

SUSTAINABLE ENERGY NEWS on EMAIL (SENSE)

Number 35

Welcome! SENSE is a service of the Sustainable Energy and Climate Change Project (SECCP) a project of Earthlife Africa Johannesburg.

SENSE is a regular publication, edited by Nkosana Rakitla. We welcome any feedback and submissions. Also let us know if you wish to be removed from this list, know someone else who should be receiving SENSE, or if you'd like to receive our separate Climate Change email newsletter, CCEN.

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Note from the Editor

Dear SENSE reader

Welcome to the last edition of SENSE this year, it been an exciting year especially particularly regarding energy policy development. We have seen the launch of the National Integrated Resource Planning II of NER and recently the Integrated Energy Planning 2 is underway just to highlight on a few. This edition of SENSE will give you some insight into the two plans and as usual a progress report on sustainable energy.

I hope you will enjoy reading SENSE, best wishes for the festive season and will see you on the New Year.

Yours in a just transition to sustainable energy and climate change response
Nkosana Rakitla

Holiday notice: SECCP out on holiday from 15 December and will be back on 09 January 2005

1. SECCP News

SECCP gives input to the Electricity Regulation Bill

By: Nkosana Rakitla

On the 31 August 2005 the Electricity Regulation Bill was gazetted, calling for the public to make written comments and in the first week on November the Minerals and Mineral Parliamentary Portfolio Committee held public hearings on the bill. The SECCP made written submissions and participated in the public hearings, focusing on the need for Bill to provide a mandate for the National Energy Regulator **to implement a Stepped Block Tariff**, to address inequities in the electricity pricing system. Initial blocks or portions of electricity consumption should be charged at a lower rate than consumption above a particular threshold, which could be subject to an escalating tariff, with tariffs set separately for different classes of consumers.

This would correct the disproportionate benefits enjoyed by more electricity intensive consumers, resulting from the externalisation of most of the true cost of generation, as well as encouraging efficient use and conservation of electricity.

Access to affordable energy services - we emphasise the need to specifically address the affordability of access to energy services and means to ensure that research and development spending be directed to achieving public benefits, particularly job creation.

Advisory Committee - we view The National Energy Advisory Committee as a particularly necessary institution and we urge that it not be so small as to be dominated by vested business interests, but should allow representation of the full range of interests including NGOs, communities, consumers, labour, small business/entrepreneurs, etc

Customer and Consumer Forums - We would like the functions and mandate of these forums, which would be publicly funded or funded by licensees. to be identified and spelled out in the Bill. Given that the Regulator will constitute the forums and Licensees might be required by a licence condition to constitute a forum there's a need for clear mandate to avoid unnecessary duplication.

Equitable access to the transmission and distribution network - We are encouraged that the regulator sees the need to include in the licence the provision for a licensee to provide non-discriminatory (equitable) access to transmission and distribution power network to third parties. This an essential step in levelling the playing field for smaller companies, such as would be involved in renewable energy projects. Ensuring equitable access, combined with internalisation of full costs, should also facilitate competition, which will drive utilities to improve efficiencies .

Capacity Building For Energy Policy Activist

Participants at the Energy Policy Unit inception workshop in August called for capacity building workshops on the Energy Policy –processes and content and whether these are working for the people. We therefore calling on activists to express their interest in workshops proposed as follows:

When and where are the workshops?

The workshops will held in the third week of February 2005 and will run in Johannesburg, with dates to be finalised according to availability of participants. There is some money available to support participation from participants from outside of Gauteng.

Who are the workshops for?

The workshop are for energy activists wanting to influence how South Africa develops and uses its energy resources, so that everyone has access to energy that is affordable, appropriate, and sustainable.

The workshops are based on a participatory learning approach, which recognises prior learning and experience. Preference will be given to applicants actively involved with energy policy (e.g. participants of the Energy Caucus), whose organisation or community group supports their application.

What will you get from the workshops?

At the end of the workshops you'll have a greater understanding of what policies are the in place and opportunities for influencing policy, where energy policy comes from and where it is going.

Requirements to be part of the workshops:

- Have access to an e-mail account (as assignments will be e-mailed to participants)
- Speak English, as the workshops will be run in English
- Live in South Africa
- Have one week blocked out for the workshop (third week of February).
- Broadly support the principles of the South African Energy Caucus – www.earthlife.org.za / seccp
- Sign a Memorandum of Understanding in which you commit to fully participate in the course

Do you want to be part of workshops?

Send your CV (which includes your name and contact details) and a letter of motivation describing:

- Why you are interested in participating in the workshops (your interest in energy policy)
- What you hope to get from the workshops
- Your experience of activism
- Your availability in the period 13 – 24 February

Send your CV and letter of motivation to:

Nkosana Rakitla

E-mail: Nkosana@earthlife.org.za

Fax: 339 3270 or 086 686 8434

Post: PO Box 11383, Johannesburg, 2000

Deliver: 11th floor East Wing, Auckland House, 185 Smit Street, Braamfontein

Deadline for applications: 13 January 2005

2. SA Sustainable Energy progress

Time for RE, has it come?

By: Nkosana Rakitla

There are a number of reasons why “green energy” – energy generated from renewables resources has remained on the fringes. The most important is cost and the related issues of generating a financially attractive return on investment in renewable energy technologies (RETs). Coal fuels around 92% of South Africa’s electricity needs and round 74% of the total energy supply. The abundance of coal and its relation to low mining costs contribute to making SA’s electricity one of the world’s cheapest, therefore putting any other generation technology at a price disadvantage.

In his paper *Meeting South Africa’s Renewable Energy Targets* (December 2004 paper) - University of Cape Town Energy Research Centre director Thomas Alfstad estimated that generating an additional 4Tetra Watts (TWM) from Renewable Energy by 2013 would cost R10billion more over the next nine years than generating that from non-renewable sources.

Another study “*the potential contribution of renewable energy in South Africa*” commissioned by SECCP shows that SA has the opportunity to generate up to 50% of its total energy requirements from renewable resources by 2050 and that Renewable Energy Technologies (RETs) could be cost competitive with conventional technologies before 2015.

The reason why, generating energy from non-renewable is less expensive than renewable, it that non-renewable energy generation does not include external cost, such as adverse health effects and air pollution which are paid for by the public, not by the power utility. Now is the time to apply real triple bottom line accounting to SA’s energy industry, as that will then illustrate the economic, social and environmental costs acquired from non-renewable base energy generation. This approach would change the relative cost equation, which has to date reduced the attractiveness of renewable energy SA’s energy planners, investors and consumers.

There are three reasons why SA’s planners, investors and consumers should start to look seriously at the these renewable energy options. Firstly is not true that coal is the abundant energy source in South Africa, it is finite and will run out. The abundant energy source in SA is renewable energy largely been solar it will never run out.

Second, Renewable Energy (RE) can achieve other public benefits like opportunities to achieve social objectives, such as job creation. The potential for RE to address high unemployment rate is especially striking when compared to thousands of job losses in the electricity sector in the last 20 years. A study into “*the employment potential of renewable energy in South Africa*” that was undertaken by AGAMA Energy in 2003, shows that “If South Africa generates just **15% of total electricity** use in 2020 using Renewable Energy Technology, it will create 36 400 new direct jobs, without taking any jobs away from coal-based electricity.

Thirdly, our country is faced with a challenge to mitigate the environmental impact of energy production and consumption including climate change, therefore we need to make a just transition to sustainable energy away from fossil based energy.

To get copies of the studies commissioned by SECCP visit www.earthlife.org.za / seccp or contact: nkosana@earthlife.org.za

Renewable Energy Finance and Subsidy Office (REFSO)

The Department of Minerals and Energy (DME) has established the Renewable Energy Finance and Subsidy Office (REFSO), whose mandate includes: The management of renewable energy subsidies.

The provision of advice to developers and other stakeholders on renewable energy finance and subsidies, (including size of awards, eligibility, procedural requirements, etc), as well as opportunities for accessing **finance from other sources** is available at this link.

Renewable Energy developers are requested to submit Expressions of Interests as early as possible to DME's RE Finance Subsidy Office, Tel number: +27 12 317 8569, E-mail: Refso@dme.gov.za. The decisions regarding the award of Letters of Registration and the subsequent awarding of subsidy contracts will be made by the Departmental Renewable Energy Subsidy Governance Committee (SGC), which will meet three times a year.

Are seeds the next source of oil?

Based on article in the Mail and Guardian, 07th October 2005

The Barolong Boora Tshidi community in partnership with the North West Government and the Mafikeng Bio-Diesel Company is involved in a pilot project that could ease the country's dependence on fossil fuels by extracting oils from plants to create bio-diesel.

The cost of extracting plant oil and the production of bio-diesel will be less than that of fossil fuels, the Company says. It is hoped the fuel will replace between 1% - 8% of fossil fuels in South African (Petroleum, oil, diesel) and will help in decreasing the rampant rise in emission of greenhouse gases.

The project includes the setting up of a nursery, a 60-000ha plantation and a refinery. The nursery has already been established and an environmental impact assessment of the land use started in February this year.

Trees are being tested to determine their oil-yield; these include the sour plum, Horseradish tree, Jacket Plum and Purging Nut (*Jatropha Curcas*). The project has secured R4, 75 million from the North West Government, with the promise of an additional R10million. The project is currently negotiating a loan of at least R1billion for the development of the 60 000ha plantations. The Barolong Boora Tshidi, as the main beneficiary and legal occupants of the land, will aim at providing jobs to the land users and tribal members first. Commercial farmers in the Mafikeng area have also shown interest in the project, they want to enter the bio-diesel industry right away.

The community members will work on the project in a cooperative structure and will be responsible for collectively carrying out the ideas and making decision regarding the operation of the project. The project director says the project also assist in increasing wealth within the rural areas and might result in metropolitan overspills – where rural areas are developed in order to lure people out of the urban areas, thus reversing the pattern of movement from rural to urban areas.

3. SA Unsustainable Energy: Eskom Watch

New EIA process for PBMR with higher energy rating

By Richard

The Pebble Bed Modular Reactor (PBMR) project is to be subject to a full Environmental Impact Assessment (EIA) process, following the successful legal appeal against the record of decision of the previous EIA. Any interested and affected parties can register with the consultants conducting

the public participation process, by phone: 012 362 2908 or e-mail: pbmr@mawatsan.co.za. Given that procedural shortcomings were the primary basis of the legal appeal, we should be able to expect a rigorous process this time around.

One of the factors cited in objections to the previous approval, granted under then Minister Valli Moosa - now Executive Chairman of Eskom, the parent company of PBMR Pty (Ltd) – was discrepancy between the power rating of the design considered in the EIA and that subsequently planned for construction at Koeberg. The electricity generation output has been increased from 110MW to 160MW in an attempt to improve the prospects of eventually achieving economic competitiveness, assuming that the test plant performs somewhere close to expectations.

Lack of both an EIA approval and initiation of licensing process has not stopped taxpayers money being given to the company (R1.18 billion directly allocated from the National Treasury), but it may provide the basis to halt some of the construction work being initiated

Environmental Impact Assessment (EIA) for Peaking Power Station

The construction of the Peaking Plants is owing to the growing need for increased electricity, the demand for which may exceed supply by 2009, according to the national electricity demand forecast is such that the peaking generation capacity must be in operation by 2009.

Since electricity storage is expensive, it must be generated on demand. Therefore, long term options to meet the demand range from reinstating (mothballed) power stations to identifying other options, powered by alternative fuel sources, in the case of the Department of Minerals and Energy's (DME) proposed power Gas turbines will be used because of their quick start-up time, i.e. they can begin to generate electricity within a few minutes of starting the power plant.

Currently the DME on behalf of an Independent Power Producer (the ultimate owner of the power plant), still to be chosen after competitive bidding process, is undertaking an Environmental Impact Assessment for the construction of this Power Plant.

To participate as an Interested and Affected Party in the EIA process contact Ms Jayshree Govender at jayshree@eims.co.za, tel: 011) 789-7170

4. SA general energy

SA Government committed to energy of the future

By: Nkosana

Recently the deputy of Minerals and Energy, Lulu Xingwana launched the second National Integrated Resource Planning (NIRP 2) of National Electricity Regulator (NER), which is the predecessor of the new National Energy Regulator of South Africa (NERSA).

The NIRP is a long-term plan by the NER to inform construction, licensing and decommissioning of power plants in South Africa. The government has alluded to the fact the energy sector is undergoing a long term reform process in its structure generation, transmission and distribution and the diversification of energy sources in order to meet the growing demand for energy.

The objective of the NIRP2 is to determine the long term least cost electricity supply options country under current market conditions, introduce competition in the Electricity Supply Industry (ESI) and introduce Independent Power Producers. Further the NIRP2 is drastically improved compared to the predecessor NIRP1, in that it provides moderate and high electricity demand

forecast, a complete database of the cost and performance of the generation plant considered in the optimisation, detailed output results, methodology applied to the planning process and risk and sensitivity analysis.

The National Integrated Resource Planning of NER is available on the NER website:
www.ner.org.za

SA ten-year energy needs to cost R171bn – DBSA

Based on the article by: Creamer's media, 8th December 2005

According to Development bank of Southern Africa (DBSA) energy sector specialist Jean Madzongwe South Africa will require some R171-billion over the next decade in energy infrastructure spend, she said that this money would need to be focused on upgrading existing liquid-fuels infrastructure, demothballing and building new electricity generation capacity, investing in renewable energy sources, provision of electrification to households.

5. SA Energy Policy

Victory for environmental justice movement: Positive precedent against incineration of hazardous waste!

By: Earthlife Africa, groundWork and Legal Resource Centre

Civil society organisations have welcomed the decision by the North West Province to deny Holcim Cement permission to burn hazardous waste in their cement kiln in Dudfield, outside Lichtenberg (Ditsobotla Local Municipality District) in the North West Province. The decision is an important precedent.

Earthlife Africa Johannesburg [1], with legal representation from the Legal Resources Centre (LRC) [2] office in Pretoria, submitted comment during the Environmental Impact Assessment and raised various concerns about the project. These concerns were considered favourable by government and the reasons for rejecting the Environmental Impact Report are as follows:

- Cumulative impacts were not considered;
- Reference to waste materials that would be burnt is "vague and wide";
- The Stockholm Convention on Persistent Organic Pollutants (POP's) identifies cement kilns firing hazardous waste as a potential source of dioxins, furans and heavy metals;
- No alternatives including the "no-go" option is discussed; and
- The emission inventory was not based emission measurements or mass balance. [3]

Louise du Plessis, of the LRC who acted on behalf of Earthlife Africa Johannesburg indicates that it is encouraging to see that the provincial department considered the matter so carefully and had the good judgement to implement the precautionary principle.

Earthlife Africa Johannesburg spokesperson on this issue, Richard Worthington, indicates that, "Holcim's project is a classic case of opportunism dressed up as altruism: turning a blind eye to toxic emissions such as organochlorines (dioxins and furans), fudging the details of proposed "fuels" and claiming environmental benefits. Such projects seek to turn the polluter pays principle on its head - instead of industries accepting the costs of redesigning processes or products to avoid hazardous wastes, they now market their wastes as a commodity, which is presented as a "clean fuel" on the basis of avoiding one or more of the pollutants associated with coal (traditionally the dirtiest fuel). It is encouraging that such attempted slight-of-hand has been rejected by authorities."

Llewellyn Leonard, groundWork's [4] Waste Coordinator, visited the local municipality in Lichtenberg in 2004, and in an address to the Mayor Mr. J. Bogatsu and his officials presented the health and environmental concerns of burning hazardous waste in cement kilns. This was followed up with a similar meeting with the National Union of Mineworkers who organise in the cement industry nationally. "It is only through careful and systematic building of our knowledge base on the dangers of hazardous waste incineration, that these proposals will be halted", stressed Leonard.

Various civil society organisations, including groundWork, Earthlife Africa, Wildlife and Environment Society of South Africa, the South Durban Community Environmental Alliance and Injiya ya Uri have consistently addressed their concerns on the burning of hazardous waste in cement kilns to the Ministry of Environment and Tourism, calling on the Ministry to develop clear policy guidelines through a consultative process to determine how hazardous waste is treated in South Africa. These organisations have worked together to challenge various proposals on the burning of hazardous waste [5].

Bashiru Abdul spokesperson for Agenda, an environmental justice NGO based in Dar es Salaam, Tanzania, who is presently in South Africa, stated that they were delighted at the victory news since this precedent set in South Africa would not allow for cement companies to set up similar processes in other African countries.

There has been an international focus on these proposed developments by the Global Anti Incineration Alliance [6] Manny Colonzo, of Global Anti Incineration Alliance, welcomed the decision by government, and maintains that "the South African government's decision puts them in a leadership position in ensuring that hazardous waste is not treated inappropriately."

South Africa's Integrated Energy Planning II (IEP2)

By: Nkosana Rakitla

The White Paper on the Energy Policy of the Republic of South Africa (1998 DME) mandated the Department of Minerals and Energy (DME) to carry out Integrated Energy Planning (IEP) for South Africa. Integrated Energy Plan 1 for SA was completed in 2002 and published in March 2003.

The IEP I is at best an Energy Plan, rather than an **Integrated** Energy Plan – as it makes forecasts about business as usual. To its credit, IEP I does recognise this, and identifies eight significant gaps, including that IEP I:

- Failed to consider the impact of legislation that would “facilitate the expansion of renewable energy and energy efficiency measures.”
- Did not include “Environmental Externalities.” South Africa currently has the cheapest electricity in the world because the price paid for coal-generated electricity includes less than half of all the costs incurred in producing it.
- Did not consider the trade off between least cost energy production and other factors such as job creation and social development – despite both of these being priority areas for South Africa
- Did not include the effects of certain interventions, for example environmental funding in the modelling “because policy regarding national environmental taxing/funding is not yet resolved
- Did not include all stakeholders.
- Traded off developing optimal models for future scenarios against the need to speed up results.

The DME is now in the process of identifying and developing scenarios to be modelled for the IEP 2, and therefore on the 6th December 2005 the department invited various stakeholders to make inputs and comments to the process.

1. The current scenarios that suggested from public consultation process include:
Baseline or Business as Usual scenario - the scenario is considers a least cost approach and it is based on the currently energy demand and supply patterns, with the assumption that coal will remain dominant, externalities are not considered, government push forward to achieve high economic growth (4-6%) and increasing energy demand. The drivers of the scenario are security of supply and economic growth.
2. Diversification / Policy Scenario - the scenario looks at an optimal diversified solution (what will be the least cost energy mix after policy interventions) through a blend of various energy sources. The drivers of the scenario are health and safety, efficient ways of burning coal are introduced, security of supply, access and affordability of energy services, availability of alternative resources, regional cooperation and increase of energy efficiency technology
3. Low Carbon scenario - this scenario will incorporate interventions aimed at lowering green house gases, with the main focus moving of least cost approach but rather to the development of renewable energy, nuclear energy, clean coal technology, fuel switching, energy efficiency, hybrid cars, alternatives mode of transport – electrified trains.

Although avoiding air pollution comes up in scenario 2 – 3 as the one of the main public benefits amongst others, it is important that the scenarios are modelled in a way that they indicate other public benefits like poverty alleviation and job creation.

More information including the IEP2 document circulated at the IEP 2 consultation workshop and presentations visit the DME website www.dme.gov.za.

Electricity Regulation Bill, MPs protest against late amendments

Based on an article by: Business Report, 10th November 2005

The National Electricity Regulation Bill hit an unexpected snag when Members of Parliament (MPs) downed tools in protest about last minute amendments that had not been canvassed in public hearings.

Although Department of Minerals and Energy (DME) officials described the changes as “minor” MPs, said they were becoming increasingly alarmed by the tendency of the DME to insert changes into bills at the last minute. As a result, the MPs said, they often did not know whether the bill they been voting on was, in substance, the same as the one they had debated on with interested parties during public hearings and later at committee stage.

It was eventually agreed that the offending new additions be deleted from the bill and the committee members convene again an hour later to vote on the original bill they had been dealing with.

Editor comments: it very discouraging and disappointing for officials to solicit input to policies from the public, then at a later stage we see those inputs been excluded from the decision making process because policies are been rush through parliament at a time were the parliamentarians are tired.

6. Sustainable Energy News Around the World and Africa

Around the World:

New global database on renewables launched by IEA

By: Refocus Weekly

A database of 100 countries and their position on renewable energy market and policies has been posted on the internet by the International Energy Agency. The 'Global Renewable Energy Policies & Measures Database' was developed in collaboration with the European Commission and the Johannesburg Renewable Energy Coalition (JREC), and launched during the Beijing International Renewable Energy Conference in China. It is designed to provide information in one format in one location for the countries, which, together, represent almost all the world's supply of renewable energies.

The online searchable database is part of a continued effort by the IEA to contribute to the international dialogue on renewable energy by providing "unbiased information and analysis for the use by decision-makers, policy experts, researchers and industry, as well the broader public." Visitors can search for information according to country, policy instrument, renewable energy technology, renewable energy target and other criteria.

There are 34 countries listed with targets for renewables, ranging from Austria which wants 78.1% of its electricity to come from renewables by 2010, to the target of 3.6% in Hungary for the same period. Mali wants 15% of its total primary energy supply to come from renewables by 2020 and Singapore will install 50,000 m² of solar thermal systems by 2012.

JREC is a coalition of 88 national governments, which want to support the commitments for renewable energies, which were made at the World Summit for Sustainable Development in South Africa in 2002. It is co-chaired by the European Commission and the government of Morocco, and had worked on the preliminary database before incorporating it into the IEA on-line database.

About the Database

The Database features over 100 countries and offers renewable energy market and policy information in one format in one location for countries that together represent almost total global renewables supply. The Database is freely accessible online via the IEA website.. This online searchable database is part of a continued effort by the International Energy Agency to contribute to the international dialogue on renewable energy by providing unbiased information and analysis for the use by decision-makers, policy experts, researchers and industry, as well the broader public.

European Public Banks Accept World Commission on Dams Guidelines

By: International Rivers Network, 6th October 2005

The two biggest public banks in Europe, the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), have announced that they will take into account the international standards for dam-building set by the World Commission on Dams (WCD). The World Bank, however, continues to disregard the recommendations of the WCD, despite being one of the Commission's two original co-sponsors.

"We welcome the decision of the two biggest public banks in Europe to join the growing number of institutions worldwide that take seriously the World Commission on Dams' recommendations," says Ann Kathrin Schneider, Policy Analyst for International Rivers Network (IRN). "But we condemn the World Bank's continued irresponsibility on dams."

The EIB has told IRN that it will "align to" the recommendations of the WCD for any large dams from which it sources carbon credits. The EBRD has told IRN that any large hydro projects from which it sources carbon credits "will have been considered in relation to the WCD criteria and guidelines." However, neither of the institutions have translated these verbal commitments into binding obligations. The statements are not yet mandatory policies and are not reflected in the

environmental policies of the institutions. The World Bank has so far refused to state that they will respect the WCD in developing carbon trading hydro projects.

The European Investment Bank, the European Bank for Reconstruction and Development and the World Bank are planning to increase their roles as brokers of carbon credits under the Kyoto Protocol's Clean Development Mechanism (CDM). They are establishing an EBRD-EIB Multilateral Carbon Credit Fund and a WB-EIB Carbon Fund for Europe to buy CDM credits. These credits would be used to help European countries meet their emission reduction targets under the Kyoto Protocol.

The EU "Linking Directive" states that carbon credits from large hydropower projects can only enter the EU's Emission Trading System if they respect the recommendations of the World Commission on Dams. "It is disgraceful that the World Bank seems determined to flaunt European law. The World Bank has to wake up to the fact that applying the standards of the World Commission on Dams will soon be the norm,".

Notes: An EU directive regulating the admission of CDM credits into the EU's emissions trading system states: "In the case of hydro–electric power production project activities with a generating capacity exceeding 20MW, Member States shall, when approving such project activities, ensure that relevant international criteria and guidelines, including those contained in the World Commission on Dams year 2000 Final Report, will be respected during the development of such project activities."

In Africa:

Removing the many barriers to RE systems in rural Zambia

These barriers include the lack of information and capacity, as well as insufficient finance to take care of high initial costs.

The project, which will be supervised by the U.N. Environment Programme (UNEP), will have a total value of \$7.8 million with co-financing. The U.N. Industrial Development Organization (UNIDO) will execute the project in close cooperation with the Ministry of Energy and Water Development and the Development Bank of Zambia. This venture is expected to demonstrate sustainable ways for meeting the country's goal of increasing from 2 percent to 15 percent over the next five years the number of rural communities enjoying electricity supply. Also, directly or indirectly, it will reduce carbon dioxide emissions by some 2.2 million tons over the lifetime of the intervention.

"This is an exciting project, one that shows how you can help provide electricity, using renewable-energy technology, to a rural community while having a positive effect on national electrification policies and making an impact on the environment, both within Zambia and at the global level," said GEF Chairman and Chief Executive Officer Len Good. "This project takes on added significance in view of the GEF's commitment to contribute to the goals of the New Partnership for African Development."

The key to achieving the project goals will be the demonstration effect of three types of pilot mini-grids. The three types will use biomass gasification, solar energy, and mini-hydro power stations, respectively. They are intended to demonstrate the technical and financial viability of renewable energy in rural electrification to potential investors, financing institutions, ZESCO (the country's public utility company), equipment suppliers, energy service providers, and government planning and regulatory officers. Until now, electricity expansion plans have been focused on diesel-power generation—which is less environmentally friendly—but has lower start-up costs. As the main national grid reaches the remote areas in which the demonstration projects are installed, they can easily be integrated into the grid. The project will help develop institutions, policies, and regulations

designed to provide a level playing field on which renewable-energy technologies might be able to compete with more conventional diesel-based power-generation projects.

Of the three technologies being addressed by the project, the mini-hydro has the greatest likelihood of being widely replicated. However, after witnessing biomass electrification at work in India, officials of the national public utility have expressed willingness to use this technology in place of diesel generation in up to ten locations already identified and possibly many more to follow. A ten-fold increase in the adoption of biomass gasification technologies is foreseen over the long term. Also, there is considerable hope of a successful experiment with solar photovoltaic (PV) lighting in fishing communities not only to electrify houses but also to replace kerosene in lanterns on fishing boats.

A specially established revolving fund is expected to help foster adoption of renewable energy and to ensure long-term sustainability of the project interventions. The fund, to be located within the Development Bank of Zambia, will bear the financial risk associated with this kind of innovative undertaking, which commercial banks are not usually willing to take. The revolving nature of the fund will increase the possibilities that investment in renewable energy resources will continue long after the six-year duration of the project. The proposed fund helps set the stage for private-sector engagement, one of the defining characteristics of this venture.

Another characteristic of the project is that extensive consultations have been carried out with all relevant stakeholders, including ZESCO and a number of potential private investors. The fishermen consulted expressed a willingness to try the solar technology suggested for the fishing village and to pay to have the lighting fixtures on their boats recharged by the solar PV mini-grid.

Capacity building and policy development are other important features of the project. Training will be arranged for technology experts, planners, policymakers, university personnel, business leaders and other key stakeholders. Banks and other financial institutions will be equipped with the expertise to evaluate rural electrification endeavors based on renewable energy resources.

The key indicator of success for this project would be the spread of renewable-energy technologies in the Zambian countryside. Also, given Zambia's full integration into the Southern African Development Community, the Common Market for Eastern and Southern Africa, and the New Partnership for African Development, possibilities for the replication of any successful models in the region and even beyond seem promising.

Solar energy: a neglected answer to rural power in Africa

Robert Jan van der Plas

In Kenya, more rural households get their electricity from solar energy than from the official rural electrification program (REP). The spread of the photovoltaic systems has been recent, rapid and market-driven. The service is as good as the grid for the low power loads that prevail in many rural areas, and the price is competitive with other options for low loads.

Rural Electrification programme expansion is slow because funding is tight. The program consists of extending the already existing national electricity grid, establishing decentralized generation capacity in combination with a local grid, or helping those who produce power for their own consumption to start serving surrounding households and small commercial enterprises. New connections require substantial government and donor financing and subsidy. The rate at which the program reaches households would have to increase tenfold for it just to compensate for current rural population growth. At present only 0.5% of rural households have access to the grid.

Therefore, solar power is a serious and fast-growing option for those rural households with limited power demand and enough money to afford it. More households could afford it if the Government removed "obstacles" like high duties, which make the solar systems more expensive than they need to be. Their removal would be good rural pre-electrification policy. With easier access to solar

power, the Government could achieve higher living standards more quickly for more Kenyans than it can through the existing rural electrification program.

2. Thriving market

Today more than 1 MW of photovoltaic power has been installed in Kenya. Around 20,000 households have purchased solar energy for their homes compared to the 17,000 connected to the official rural electrification. About 17.7 million people live in rural areas, and less than 0.5% has access to grid electricity compared to 30% or less of the 4.4 million urban population. Wood is and will remain the predominant form of energy for the near- and medium-term future.

Better access to electricity would make a big difference to the quality of rural life.

Although many rural people do consume conventional modern energy, they do so in small amounts only. They also pay for it dearly: dry-cell batteries provide electricity for about \$3 to \$10 per kWh. A candle or a kerosene wick lamp does give a high quality light, but households need, respectively, about 60 or 20 of them to obtain the same amount of light as that emitted by a single 60 W incandescent lamp or a single 12W compact fluorescent.

Solar power can match the grid service partly because rural households do not consume much electricity – at least for the first few years. Household electricity usage for those just connected to the grid is often limited to a few lamps (3-6), a radio, and/or a television, or 30-60 kWh per month. These services can also easily be provided by solar systems. Household demand remains low for at least a couple of years, after which households will start to add higher power consuming appliances, such as rice cookers, tea kettles, or refrigerators if the grid capacity allows. Though solar electric systems are modular and more photovoltaic modules can be added, thermal applications (such as cooking and heating) are not feasible as this would be too expensive. However, thermal applications are often not possible either with grid-based rural electricity.

Solar systems are price competitive with the rural grid or a genset (a small kerosene/petrol generator set) assuming a low level of electricity consumption and an “equal” level of service. Like the grid, the genset option is capable of satisfying higher demand for power and energy than the rural-user normally makes. The capital cost is similar to a 50 W solar electric system, but gensets need imported fuel to operate and their service life is much shorter.

Better policy

Although the actual numbers and details differ, similar circumstances are found in many other African countries. Despite substantial amounts of money that have been invested in the African power sector, only a minority of African households are able to enjoy modern services provided by electricity.

The majority of rural households has no grid-based electricity, and will not receive it in their lifetime either. Government least-cost electricity extension programs usually exclude looking seriously at alternative approaches, such as (low load) electricity generation through photovoltaic panels placed in individual households. It would make sense to do so, particularly given the low population density in combination with the small demand for power and energy in rural Africa.

The solar power option is an effective first step. And it can be market- driven rather than depending on cash-strapped governments or aid donors. Governments should be encouraging this option rather than penalizing it by taxing imported components. Rural householders would benefit if the Kenyan Government removed at least three significant impediments to the solar power market. First, a more rational (comparable to that for rural electrification program equipment) import duty and tax regime should be applied. Second, financing mechanisms should be put in place to make solar electric equipment more accessible to a larger share of the population.

Third, technical standards for solar electric systems should be established and applied. Solar electric companies have been Compromising technical standards to offset the increase in price after the recent devaluations of the Kenyan shilling. More frequent equipment failures may have a

long-term negative impact on the development of the market, and thus of the future use of electricity in rural areas.

To read the full publication go to www.ieiglobal.org

7. Events

Energy Policy Capacity Build Workshops

Third week February 2006
Contact: Nkosana Rakitla
Tel: 011 339 3662
Fax: 086 686 8434
Email: nkosana@earthlife.org.za

Public Hearings into tariff determination for Eskom

The SA National Electricity Regulator
January 20 and 21,
Contact: (012) 401-4600
Email: info@ner.org.za

Renewable Energy for Africa Exhibition

5 – 8 March 2006
Sandton Convention Centre
Maude Street, Sandton,
Gauteng, South Africa.
Telephone: +27 11 787 5783
Fax: +27 11 326-2714
Email: gillians@iafrica.com
Website www.villageexhibitions.co.za

8. Appendix 1

SE Briefing on the White Paper on the Energy policy of the Republic of South Africa.

Sustainable Energy Briefing 7: National Energy Bill can be downloaded from our website [http://www.earthlife.org.za/seccp/new arrivals](http://www.earthlife.org.za/seccp/new_arrivals)

The Sustainable Energy briefing attempts to provide an overview of the White Paper (WP 1998), which runs to 95 pages and highlights features relevant to aligning the energy sector with sustainable development. WP 1998 set out five policy objectives, then considers what they mean for demand sectors (energy users), supply sectors and cross cutting issues. Short term (usually 5 years) and medium-term objectives priorities are also provided. There are some tensions within the policy, e.g. between public benefits and commercial interest, that remain unresolved and are reflected in uneven implementation. There are a number of commitments that are in danger of being forgotten entirely.