a policy mechanism that will accelerate development in the rural sector in an environmentally sustainable way.

At the Environmental and Energy Study Institute today I was on a panel for a very rich discussion of post-Kyoto. Everybody seemed to me to agree that the carbon issue is there, and it's big, and enduring, and growing.

My view is that the kind of negotiations, the international treaties, all of that stuff is almost beside the point if you can't find ways to accelerate economic development and growth of the poorest parts of the world because there won't be resources to take care of the carbon issue. So let's get with it, as far as decarbonization goes, in the field, and basically leave the diplomats in the dust.

I guess my last point is that I am a believer that the private sectors, including NGOs, are going to do this. Governments can't do this, it's beyond governments. It's really private sector, private actions that are going to have a big impact one way or the other.

JK: This idea of bypassing diplomacy and decarbonizing the world through individual action: I think there is a market on the private side of things that would be much happier with that approach and solution. 

Snapshot of a Mechanism—Debt Swap

Debt for nature swaps ushered in a new era of innovative financing for conservation efforts and biodiversity conservation. By linking conservation with debt reduction, swaps were able to attract funding from private donors as well as development agencies. This mechanism offers the dual benefits of fostering conservation while reducing the pressure exercised on endangered ecosystems.



Marianne Guerin-McManus, Dir., Conservation Finance, Conservation International

Debt Swap in a developing country context: Purchase of government or private debt, denominated in dollars or other hard currency, at a discount off of the face value. In return, the debt purchaser usually receives local currency or bonds worth up to the undercounted face value of the currency.

Debt for Nature Swap: A debt swap where either the local currency proceeds are used for environmental purpose, or the debt seller provides other conservation or biodiversity benefit, such as setting aside land for parks or reserves, or a combination of the two.

CI has been running a successful debt for nature swap program (DNS) in Mexico since 1991. But exactly what does this mean in process and in practice? Andrea Collins asked Abbe L. Reis of Conservation International (CI) about its experience with debt swaps.

How did it come about that CI's debt swap mechanism came to be used to purchase, install, and maintain solar equipment?

CI has an agreement with the Mexican government to do DNS swaps, and it was designed broadly enough that we could easily do many types of activities.

Right now we are using the funds to install solar panels and batteries—photovoltaic capacity to

provide electricity—to three sites: Chajul biological research station in the Montes Azules Biosphere Reserve in Chiapas; an ecotourism lodge down river on land managed by Ixcán, a local community; and an outreach station in Chajul, the community closest to the biosphere reserve. In one of the sites we are also doing some water pumping.

We negotiated our original contract with Mexico in 1990, and since that time we've done over a dozen contracts, with a gain of 25–40% depending upon the purchase price of the debt and the strength of the peso at the time. We did approximately U.S. two million dollars worth of debt swaps for next year. For us, that's a significant gain.

What we do: upon receiving hard currency funding allocated to a project, CI purchases Mexican debt at a discount on the secondary market (commercial debt papers are sold and bought in amounts below their face value) and redeems it in local currency with the Mexican Central Bank with whom CI has a long-standing refinancing agreement.

How difficult, and how expensive, is setting up a debt swap mechanism in a country?

The concept is always the same, but you get different terms each time depending about how you negotiate your agreements.

Debt swaps are complicated for several reasons: you have at least three players: the host country, (usually the central bank and maybe the ministry of finance); the owner of the debt; and the

organization that is actually doing the swap, in our case that's CI.

Also, the terms of the swaps can vary from country-to-country or even within the same country, and setting the mechanism up can take awhile. It took us over a year to negotiate our original contract with Mexico, but it was the first DNS Mexico ever did. And some countries don't do them.

When the money we originally negotiated is spent we renegotiate. At the moment in Mexico we're in the process of negotiating a new swap deal. And that's taken us a couple of months because we began at Christmas time and the government was closed down.

For us, once we have the mechanism set up, it takes about a week of staff time here in Mexico City per swap—unless there's a problem, and usually there isn't.

Given the transaction costs, you have to think about economies of scale. The mechanism may not be cost effective if you're doing a swap for just a couple hundred thousand dollars. And when you negotiate your swap you need to factor the one-time cost into the life of the project.

But still, without a doubt, I can tell you that for CI, it's worth the cost.

Why do countries do debt swaps?

It's advantageous to the country because the money stays at home, because they are no longer paying interest on their debt, because they get to set up the terms of how that money is used, and they are able to pay back the

(See Debt Swap, page 5)

The Indonesian Economic Crisis and its Impact on Private Power and Renewable Energy Projects

by Dennis McCandless

The Indonesian economic crisis has seen the value of the rupiah, the local currency, plunge, and the banking system and much of the economy come to a standstill. If the economic reforms and debt workouts proceed as planned, economic recovery is expected to take several years. The impact of the crisis on renewable energy and other independent power projects is dramatic.

PT. PLN (Persero), the government-owned national electric utility, has heavy foreign currency demands for loan repayments and purchase of imported repair parts, supplies, and materials; but all PLN revenues are in rupiah, based on a government-controlled tariff. Because of this, the planned privatization of PLN may have to be delayed indefinitely.

Many private power projects have been postponed or canceled, mostly by government order. These include hydroelectric projects and several geothermal developments, as well as many coal and gas power plants. This is due to PLN's poor financial condition as well as the likelihood of a power oversupply, especially on the island of Java.

In addition, PLN initially has notified project developers that they will be paid for generating plant output (for both operating and planned projects) in rupiah at 2,450 per U.S. dollar, despite contractual obligations to pay in dollars or other foreign currencies. However, this plan of action has yet to be confirmed.

This has cast doubt on all power purchase agreements. Developers of small generating projects, working with a standard PLN tariff and contract, have been unable to arrange financing. Renewable energy projects that rely on local credit to purchase equipment and services, and often use imported components (now very costly in rupiah terms), are at a standstill.

The few new projects that could move ahead in the near future include projects financed by aid agencies; "captive" projects that serve power users such as mining companies that generate foreign currency earnings; or energy efficiency and cogeneration projects that can attract foreign partner balance sheet or equity financing.

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Debt Swap *(continued from page 4)*

debt in local currency. DNS are a way for a country to facilitate conservation activities in priority ecosystems.

It's advantageous to an organization such as CI because it allows us to take a hundred dollars that we are going to put into conservation work in a particular country and allows us to turn that into \$120–\$130 dollars.

99% of the money that CI sends down to Mexico is swapped. Besides offering additional funding for projects, the gain helps us to pay expenses that may be more difficult to find

donors to cover: office expenses and administrative expenses. But it's all related to the projects that we're trying to do.

And the only reason I don't swap 100% is because there may be something I need to get done more rapidly than the swap allows. There are certain basic rules that go with swaps. One is that the money has to stay in local currency.



What is the outcome of all of this?

The outcome? If conservation activities were not taking place in these areas, the natural resources could be permanently damaged. *(Photos: Lisa Büttner and Abbe L. Reis)*

The ecotourism resort managed by Ixcan, a local community.

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Brazil: Northeast Development Bank Provides Financing for Renewable Energy Projects

By Osvaldo Soliano Pereira

Overview

The Banco do Nordeste do Brasil, or, Northeast Development Bank (BNB) has set up the only financing mechanisms existing in Brazil that specifically target renewable energy projects (REP).

A significant feature of BNB is its recently established concept of development agents or "mobile branches," trained in specialized promotional and extension work and responsible for four municipalities, where they will present all credit mechanisms offered by the Bank. The BNB is planning for 450 development agents.



Renewable Energy Business: A positive force for social and economic development.

Programa de Energia Renovavel do Nordeste (PROERNE), and Programa de Apoio à Geração de Energia Renovável para Pequenas Comunidades do Nordeste

PROERNE is a credit line which finances the installation of viable renewable energy technology components in agricultural, agribusiness-industrial, and tourism activities, provides for the production of renewable energy equipment (except for solar home systems), and provides institutional support and limited resources for research and development, information dissemination, and capacity building.

Financing and institutional support represent an advance for the commercialization of renewable energy projects. The main advantage is the 40% rebate on total interest composed of long-term rate of interest plus basic spread. This reduction is applicable to all loans described in this article.

The Luz do Sol Program

Another financing mechanism set up by BNB, in cooperation with FTV, is the Luz do Sol Program, which provides a credit line to local small entrepreneurs who live in the underserved areas of Northeast to finance battery charging stations.

These entrepreneurs charge a R\$ 3.00/charge fee or a minimal monthly fee of R\$ 12.00. FTV will finance the component of the loan covering imported

equipment acquisition (financing supported by Exim bank), project implementation, and capacity building.

FTV has signed cooperation agreements with the National Renewable Energy Program - (Prodeem) which provides PV equipment for social uses. Because the scheme is new, the non-payment rate is not clear yet.

The lack of payment by users can make the business not feasible to small entrepreneurs, who have limited profit margins and markets and loans to be repaid. Thus, some kind of insurance or compensation fund must be considered. An interesting aspect of this concept is the creation of local employment as a simple solution to managerial and billing problems. The BNB component is benefited with the same advantages of PROERNE.

Expansion of the Luz do Sol Program

A similar program was signed between FTV and the National Social and Economic Development Bank (BNDES) to expand the concept to the rest of the country. BNDES finances the small entrepreneur through FTV, with collateral provided by Golden Genesis, the equipment provider to FTV. BNDES also finances 20% of the investment to the municipal governments which want to reduce interest to the final user.

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Between Technology and Financing: Bridging the Gap

"What we're doing essentially is helping private developers to assess, structure and finance projects to facilitate implementation of more commercially viable renewable energy projects. Catalyzing private sector initiatives, that is, bridging the gap between technology and financing." Grace Yeneza

Preferred Energy, Incorporated (PEI), manager of Winrock's REPSO program in the Philippines, has as its goal to catalyze a technology-and business-based infrastructure for renewable energy projects.

Since renewable energy projects are often several orders of magnitude smaller than conventional energy projects, project developers incur disproportionately high costs to identify and evaluate opportunities, and evaluate and prepare renewable energy projects for financing and implementation.

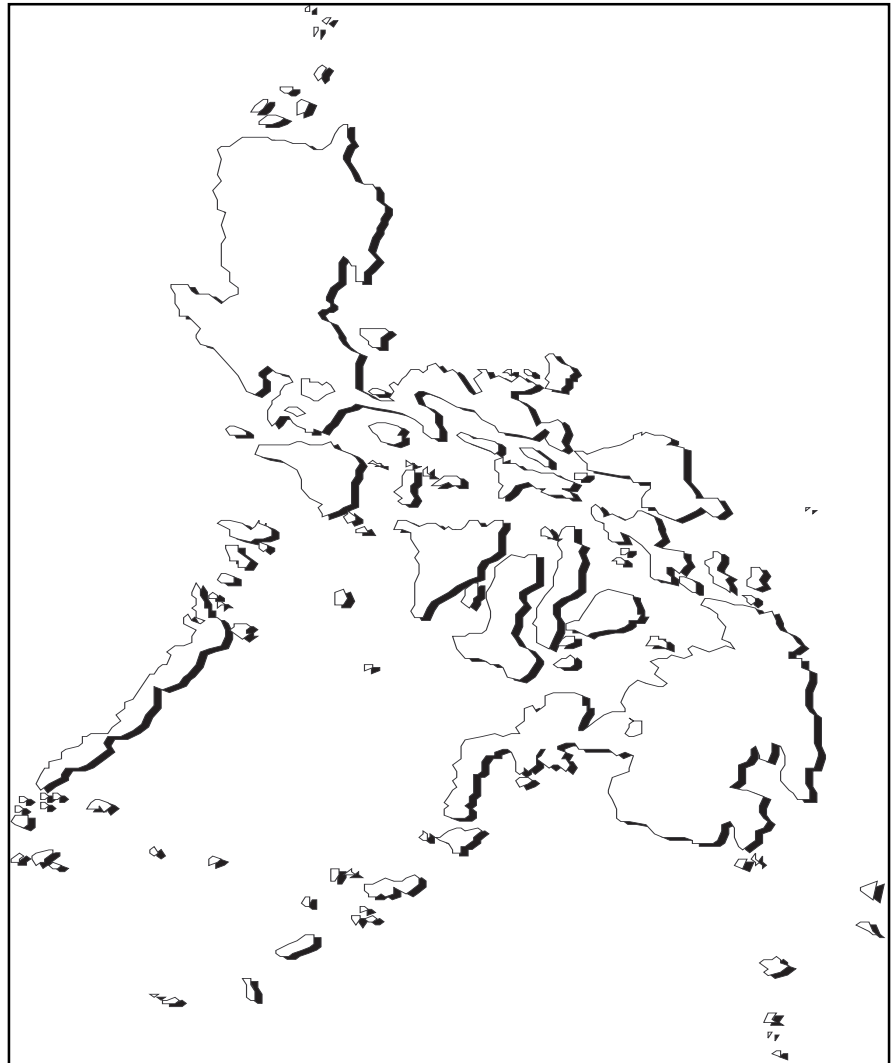
This problem is especially troublesome given that renewable energy developers face other market constraints, such as high investment costs and in many cases, competition from subsidized conventional energy systems.

Developers who wish to explore renewable energy must incur the same or even higher costs as that of pursuing much larger conventional energy projects—a hindrance that steers developers away. The net effect of this is obvious.

One of the ways PEI works to bridge this gap is to mitigate the commercial risks to renewable energy project development by lowering the transaction costs of developing renewable energy project and providing seed capital to support specific financially-attractive projects.

Renewable energy ventures which have received loans or equity investments from the PEI Capital Investment Fund (CIF) include: a) Bubunawan Falls Mini-hydropower Project (7 MW); b) VEPRI Micro-hydropower Project (98 KW) and c) Solar Electric Company Solar Photovoltaic (PV) Dissemination Project.

The latter transaction involved an operating capital loan to enable a PV dissemination company to expand its sales and service network. The CIF was supported under the USAID-funded Renewable Energy Financing and Technical Assistance (REFTA)



Project, which was implemented by Winrock International and PEI.

Under REFTA, PEI also provided pre-investment financing to two firms, Cagayan Electric Power and Light Company (CEPALCO) and Silk Roads, Ltd., for two mini-hydro and two biogas projects, in the form of Pre-Investment Cost-Share (PICS) loans.

In addition, PEI worked with Winrock to implement numerous pre-investment cost-shares under the REPSO program funded by the USAID Office of Energy, including several hydro and biomass projects.

At present, PEI is working on a number of financing-related initiatives, including negotiating with the Government of the Philippines concerning possible establishment of a Solar Village Project Loan Fund; establishment of a broader Village Power Fund to provide loan financing for communities and NGOs for rural energy projects; working to attract additional financing for the PEI CIF, and exploring possible involvement in multilateral renewable energy financing initiatives such as the International Finance Corporation's REEF Fund and/or SME Program.



Global Financiers of Renewables

Below are brief samplings of some of the most accessible & innovative international organizations & mechanisms currently active. Amounts are represented in U.S. dollars. All organizations represented here have a focus on lending in developing countries with a project size limit of more than \$25 million. (List compiled by Bikash Pandey)

ORGANIZATIONS

German Investment & Development Company (DEG) finances—on a project finance basis—long-term investments in many sectors, including infrastructure. It provides a maximum of 50% debt financing & limits its involvement to a maximum limit of \$25 million per project. It prefers to work with German suppliers if there is an option, but is flexible. *Contact:* Mr. Rolf Grunwald, Head of Infrastructure Dept., DEG, Belvederestrasse 40, D-50933 Koln (Mungersdorf), Germany. Tel: 49-221-498-6138. Fax: 49-221-4986-107. E-mail: Rolf.Grunwald@DEGINVEST.DE.

E&Co is a non-profit energy investment service. It participates in the higher-risk, less-secured stage of enterprise development with a goal to leverage funding from more conventional sources. Maximum loan or investment into a project will generally not exceed \$250,000. E&Co has in-country representatives in Costa Rica, Bolivia, Zimbabwe, South Africa, India, & Nepal. *Contact:* Michael Allen, E&Co, 383 Franklin St., Bloomfield, New Jersey 07003, USA Tel: 1-973-680-9100. Fax: 1-973-680-8066. E-mail: eco@energyhouse.com. or Jose Maria Bianco, Regional Director. E&Co-LAC, P.O. Box 573-2050, Montes de Oca, San Jose - Costa Rica. Tel/ Fax: +506-283-9150. E-mail: biomass@sol.racsa.co.cr.

Energy Capital Holding Company International Inc. ECHCO specializes in providing integrated project financing for medium size (10 MW to 250 MW) & larger, environmentally & commercially sound energy projects in Latin America & the Caribbean (LAC). ECHCO also utilizes 19 senior in-country managers in 15 LAC countries. ECHCO enables small- & mid-sized energy projects to enjoy the funding advantages of international banking, non-banking & capital markets previously available only to large projects & global corporate development teams. *Contact:* Ronald Muller, ECHCO, 727 15th St., Eleventh Floor, N.W. Washington, D.C. 20005, USA Tel: 1-202-408-7916. Fax: 1-202-371-5116. E-mail: remcap@erols.com.

Energy Investors Funds Group (EIF) does project finance through the funds it manages. It provides long-term finance of up to 10 years for commercially attractive RE projects. EIF has organized three funds to date & manages over \$500 million of capital. Previous investments have been made in energy projects ranging in cost from \$25 million to \$280 million. In developing countries, EIF has financed projects in Costa Rica & Jamaica. *Contact:* Philip Messina, Chief Investment Officer, Energy Investors Funds Group, 200 Berkeley St., 20th Floor, P.O. Box 111, Boston, Massachusetts 02117, USA Tel: 1-617-572-4641. Fax: 1-617-572-4630.

Environmental Enterprises Assistance Fund (EEAF) (see article, this issue, p. 10) *Contact:* Brooks Browne, EEAF, 1901 North Moore St., Suite 1004, Arlington, Virginia 22209, USA Tel: 1-703-522-5928. Fax: 1-703-522-6450. Email: eeaf@igc.apc.org. Home-page: www.eeaf.org. or Leonardo Ramirez, Gerente General, Empresas Ambientales de CentroAmerica, Mailing Address: P.O. Box 25216-1190, Miami, Florida, USA 33102-5216. Tel: 506-257-

4717. Fax: 506-256-1357. Email: eacasa@sol.racsa.co.cr.

Export Import Bank of the United States (Ex-Im Bank) is the U.S. government export credit agency. Since 1980, the Bank has authorized over \$2 billion to support 55 RE projects. The Bank facilitates short-, medium-, & long-term financing to credit-worthy international customers to purchase U.S. goods & services, & short- & medium-term export credit insurance to enable U.S. firms to extend credit directly to international customers. Ex-Im Bank has no minimum or maximum project size & is very interested in financing small projects. *Contact:* Bob Haight, Environmental Liaison; Craig O'Connor, Business Development. Ex-Im Bank, 811 Vermont Ave., N.W. Washington, D.C. 20571, USA Tel: 1-202-565-3946, Fax: 1-202-565-3380.

Netherlands Development Finance Company (FMO) is a Dutch development finance institution. Loans range in size from \$2-25 million. Financial institutions in developing countries seeking to expand their long-term financing capabilities for small enterprises can access long term loans denominated in local currency, as the FMO accepts the foreign exchange risk. FMO's finance can be used for credit of average size \$25,000 per (small) enterprise. FMO is in the process of establishing an environmental fund (loans expected between four to eight million each), which will include financing of RE projects & could be on-line before the end of 1998. The fund could grow to \$50 million in five years. *Contact:* G. Kidane Mariam, FMO, P.O. Box 93060, 2509 AB, The Hague, The Netherlands. Tel: 31-70-314-9696, 31-70-314-9617 (direct). Fax: 31-70-324-6187.

Global Environment Fund (GEF) is a venture capital fund manager which invests equity in infrastructure projects & companies with an environmental focus. It currently manages close to \$400 million, including Global Environment Emerging Market Funds I & II. GEEMF I: a \$70 million fund partially capitalized with promissory notes guaranteed by the Overseas Private Investment Corporation (OPIC). It invests up to \$10 million per project in OPIC-qualified countries. GEEMF II: a \$120 million fund that is also OPIC-backed & can make investments of up to \$18 million. *Contact:* Wendell Robinson, Global Environment Fund, 1201 New York Ave., Suite 220, N.W. Washington, D.C. 20005, USA Tel: 1-202-789-4500. Fax: 1-202-789-4508. Home-page: www.geffunds.com.

Impax Capital provides corporate finance advisory services in the environmental utilities sector, specializing in RE, waste-to-energy, & waste water treatment. It also arranges third party debt & equity finance for project funding requirements of clients. Impax is expanding to asset management & is currently raising a \$30 million equity fund for renewables in Europe. IFC plans to engage Impax Capital, with IT Power, as the External Management Agent for the IFC/GEF sponsored Photovoltaic Market Transformation initiative (PVMTI). *Contact:* Ian Simm, Executive Director, Impax Capital Corporation Ltd., Broughton House, 6-8 Sackville Street, London W1X 1DD, United Kingdom. Tel: 44-171-4341 122. Fax: 44-171-4341 123. E-mail: i.simm@impax.co.uk.

Global Environment Fund (GEF) is a venture capital fund manager which invests equity in infrastructure projects & companies with an environmental focus. It currently manages close to \$400 million, including Global Environment Emerging Market Funds I & II. GEEMF I: a \$70 million fund partially capitalized with promissory notes guaranteed by the Overseas Private Investment Corporation (OPIC). It invests up to \$10 million per project in OPIC-qualified countries. GEEMF II: a \$120 million fund that is also OPIC-backed & can make investments of up to \$18 million. *Contact:* Wendell Robinson, Global Environment Fund, 1201 New York Ave., Suite 220, N.W. Washington, D.C. 20005, USA Tel: 1-202-789-4500. Fax: 1-202-789-4508. Home-page: www.geffunds.com.

Impax Capital provides corporate finance advisory services in the environmental utilities sector, specializing in RE, waste-to-energy, & waste water treatment. It also arranges third party debt & equity finance for project funding requirements of clients. Impax is expanding to asset management & is currently raising a \$30 million equity fund for renewables in Europe. IFC plans to engage Impax Capital, with IT Power, as the External Management Agent for the IFC/GEF sponsored Photovoltaic Market Transformation initiative (PVMTI). *Contact:* Ian Simm, Executive Director, Impax Capital Corporation Ltd., Broughton House, 6-8 Sackville Street, London W1X 1DD, United Kingdom. Tel: 44-171-4341 122. Fax: 44-171-4341 123. E-mail: i.simm@impax.co.uk.

International Finance Corporation (IFC) is a private sector multilateral development bank. It provides financing for infrastructure projects & companies with an environmental focus. It currently manages close to \$400 million, including Global Environment Emerging Market Funds I & II. GEEMF I: a \$70 million fund partially capitalized with promissory notes guaranteed by the Overseas Private Investment Corporation (OPIC). It invests up to \$10 million per project in OPIC-qualified countries. GEEMF II: a \$120 million fund that is also OPIC-backed & can make investments of up to \$18 million. *Contact:* Wendell Robinson, Global Environment Fund, 1201 New York Ave., Suite 220, N.W. Washington, D.C. 20005, USA Tel: 1-202-789-4500. Fax: 1-202-789-4508. Home-page: www.geffunds.com.

The Global Environment Fund (GEF) is a venture capital fund manager which invests equity in infrastructure projects & companies with an environmental focus. It currently manages close to \$400 million, including Global Environment Emerging Market Funds I & II. GEEMF I: a \$70 million fund partially capitalized with promissory notes guaranteed by the Overseas Private Investment Corporation (OPIC). It invests up to \$10 million per project in OPIC-qualified countries. GEEMF II: a \$120 million fund that is also OPIC-backed & can make investments of up to \$18 million. *Contact:* Wendell Robinson, Global Environment Fund, 1201 New York Ave., Suite 220, N.W. Washington, D.C. 20005, USA Tel: 1-202-789-4500. Fax: 1-202-789-4508. Home-page: www.geffunds.com.

Renewable Energy Enterprises

currently available or being set up to finance private sector renewable energy (RE) enterprises in developing countries. Dollar projects. Grant-making foundations & bilateral donors are not listed here, nor are financing institutions which have a minimum

Environment Fund (GEF) is a multilateral fund manager which invests in infrastructure projects & companies with environmental focus. It currently manages \$100 million, including Global Environment Facility Emerging Market Funds I & II. The \$70 million fund partially capitalized by Treasury notes guaranteed by the United States Private Investment Corporation invests up to \$10 million per project in developing countries. GEEMF II: a \$120 million fund that is also OPIC-backed & can invest up to \$18 million. Contact: *Johnston, Global Environment Fund, 1700 Market Ave., Suite 220, N.W., Washington, D.C. 20005, USA Tel: 1-202-789-4508. Home-page: www.gefweb.com.*

Impax Capital provides corporate finance services in the environmental utilities sector, specializing in RE, waste-to-energy, & water treatment. It also arranges third party finance for project funding on behalf of clients. Impax is expanding to Europe & is currently raising a \$30 million fund for renewables in Europe. IFC Management Agent for the IFC/GEF Photovoltaic Market Transformation Initiative (PVMTI). Contact: *Ian Simm, Executive Director, Impax Capital Corporation Ltd., Broughton Road, Blackville Street, London W1X 1DD, UK. Tel: 44-171-4341122. Fax: 44-171-4341123. E-mail: i.simm@impax.co.uk.*

International Finance Corporation (IFC) is the private sector arm of the WBG. It is the largest source of loan & equity financing for private sector projects in the developing world. It offers generally long-term & at market rates. Investment is usually limited to 25 percent of project cost. Investments in small- & medium-size projects range from \$100,000 to \$1 million. Large-size projects from \$1 to \$100 million. IFC is primarily involved, through the World Bank, in the development of strategies for the mobilization of private capital & technologies for infrastructure projects through the Global Environment Facility (GEF). Innovative projects developed include Small & Medium Enterprise Program (SME), RE & Energy Efficiency Fund (REEF), Photovoltaic Market Transformation Initiative (PVMTI), & the Solar Development Corporation (SDC) are listed below. IFC's activities are expected to address GEF's objectives on greenhouse gas mitigation objectives. Contact: *Environmental Projects Unit, World Bank, 1818 H Street, N.W., Washington, D.C. 20433, USA Tel: 1-202-477-1234, 1-202-477-4384.*

Global Environment Facility (GEF) is a multilateral mechanism that provides grants & loans to developing countries for activities designed to protect the global environment. GEF is a joint venture of the United

Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), & the World Bank (WB). These three agencies implement GEF projects. Contact: *Hutton G. Archer, Senior External Relations Coordinator, GEF Headquarters, 1818 H Street NW, Washington D.C. 20433, USA Tel: 1-202-473-0508, Fax: 1-202-522-3240/522-3245. E-mail: harcher@worldbank.org. Home Page: www.gefweb.com.*

Triodos Bank offers financing to organizations & businesses with social & environmental objectives. Its first funds oriented to developing countries were the Hivos-Triodos Foundation Fund (HTF) & Triodos-Doen Foundation Fund (TDF). In 1996 Triodos established the Solar Investment Fund (SIF) to provide loans & guarantees to intermediary organizations (credit institutions, co-ops, NGOs, utilities, distributors, & installers) which subsequently sell Solar Home Systems (SHS) under a hire-purchase or "fee for service" agreement to users. Loans can be made in local currency if the client chooses. Minimum size of these loans: around \$100,000. Triodos also manages funds in the Netherlands which have been recognized as "Green Funds," i.e., investor dividends are tax-free. As of this year, these funds can officially be invested in selected countries outside the Netherlands. Contacts: *Fund Management: Mr. Hans Schut; Project Management: Rene Magermans. Triodos Bank, Prins Hendriklaan 9-11, P.O. Box 55, 3700 AB Zeist, The Netherlands. Tel: 31-30-693-6500. Fax: 31-30-693-6555. E-mail: triodos@triodos.nl.*

MECHANISMS

The **Photovoltaic Market Transformation Initiative (PVMTI)**, being implemented in India, Kenya, & Morocco, plans to be open for business sometime this year. It will use \$30 million, (\$5 million grant & \$25 million loan of GEF funds) to support private sector, competitively solicited solar PV market development projects. PVMTI will make investments estimated to range from \$1 to \$5 million for the most innovative & promising proposals for large-scale expansion of the market for PV. Contact: *Impax Capital (above), or Vickram Widge, IFC Environmental Projects Unit (above).*

The **Renewable Energy & Energy Efficiency Fund (REEF)** is a soon-to-be-established investment fund to finance RE & EE projects will have three components: equity funds, debt funds, & a concessionary finance window. The fund is expected to grow to \$180 to \$230 million with investments from public & private sources. It will be managed by a private sector team, & is expected to be accessible by the mid-1999. REEF's designer and lead investor is the IFC. The GEF has agreed to provide a grant of up to \$30 million in proportion to the size of the equity pool. The private sector Fund Management Company is expected to attract private investment to the Fund to add to IFC's & other public investment to make a total equity pool of \$100 million. A parallel debt facility of \$100 million will be led by the IFC. REEF expects to finance on-grid RE in the 5 to 50 MW range, smaller off-grid RE projects, & EE projects. The smallest isolated

projects considered will have project costs of \$0.5 million. Contact: *IFC Environmental Projects Unit (above).*

The **Small & Medium Scale Enterprise Program (SME)** lends, on a concessional basis, GEF grant funds to intermediary institutions with financial & environmental expertise & experience working with SMEs (enterprises with assets valued at less than \$5 million). The intermediaries lend or invest to qualifying SMEs for promising experimental biodiversity conservation & greenhouse gas reduction projects for which long-term capital is lacking. An SME may not receive more than \$250,000 total from the program. The program is administered by the Environment Division of the WBG's IFC. It was developed as a pilot GEF project in 1995 (total of \$19.5 million, GEF contribution \$4.3 million) & replenished in 1997 (total of \$52.5 million, GEF contribution \$16.5 million). This project hopes to finance a total of 100 projects. Contact: *Dana Younger, IFC Environmental Projects Unit, 2121 Pennsylvania Ave., Room F-9K-148, N.W., Washington, D.C. 20433, USA Tel: 1-202-473-4779. Fax: 1-202-974-4349. E-mail: dyounger@ifc.org.*

Solar Development Corporation (SDG) seeks to help PV companies in developing countries to be considered for business development support and investment. Activities can be financed through loans and/or grants, and follow-on investment capital in the form of debt and/or equity will be provided to successful companies. SDG is managed by Stichting Triodos PV Partners, a joint venture formed by Triodos Bank Group, Environmental Enterprises Assistance Fund, and Global Transition Consulting. To apply submit a brief introductory letter describing your company and its proposed business development and financing plan to partners Winrock International or FACET. Further information may be obtained by sending an email to sdcf@mindspring.com



Meet the Environmental Enterprises Assistance Fund

In 1990, recognizing that the failure of the developing world's financial markets to provide long-term debt or equity financing was impeding the growth or formation of renewable energy businesses, Winrock formed Environmental Enterprises Assistance Fund (EEAF).

Created with support from Winrock, USAID, and the Rockefeller Foundation, EEAF is now an established specialist that provides debt and equity financing to environmental entrepreneurs in renewable energy and other environmentally beneficial industries. EEAF is active in Latin America, Indonesia, and the Philippines, and has offices in the U.S., Costa Rica, and Indonesia.

EEAF's ultimate goal is to direct as much investment capital as possible into environmental industries.

After developing a track record of direct investments (more than 20 investments in eight countries), EEAF identified the opportunity to form larger investment funds to attract even more capital to its efforts. Such funds encourage participation of institutions that would not likely support smaller projects on an individual basis, due to unfamiliarity with the industry and high transaction costs.

In Central America, EEAF and its local subsidiary, Empresas Ambientales de Centro America, operate the developing world's first small business venture capital fund

for the environment. Capitalized at almost \$10 million, Corporacion Financiera Ambiental (CFA) is a model for creating sustainable development investment funds. CFA has approved eight investments (between \$100,000 and \$750,000) totaling \$2.5 million, six of which have been disbursed.



The staff of Empresas Ambientales de Centro America

These include a high head hydro installation in Costa Rica, solar leasing in Honduras, and oil recycling in Panama.

Sustainable development is a multidisciplinary endeavor. To identify businesses for investment, EEAF builds upon the work of multi- and bilateral agencies, NGOs, and technical assistance organization such as Winrock. EEAF works closely with these organizations and leverages their core activities. Frequently, these groups refer projects to EEAF for funding.

For example, the solar company financed in Honduras received funding from Winrock for a

feasibility study. Following the study, the company was funded through EEAF's managed fund CFA. In this way, financing marks a final step in realizing successful conclusion to the efforts of Winrock.

In addition to referrals, EEAF relies on the work of the development community in the policy arena. Support for sustainable development and the establishment and enforcement of environmental laws are necessary for EEAF's effectiveness in a region.

In the energy sectors, for example, EEAF President Brooks Browne notes that *as EEAF invests only in private sector businesses, private power laws are an important component to the creation of smaller renewable energy projects. Winrock's work in this area makes EEAF's job possible.*

EEAF is part of a broader effort by renewable energy-focused development specialists to transition sustainable development from the margin to the mainstream. Using venture capital as a tool to finance environmental companies, EEAF intends to make enough successful investments in a country to attract the participation of local capital sources and generate replication of those businesses by other entrepreneurs.

If successful, EEAF can prove that venture capital is indeed a missing link in implementing sustainable development.

Photo: EEAF

SELCO: SOLARIZING RURAL INDIA

by Dr. B. S. K. Naidu & Mr. Rahul Arora



SELCO is a solar energy services company that assembles and markets solar photovoltaic (PV) power systems to rural households and institutions in Southern India.

The main aim of the company is to provide electricity to the rural population. The other goal is to



A branch office of SELCO.

integrate PV into the mainstream of the local culture. PV provides the best solution for catering to the basic need of these villages.

Though its objectives would fit nicely with many non-profit organizations, SELCO operates as a business. Excellent, consistent, personalized service, in comparison to local electricity boards, local dealers of DG sets and inverters, is the prime reason for SELCO's success as a business.

SELCO's Marketing System

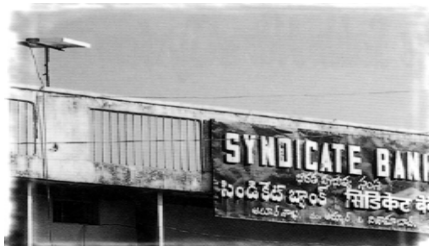
A SELCO Branch consists of a branch manager and appropriate technical support located in the villages. The technicians are also the salespeople and they work for SELCO on an income and commission basis. The aim is to provide quick after-sales service to the customers. It also

facilitates the monthly collection of loans.

SELCO now has well-equipped offices in Mangalore, Sirsi, Dharwad, Manipal, Puttur and Kundapur in the state of Karnataka. SELCO is also very active in the state of Andhra Pradesh with a branch office in Nizamabad. It has established mutually-beneficial relationships with the nationalized banks, Grameen banks, NGOs, the Indian Renewable Energy Development Agency (IREDA) and international investing agencies for promotion of solar PV systems.

SELCO Marketing Models

SELCO has set-up four different marketing mechanisms to suit various categories of its customers:



Syndicate Bank utilizing solar

■ Cash sale: SELCO installs PV system after a customer places an order with SELCO with advance payment.

■ Sale through banks: SELCO is working with large nationalized banks like Syndicate Bank and rural development banks like Malaprabha Grameen Bank to lend

for installation of SHS to its customers. In this scheme banks offer three-to-five-year loans to consumers for 90% of the SHS cost at an interest rate of 12 - 12.5% (priority sector lending rate). This is the first time in India that banks are offering credit for purchase of SHS.

■ Lease-to-own through a non-banking finance company (NBFC): In parts of Karnataka where NBFC's have presence like Manipal Finance Corp., Ltd., a financial intermediary registered with IREDA, SELCO installs SHS in rural homes under lease/finance from NBFCs, who then become eligible to claim certain tax concessions under local laws.

■ Loans via IREDA: SELCO also finances SHS to a certain class of customers by providing them loans at low interest rate with IREDA renewable energy financing @ 2.5% p.a. (World Bank Line of Credit).

■ Sale through local institutions: SELCO also works with rural institutions such as cooperatives, farmer societies, plantation companies, societies etc. to promote solar energy. These institutions are run by the local people themselves. They function like localized banks and provide loans to its members for installing SELCO solar PV systems.

The commercial models described above are non-exhaustive but they clearly show the diversity of marketing patterns which SELCO created for the advancement of SHS. SELCO is growing rapidly, it has more than doubled its revenue in the past year. (All photos are from SELCO)

Interview

Professor Mohammed Yunus Founder of Grameen Bank

Grameen Shakti has recently been set up as a power company affiliated with Bangladesh's world-renowned Grameen Bank to promote and supply renewable energy resources to rural households. In 1976, the Grameen Bank revolutionized poverty alleviation efforts by offering very small loans to poor women entrepreneurs. Bikash Pandey took the opportunity of Professor Yunus's visit to Washington D.C. in January 1998 to ask him some questions about Grameen Shakti, its objectives, and its clients.

BP: Grameen Shakti has been set up in affiliation with the Grameen Bank to provide rural households in Bangladesh with access to renewable energy systems. Do you see the role of renewable energy in increasing productivity, in improving the quality of life of rural people, or both?

PMY: Why not think of it as a straight business? We make renewable energy systems available to those that can buy them.

BP: I understand that most of the people buying your solar home systems are not the usual borrowers of Grameen Bank. So who is buying these systems?

PMY: Grameen Shakti is a business. You have to keep in mind that this is not Grameen Bank. It is another company with a completely different purpose of work. I will give you an example. Most of the people who take Grameen Phones, i.e. cellular phones, are not Grameen Bank borrowers. They are often rich people.

So if you say Grameen Phones are not being given to Grameen borrowers you are in a completely wrong set of mind. Similarly solar business is a business. In one way you can say that it has nothing to do with Grameen borrowers. So people who can pay for solar systems will buy them.

PB: Grameen Shakti gives out loans to customers to buy PV home systems costing between \$300 and \$500 each. Because of these high costs, subsidies, such as soft loans are needed before rural people can buy these systems?

PMY: No, this is all commercial. Who will give us money to subsidize these systems? We are ourselves borrowing money from the IFC on commercial terms. In addition to paying back this money, we also bear the foreign exchange risk. So financing will be expensive.

The real problem for us is not the rate of interest, it is the exchange risk. IFC interest rates are lower than the roughly 14% we would be able to borrow at locally. But the moment you want to repay the money, the exchange rate will be so adverse that you might end up paying 10%, 15%, 20% more money than you actually received.

BP: Is Grameen Shakti meant primarily to generate returns for its investors?

PMY: The company is meant for many different purposes. One is to make solar energy available to people who do not have access to electricity.

Another thing is that in villages where there is no electricity it will help us to bring cellular telephones. Without electricity you cannot have cellular telephones. So we need solar backing for telephones and for other things like the Internet, Intranet, and servers which we are also interested in.

All of these need energy but there is no energy available. So we thought that if solar systems are available from this company, we can buy from them.

BP: Are there more traditional productive areas that solar energy can help with?

PMY: I have no idea. People will figure out what to do once energy is available. It is unlikely that solar power would be used for industrial purposes because of the cost of high wattage systems.

BP: Could lighting increase productivity through increasing hours of work and hours to sell things?

PMY: The basic thing with solar PV is lighting whether you use it for education, for entertainment, for domestic lights, or for the marketplace.

BP: How many of the 37,000 villages that Grameen Bank is working in already have access to grid electricity?

PMY: We haven't counted among the Grameen Villages, but in the country as a whole, two-thirds of our villages do not have electricity today. We doubt that many villages will ever see electricity from the main grid despite government promises.

BP: Is lack of electricity hindering micro-entrepreneurs from making more sophisticated products?

PMY: Electricity would definitely have helped if it was available. Without it there are other kinds of things people can do.

The economy itself doesn't get a big boost if you don't have electricity. So to that extent all economic activities will suffer.

BP: Do you carry out market studies before you begin Grameen enterprises such as Grameen Shakti and Phones?

PMY: We are your ordinary kind of business people, we don't do studies and things, we just sniff and see and talk to a few people. And if it seems good we just go ahead and do it.

We have now been involved in 16 companies already and many more are on the drawing board. If the opportunity arises we may get involved in broadcasting, television, satellite TV, or software, data processing. Another business we find very interesting that we may get into in a big way is the seed industry. This is something that is money-making and at the same time it is useful to people. That is how we come up with ideas.

At the same time we look for opportunities to find money. Each business needs money. Most of our business money comes from bank loans. Grameen Bank does not give loans to these enterprises. So we have to source money from other commercial banks, or international banks.



Photo: Busath Photography

Professor Mohammad Yunus

We have issued bonds for Grameen Bank but not yet for our other companies. So that is another source of money. Or we might go to the stock market; sell your shares and raise money for bigger enterprises. That is also possible.

We haven't publicly issued our shares yet. So if we wanted to make Grameen Phones five times as big, for example, all we need to do is to go to the stock market and issue shares and I am sure that people would love to buy Grameen Phone shares. These are potentially very profitable enterprises.

BP: With Grameen as a prefix to the name of all these enterprises, do these companies still have a rural focus or do you serve urban populations as well?

PMY: Grameen does not stand for rural anymore. It has become a generic name for all our activities now. Grameen Phone is almost entirely in urban areas right now. In 28 villages there are women who operate Phones as an income generation activity. But this compares to a total of 20,000 subscribers we have so far.

Grameen is now more a company name. The Grameen Bank in the beginning meant rural bank. But today, nobody thinks of Grameen as being strictly rural. All over the world, people think of it as a bank for the poor.



Guatemala (continued from Page 1)

majority of the funds Guatemala now receives to implement its 1996 peace accords is directed towards institutional reform rather than infrastructure.

Project Sustainability: in early projects where the equipment was donated, programs have literally been abandoned due to lack of interest and maintenance. In order to ensure participation and commitment from the community—and thus project sustainability—families must make more than a symbolic financial contribution.

The Credit Mechanism

Creating a credit mechanism to accompany a PV project is more complicated and time-consuming than installing the equipment itself, and it requires a significant level of confidence between communities and project coordinators. The Fundación Solar found that many communities were initially resistant to the concept of credit. Frequently they were unfamiliar with the idea and/or fearful of banks and credit institutions due to previous negative experiences.

Moreover, the Fundación Solar did not have the resources to provide loans itself. Thus it created institutional partnerships between international donors, governmental organizations, equipment suppliers and local credit institutions. Such collaboration meant convincing private developmental organizations, who were accustomed to providing only donations, of the long-term development benefits of financial contributions from the communities.

One of the keys to successful credit projects is flexibility, particularly in determining the proportion of the system costs that a community will pay. The Fundación has found that in many areas communities that desired PV systems simply could not pay the entire cost (US\$700, with interest rates between 18% and 30%), or were reticent to take on such a large credit the first time around.

Thus community contributions generally range from 25% to 100% of the system cost, with repayment schedules between six months to three years.

Beneficiary versus Client

Community financial participation improves the relation between outside institutions and the communities. Instead of seeing the families as beneficiaries who ought to be grateful for whatever help they are offered, the institutions working with the communities view the families as clients who deserve quality service.

In La Canoa, where Fundación Solar first introduced the concept of full credit, for example, in order to promote the project, as well as to thank those who had already bought systems, the credit institution CREDIEEGSA organized an inauguration party for the project, complete with food and music.

A community's experience with small credits also familiarizes them with the concept of loans and gives them the confidence to request other credits in the future, as well as a sense of pride and the confidence to demand quality service. For example, the village of Los Paxtes, in the northern department of Baja Verapaz, had barely celebrated the first anniversary of their PV credit project when villagers began to look for another loan to buy fertilizers for their crops. Before the PV project, they never imagined that they could obtain such a loan.

These projects are often difficult in areas where communities are accustomed to receiving free international assistance, and some communities will simply not be able to afford such a project. Nevertheless, for many families, PV credit programs are an excellent way to bring light to their homes, to gain valuable financial experience and knowledge, as well as to increase their sense of project ownership and pride in their systems. Finally, PV credit programs allow energy PDOs to do what they are supposed to do: use their resources efficiently to provide energy to the greatest number of people possible.

For more information on the evolution of community-based PV illumination projects in Guatemala, visit the upcoming REPSO section of Winrock's renewable energy page (www.winrock.org) in July 1998.

What's New in REPSO?

India...

REPSO India has begun a renewable energy newsletter, *REPSO Vision*. The goal of the publication is to allow the office a platform which they can use to interact with all members of the renewable energy sector in India and elsewhere.

The second issue, published in January 1998, features articles on bioenergy development, electric vehicles, and hydro work in India, publications by REPSO-India staff, and the upcoming REPSO-India website.

For a copy please contact Anita Kuhler at the REPSO-India (winrock-delhi@cgnnet.com).

Indonesia . . .

REPSO Indonesia (RENI) manager YBUL (Yayasan Bina Usaha Lingkungan) recently awarded a grant (through their UNDP/GEF Small Grants Program) to PT Linsing Rens, a local solar PV dealer, who has developed a buoy which uses solar-powered lights. These lights are designed to replace kerosene lanterns for use by local fishermen who use purse-seine technique to capture fish at night.

Formerly, fishing was conducted using buoys rigged with as many as 12 kerosene lanterns to attract fish into nets which covered an area of up to one km. square.

These kerosene lantern buoys were dangerous and sometimes exploded if they became wet or too hot. Additionally, a typical fishing crew needed to use up to 40 liters of kerosene a night to generate power for the system.

The panels sit on the dock or on the top of a boat steering house during the day, charging the batteries for night use and providing a reliable and safe source of lighting.

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LaRocco *(continued from page 1)*

moved out of labs and workshops and into communities this has become a deadly ailment.

Subsidies and grants have to make sense. Broad justifications like “testing consumer acceptance” cannot gloss over financial reality. Somebody benefits: an end-user, a utility, a government, society in general. Somebody is already incurring costs, monetary and non-monetary, for energy services. Funds are needed to cover initial costs and the energy asset needs to be maintained to provide services tomorrow not just today. Otherwise the projects and enterprises cannot be sustained.

These are simple things, easy to quantify and easy to present. Combined with the fact that the audience of organizations, investors and specialized funds is growing and that the Internet can allow interaction between projects and funders as never before, the lesson is clear: There is nothing to be afraid of. Write a business plan. That’s what Bill Gates would do in your shoes.

Don’t Take It For Granted - It Isn’t A Walk in the Park

The second disease is caught by those who know everything said in the preceding paragraph, in fact a little too well. The result is cool color presentations with 20-year projections and at least six sensitivity analyses, plus IRRs on smaller and smaller amounts of equity offset by longer and longer debt service schedules down to the penny.

The problem is that most of the assumptions underpinning these superb presentations are just that—assumptions. When you inquire as to the basis—agreements with suppliers, contractors, and lenders; understandings on fuel or the purchase of energy; ability and willingness of end-users to pay; government approvals and concessions; capability of the development organization and its sources of equity—frustration builds on both sides.

The document may look like a business plan but it is only a concept paper, and that won’t get the attention of serious people, whether done in Power Point, Harvard Graphics, or with crayon on cardboard. Serious

people want a simple clear story, with clear delineation of what is certain, what is reasonably probable based on work in progress, and what is early-stage thinking.

Don’t Believe All Those Project Finance Seminars - There Are No Truths Carved in Stone

Our third disease is characterized either by paralysis or by lots of motion with no perceived movement. Most of the people who catch this disease know all the questions in this essay and lots more, and they know with certainty (the kind learned by being told *no* a few times) that there are a limited number of correct answers. They keep working on what they are sure is the correct answer, and while they are busy toiling the world changes beneath them.

Their mistake is believing that finance principles are everything, and that the rules of finance are well-known, well-established, and must be applied as known and as well-established.

The most common symptom of this disease is the word *must*, as in: there must be personal guarantees and 100% collateral which must be perfected . . . the project must deal with all facets of foreign exchange . . . we must have a long-term power purchase agreement from a creditworthy utility or end-user.

And so on. These issues drive capable people from smaller more important innovations and into the arms of more “tried and true” projects (which are sometimes “tried and false”).

The School of Right Answers is often reinforced by conference presentations where project finance experts set forth the rules of the game with little grounding in the realities of renewable energy projects and enterprises. Project finance is less than 50 years old. Its roots are in public purpose initiatives. Like all techniques, it has uses and it has limits.

Non-recourse project finance as presented by a commercial banker at a conference is not going to be the financial tool that profitably energizes a billion or so people and businesses who can afford these services.

Government didn’t build the port of London or the George Washington Bridge either. New financial instruments and intermediaries were needed then and they evolved. The same has and will happen in renewable energy finance. This issue of *REPSource* introduces some of these innovations.

Stay tuned (or better yet, invent a better mousetrap).

What are the lessons here (*here* being an emerging sub-sector of an emerging industry in emerging markets)? First, business and financial planning is crucial and must be incorporated into project thinking as early as possible. Who is going to pay for what and how? Is our team complete enough to deliver on all the requirements of this project or do we need partners?


Second, prepare a business plan. It doesn’t need to be fancy. It needs to be clear and thorough and it needs to distinguish the assumptions grounded in reality from those simply assumed.

Keep in mind that there has been little original written material since Shakespeare died and investors basically want answers to those old journalist questions: What are you proposing? Where is this to take place and when? Who are you? Why does this make sense? How do you plan to succeed?

Third, shop the business plan around, be persistent (e-mail is your friend) do not be discouraged, and at the same time learn to accept a “no” and move on. If the project makes sense someone will say, “if you get A, B, and C done, then I’m interested.” He or she may not be willing to pay for A, B, and C but at least you are dealing with a smaller problem than before.

My colleagues and I consider ourselves to be specialists in renewable energy finance. *Specialists*—as in we do this exclusively for our livelihood. This should not be confused with *experts*. And we are specialists in renewable energy finance not energy finance. We leave that to Texaco, Goldman Sachs, and GE Capital.

Nor are we specialists in renewable energy, where Soluz Dominicana, IEI and dozens of other capable organizations, men, and women do the essential work.

We are part of an emerging (there’s that word again) group of professionals who believe that finance is important enough to warrant specialization, while at the same time we know with certainty (the kind you gain by lots of trials and many errors) that finance represents just one piece of the complex equation that can lead to successful renewable energy projects and enterprises. A necessary piece for success, but not a sufficient piece alone to assure success. 

Winrock International is a private, nonprofit organization that works with people to build a better world—increasing productivity and rural employment while protecting the environment.

We work independently or in collaboration with other organizations. This allows for the flexibility and responsiveness essential to development success. Efforts focus on five critical areas: agriculture; forestry and natural resource management; leadership and human employment and enterprise development.

Winrock's staff of more than 200 implements projects in 40 countries. Activities are funded by grants, contracts and contribution from public and private sources. Winrock is headquartered on Petit Jean Mountain near Morrilton, Arkansas, and has offices in Arlington, Virginia, and around the world.

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