

Financing the future

Sustainable energy developers face significant structural barriers in accessing the capital markets. **Eric Usher** explains how UNEP is working to bridge the gaps in the 'financing continuum'

With primary energy demand projected to rise steadily in the coming decades, trillions of dollars will be invested worldwide in every step of the energy supply chain. Even with the promise of nascent sustainable energy technologies, conventional energy supply is firmly embedded in the current market system, relying heavily on polluting fossil fuels that take their toll on the human environment.

In developing countries the situation is most acute at the local level, where half the world's households still use solid fuels (biomass and coal) for cooking and heating in simple devices that produce large amounts of localised air pollution. This pollution, a combination of carbon monoxide, smog and particulates, is responsible for 4–5% of the global burden of disease and costs an estimated 0.5–2.5% of world GNP – some \$150 billion–750 billion a year.

Globally, mounting evidence continues to link conventional energy sources, global warming and climate-related natural disasters. In a landmark UNEP Finance Initiative study released in October 2002, a group of major

global financial corporations stated unequivocally: "Climate change poses a major risk to the global economy... Worldwide economic losses due to natural disasters appear to be doubling every 10 years and, on current trends, annual losses will reach almost \$150 billion in the next decade."¹

Clearly, if conventional fossil-fuelled infrastructure maintains a dominant share of the energy mix in future, these environmental impacts, and others, will continue to increase and cause significant social and economic costs. There is a compelling environmental imperative for changing the energy mix.

As the environmental agency of the United Nations, the UN Environment Programme (UNEP) is working with the finance sector in developed and developing countries to create and promote new financing products for sustainable energy systems based on renewable energy and energy efficiency technologies.

Greening the mix

The finance sector's exposure to renewable energy and energy efficiency grew through the 1990s, although more recently this has declined with the economic downturn and disruption in the international energy markets. Nonetheless, there are some promising efforts under way in emerging markets, including a number of groundbreaking clean energy funds, and the first carbon transactions. Such efforts are backed with high-level support – for example, the recent announcement from Prime Minister Tony Blair that the UK government's Export Credits Guarantee Department will provide \$78 million of cover for renewable energy exports.

As promising as these initiatives are, the reality is that the market development and initial transaction costs of creating new financial products for a

niche sector are prohibitive, which leads most financiers to wait on the sidelines instead of acting as first movers. This attitude is compounded by a lack of information, experience and the tools needed to quantify, mitigate and hedge project and financial product risks.

Without a conscientious effort to address some of these barriers and to increase finance flows, investment in clean and 'carbon-lite' sustainable energy options will be insufficient to make a real difference in the overall energy mix. A mandate exists for public interventions from policy-makers and organisations such as the UN to help create and spur markets towards a greener energy mix.

UNEP and sustainable energy finance

As part of UNEP's Division of Technology, Industry and Economics, UNEP Energy has been working with the finance sector for some time on new approaches to financing sustainable energy. Through various programmes, UNEP has implemented a variety of market instruments or financial catalysts aimed at helping financiers share risks, lower transaction costs, build capacity and address various other barriers that restrict the creation of sustainable energy investment portfolios. This work builds off, and is often carried out in partnership with, other UNEP teams and collaborating agencies, particularly the UNEP Finance Initiative, the UNEP Risoe Centre and the Basel Agency for Sustainable Energy.

Seed capital

The Rural Energy Enterprise Development (REED) initiative is a flagship UNEP Energy effort, focused on enterprise development and seed financing for clean energy entrepreneurs in developing countries. To date, \$8.7 million has been committed to REED programmes in Brazil, China and five countries in Africa. This 'energy through enterprise' model has been pioneered by the US-based clean energy investor E+Co and advanced by a partnership between UNEP, E+Co, the UN Foundation, the W Alton Jones Foundation and a diverse group of country enterprise development partners.

The African programme, AREED, is the most advanced to date, with debt and equity investments in 15 clean energy enterprises. These investments, ranging from \$20,000 to \$120,000, have seeded solar crop drying, sawmill waste charcoal production, efficient cook stove manufacture, wind water pumping, solar water heating, liquefied petroleum gas distribution and energy efficiency businesses.

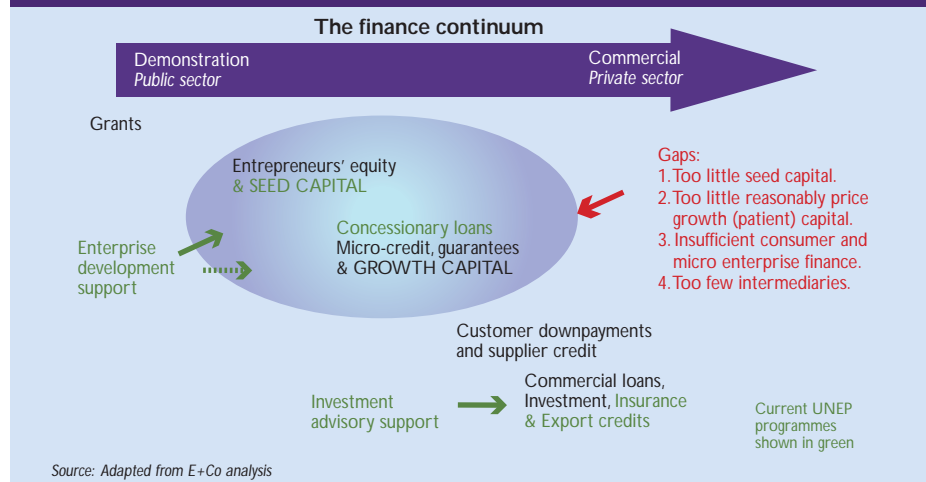
REED invests in small- and mid-size enterprises (SMEs) that deal in clean energy products and services, a sector generally considered too risky to attract conventional sources of finance. Equity investments are structured to provide returns commensurate with 'pilot' or early-stage capital while debt investments are based on current market rates available for SMEs in each country, the underlying risk of

Making charcoal from sawmill waste – with a little help from UNEP



¹ *CEO Briefing*, a document of the UNEP Finance Initiatives Climate Change Working Group summarising the findings of a major two-phase study on the financial services and climate change. Available at www.unepfi.net.

Filling gaps in the finance continuum



the investment and the expected cash flow of the enterprise. An underlying goal of REED deal structures is to prepare young enterprises for later growth capital from more commercial sources. A young enterprise that manages to service a first loan from REED is well positioned to attract later financing from a local bank.

Underlying the REED approach is a shift from conventional grant-based technology demonstration programmes to the seed capital business. Instead of dropping a few wind pumps into rural villages, for example, the same funds can be used to invest risk capital in a clean energy entrepreneur who, if successful, could eventually install, maintain and service hundreds or thousands of pumps. UNEP firmly believes that assisting entrepreneurs to take risks and to innovate is an effective way to gain public trust while attracting commercial investment into the sustainable energy sector.

The REED programmes fit within an overall strategy to help create a 'finance continuum' that can carry new ideas and technologies from the public sector supported demonstration stage through to commercial investment (see figure). Whereas seed funds are usually backed by government donors or foundations (in a sense pulling grant money down the continuum), growth or 'patient' capital is typically a blending of donor and commercial capital (pulling the finance sector up the continuum).

A good example of growth capital is the Empowerment through Energy Fund launched on 4 June in Pretoria and managed by an E+Co investee company, RAPS Finance. This 60 million rand (\$7.7 million) fund, a blend of soft capital from the Shell Foundation with commercial capital from the South African banks Absa and the International Development Corporation, is positioned to finance sustainable energy SMEs with proven business models but still considered too risky or lacking sufficient collateral to be financed by commercial sources. UNEP is also working with the Global Environment Facility to develop similar approaches elsewhere. These various initiatives combine to help plug gaps in the middle of the finance continuum, an area some developers have termed the 'valley of death'.

Buying down interest rates

Catalysing increased flows of capital into sustainable energy can also be achieved through finance subsidies. UNEP's position is that, without appropriately targeted subsidies, the ability of under-served populations to gain access to clean and affordable energy services is limited. Of course, the challenge is to use subsidies in ways that allow the target markets to continue to grow after the subsidy is removed.

A four-year, \$7.6 million effort was launched early this year by UNEP to help accelerate the market for financing solar home systems in southern India. The programme is a partnership between UNEP Energy, the UNEP Risoe Centre and two of India's largest banking groups – Canara Bank and Syndicate Bank. The

aim is to help the banks develop solar lending portfolios through their 300-plus branches in the states of Karnataka and Kerala.

With the support of the UN Foundation and the Shell Foundation, the programme provides an interest rate subsidy to lower to 5% the financing cost for consumers of solar home systems. Rather than have Canara and Syndicate simply intermediate the on-lending of donor capital, this approach has them lending \$6 of their own capital for every \$1 of UNEP subsidy, which itself is fully passed on to the consumer. By working through a combination of two banks and a number of qualified solar vendors, this market-driven approach is stimulating competition among vendors and ensuring quality products, competitive pricing and reliable after-sales service.

Finance facilitation

Some grant-based mechanisms have also been tested that specifically target deal origination and transaction costs. Between 1999 and 2002, UNEP put \$750,000 into promoting clean energy investments in developing and transition economies through its Investment Advisory Facility (IAF). Supported by the Global Environment Facility, the IAF, which ran for three years, provided banks and financiers with third-party expertise to help evaluate prospective debt and equity investments in the sustainable energy sector.

Financiers used the IAF to obtain the advice of expert consultants on specific issues of project feasibility, such as legal concerns, environmental assessments or even financing linked to carbon reductions. In a mature market, hiring outside expertise to resolve these sorts of issues would usually be the responsibility of the project developer who would recoup the costs during project operation. However, sustainable energy project developers are typically small and not particularly robust and therefore often unable to absorb these transaction costs, particularly given that they are often higher than those in mature markets.

By channelling support through the financiers, the IAF was able to identify the most bankable projects and ultimately help developers access capital. Examples include a \$1.2 million energy crop plantation in Tanzania, a \$36 million 20MW small hydro peaking plant in Guatemala and a \$25.5 million Latin American clean energy fund.

Besides the IAF, UNEP's collaborating centre the Basel Agency for Sustainable Energy (BASE) has also been running a number of finance facilitation programmes, including the BASE Investment Forum, the Financing Sustainable Energy Directory and the BASE Coaching Programme.²

Valuing carbon

UNEP has also helped link conventional finance to evolving markets for carbon trading. Through the IAF, a number of projects and energy funds received support and assistance to assess carbon streams and close transactions. These include the 20MW Wigton wind farm in Jamaica, which eventually secured a carbon offer from the Dutch government's procurement programme, and various investments in the Dexia-Fondelec Energy Efficiency and Emissions Reduction Fund. At the transaction level, new approaches are being considered for bundling small-scale projects, including the pooling of enterprises being seeded in the REED programme.

Looking forward

A number of new activities are in development. The Italian government is supporting a new UNEP finance facilitation initiative as part of the Mediterranean Renewable Energy Programme. Planning is also under way for work on risk management products, both insurance and non-insurance related, and on export credit finance. More generally, a broad new area of activity will be to develop jointly with finance sector partners a portfolio of tools, guidelines, market reports and capacity-building activities to help financiers assess and manage risks, improve deal origination and lower transaction costs.

Achieving critical mass will require investment, finance and insurance products to create the liquidity necessary for vibrant markets in sustainable energy. By providing first mover financiers with the tools, support and networks to drive the cycle of financial innovation, it is hoped that UNEP can help move the sector from a niche market to a more mainstream status acceptable to conventional finance institutions.

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² See www.energy-base.org and www.fse-directory.net for more information.