

SUSTAINABLE ENERGY NEWS on EMAIL (SENSE)

Number 32

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 Claire Taylor. 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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1. SECCP News

Note from SENSE Editor

This edition of SENSE marks a number of changes for SECCP. The first is that a brand new Energy Policy Unit is being established, with funding from the Heinrich Bohl Foundation. We warmly welcome Sekgametsi Mandhlazi to the team as Energy Policy Unit officer. You'll be seeing Sekgametsi's name a lot in SENSE as she's been tasked with keeping readers up-to-date on policy developments nationally and regionally.

Secondly, we welcome Nkosana Rakitla on board as a full-time staff member. Nkosana started working with SECCP as an admin Intern in January of this year, and has proved to be an invaluable worker. He joins the team as Energy and Information Officer.

Thirdly, Joan Cameron joins the team as Operations Manager, who will also assist with editing SENSE and the CCEN, our separate Climate Change E-mail Newsletter.

The final change is that I will be leaving SECCP to embark on a totally new career in the HIV/AIDS field at the end of June. Which means this is the last SENSE that I'll be editing, after which the mantle of editor rests on Nkosana's shoulders. So let me take this opportunity to wish all of you working for a just transition to sustainable energy in South Africa and around the world continued strength and commitment. You are fighting the good fight – so fight with all your might!

In addition to keeping abreast of these changes, the SECCP team has also had to deal with huge amounts of media interest in Earthlife Africa following the President's and Minerals and Energy Minister's response to concern expressed by it that nuclear levels at a calibration facility far exceeded levels considered safe. Instead of thanking Earthlife Africa for alerting authorities to an unprotected radioactive site posing a threat to public health in contravention of regulations and dealing with this, both shot the messenger, with the Minister even talking of developing laws against spreading "unnecessary panic." With the Regulator confirming Earthlife's radiation claims (see article by Melanie Gosling, The Star 2 May 2005) we hope both the President and the Minister, who's just been named Deputy Minister, will recognise that Earthlife Africa is committed to promoting social and environmental justice and that any activities that it undertakes are aimed at achieving this objective.

Become an Energy Activist

Imagine that every person in South Africa had access to safe and affordable energy. Make this vision a reality by becoming an **Energy Activist**.

The Sustainable Energy and Climate Change Project of Earthlife Africa-Johannesburg is running a course to build Energy Activists.

The main themes of the course are:

Day 1: Introduction to activism and energy

Day 2: Technology options and their pros and cons

Day 3: Full cost accounting, environmental injustice and writing letters to the media

Day 4: Energy resources - globally and in South Africa, media training focussing on press alerts

Day 5: Policies and measures to support sustainable energy

Day 6: Energy efficiency and developing a campaign

Day 7: Internet skills to research resources and networks and presentation skills

Day 8: Facilitation, presentation and interpersonal skills

What will you get from the course?

At the end of the course you'll have a greater understanding of where energy comes from, how it's generated, transported and stored; what the costs and benefits of different energy sources are and why millions of South Africans still don't have access to safe and affordable energy. You'll also have many skills needed to be an effective activist, including how to write letters to the press, and media alerts, how to make presentations, use the Internet for research and plan a campaign. Certificates will be given to participants who attend lectures and complete assignments.

If you'd like to find out more about the course – when and how it's being run, who it's for and how to apply – visit our WebPage at www.earthlife.org.za/seccp

Please distribute this to anyone you think would be interested in attending the course.

European Investment Bank (EIB) workshop with African NGOs

Summary of notes by Stefan Cramer, Heinrich Böll Stiftung; Elin Lorimer, South African Climate Action Network and Claire Taylor

The European Investment Bank (EIB) contacted various environmental and developmental NGOs in early March, asking representatives to attend a workshop on "economic development, environment and good governance."

On 21 April 2005 senior bank staff (all in all 8 representatives including the head of the recently established liaison office in Pretoria/South Africa) represented the Bank at an African NGO audience of some 20-25 representatives, almost exclusively from South Africa (only one delegate from Zimbabwe attended). This is because the Bank issued only very limited invitations to NGOs outside SA and initially made no allocation for travel costs or visa assistance. In addition, a few representatives from the "intermediary bank" Development Bank of Southern Africa (DBSA), of the European Commission's Delegation in Pretoria and the South African Industrial Development Corporation attended.

The meeting was part of the bank's "ongoing dialogue...to give local and regional NGOs an opportunity to meet with the Bank's specialised staff and discuss topics of common interest." Unfortunately, while an equal amount of presentation time was allocated to EIB and NGO presentations discussions were severely curtailed primarily by the rigid structure of the programme, which restricted the time available. This meant that a number of questions asked by civil society representatives remained unanswered, and suggestions were not responded to. A list of these questions and suggestions was sent to the Bank for response. **For a of the questions asked of the EIB, but not answered during the workshop, as well as recommendations made please email nkosana@earthlife.org.za**

In summary:

- The meeting was useful for civil society representatives as it informed them of the Bank and its policies. The Bank was and still is largely unknown, as it keeps an incredibly low profile in the region. It is however, a shame that so few African

NGOs were present and that the structure of the programme, and the time allocated mean that discussions were curtailed and questions unanswered.

- All requests to clarify which policies and rules guide lending decisions were deflected with two contradictory arguments:
 - That the Bank is operating under the EU mandate and simply follows the EU Standards and Laws - so implying that all projects being considered would have to comply with these standards and laws.
 - That the Bank is not the promoter of the projects in question, and so cannot insist that projects do in fact comply with these standards and laws.
- Responding to requests for clarity on how projects are assessed and monitored the EIB reported that all assessments are done in-house, which makes the assessments more independent (how this was so was not elaborated on) and rigorous. Staff also declared that all projects even at the appraisal stage are published on the website for assessment. Even a cursory glance shows that this is not the case, but nobody questioned that in public.
- Despite a request there was no agreement on the way forward. Neither did the Bank commit to an ongoing process of consultation nor were minutes taken of the meeting. While the Bank did promise to publish the presentations of the meeting on their website, the rich discussions and comments from the floor were not recorded nor will they be published. NGO participants at the meeting agreed to write up their notes into one document and then send this to the EIB for a response to questions asked and recommendations made. As such it should be clearly stated that the Bank has NOT CONSULTED with African civil society, but has undertaken a limited PR event in South Africa.

Editor: A CEE Bankwatch Network and Friends of the Earth International (FoEI) press release (2 June 2005) questions the European Investment Bank's commitment to investing in renewable energy. "Positives undermined: the EIB's lending for renewable energies", demonstrates how this European institution is part of the problem rather than part of the solution when it comes to combating climate change.

At the Bonn Renewables conference in June 2004, the EIB declared that the bank's lending for renewable energies has been significant, totalling over 1.6 billion Euros in the period 1999-2003. Also at Bonn the EIB announced an ambitious target of increasing its funding for renewables by up to 50 percent of its financing for electricity generation in the EU by 2010.

To verify the EIB's declarations, and as a result of the EIB's refusal to present detailed information on renewable projects financed through its global loans to financial intermediaries, CEE Bankwatch Network and FoEI asked 386 intermediary banks to provide a list of renewable energy projects financed from EIB monies in the period 1999 to 2003.

- Information from the banks showed no evidence of an actual renewable energy project being financed.
- In addition, the study also highlights the problematic aspects of renewable energy projects financed from the EIB's direct loans - some of them, especially large hydropower projects which the EIB clearly includes as renewable investments, are of serious concern in terms of their negative environmental and social impacts. The Nam Theun 2 Hydroelectric Project in Laos, backed for funding by the EIB in April 2005, fails to comply with six of the seven Strategic Priorities laid out by the World Commission on Dams. These include the resettlement of affected indigenous people, economic unfeasibility as well as negative environmental impacts. As well

as having a poor record in financing renewables, the EIB remains a significant supporter of road and air transport as well as fossil fuels, leaving a legacy of harmful emissions, increasing the global threat of climate change.

To see a copy of this new study visit

<http://www.bankwatch.org/publications/studies/2005/renewables.pdf>

SECCP calls for a Just Transition to Sustainable Energy at Pan African Power Conference

Richard Worthington, SECCP's Coordinator was invited to speak at the Pan African Power Conference at Gallagher Estate in April 2005. In his speech, Richard highlighted the importance of Integrated Energy Planning with full-cost accounting – which would ensure the rhetorical commitments to 'triple-bottom-line accounting,' which include a cost-benefit analysis of all social, environmental and economic impacts.

A full copy of Richard's speech is in Appendix 1 below.

The potential contribution of renewable energy in South Africa

Claire Taylor

Editor: This article is a summary of Sustainable Energy Briefing 5, which in turn summarises the findings of a research project, commissioned by SECCP, into the potential contribution of renewable energy in South Africa. The findings were presented at the Sustainable Energy Symposium III on 13 April. To see a full copy of the research go to www.earthlife.org.za/seccp and follow the link to <Research>

SECCP recently commissioned independent research that made forecasts about South Africa's future energy demand, and how this could be met, particularly by renewable energy. This research is unique in that instead of making forecasts 20 years into the future, the researchers plotted the various contributions renewable energy can make over 45 years.

Why Renewable Energy?

Renewable energy offers South Africa a number of benefits; most notably that it can reduce our reliance on fossil fuels such as coal and oil

- Current energy supply in South Africa is primarily coal-based and, although these resources will last for more than a century if used at current rates, large power plants will need to be replaced over the next 30 years.
- Coal has many other uses, and we need to conserve this resource for future use.
- Coal and other fossil fuels, including oil, produce Carbon dioxide when they are burned to produce energy. Climate change caused by human-generated Carbon dioxide and other greenhouse gases represents an extremely serious environmental threat to the world as a whole. Human-induced climate change is already being blamed for the higher-than-usual incidence of extremely damaging weather experiences (e.g. storms and droughts).
- Local air pollution is strongly related to energy supply options, with coal and oil products being major contributors to urban and rural air pollution and acid rain. Human health effects of air pollution include damage to childhood development and the respiratory system, including increasing incidence of asthma.

Other advantages of renewable energy include employment creation¹, proximity to point-of-use and, in many cases, less reliance on concentrated sources of energy (and

¹ See Sustainable Energy Briefing 2: The Employment Potential of Renewable Energy, which shows that 36 000 new direct jobs would be created if just 15% of South Africa's electricity were generated from renewable energy.

political power). Greater use of renewable energy would also reduce South Africa's economic vulnerability to the variable and escalating costs of imported fuels. International and local communities are increasingly trying to find ways to shift economies towards greater reliance on renewable energy. Clear policy and regulation, including environmental fiscal reform, is needed to provide increased support for an expanded role for renewable energy in the economy, since we can't rely on voluntary schemes such as the 'Clean Development Mechanism' to prompt a significant departure from business as usual.

Current and future energy demand

South Africa has an energy-intensive economy, currently using more than 4 000 Petajoules² primary energy per annum. The economy relies on low-cost electricity and coal to power energy-hungry industries such as mining and metals processing. The renewable contribution to energy supply is relatively limited, with biomass being estimated to contribute 9 to 14 percent of energy needs (often not sustainably) and hydropower about 1 percent.

In the next 50 years, as economic development takes place, energy demand is expected to grow significantly. However the population growth rate is expected to reduce during the next 50 years. This, coupled with a greater awareness of energy efficiency and a shift away from an energy-intensive economy could reduce the rate of increase in energy demand. The researchers have therefore used a total energy demand of 6 700 PJ by 2050 against which to explore the potential contribution of renewable energy. This is just an illustrative scenario, since concerted attention and incentives for energy efficiency could deliver the same outputs from far less energy input.

Scenarios for Future Energy Supply

The researchers developed three scenarios for energy supply in 2050: *business as usual*, *progressive renewable*, and a *high renewable* scenario.

Business as usual scenario

The 'business as usual' scenario assumes very little support from decision-makers for renewable energy technologies. The scenario clearly shows that if SA continues along the current path, it will still need a lot of money and resources to meet the demand for energy e.g. it would need to build an Eskom 6-pack every 30 months during the years up to 2036.

This raises major environmental and economic warning flags. It also highlights the opportunity that we have as a country to prepare for the capacity crunch, and to have alternative solutions in place for implementation on a large scale. The renewable energy contribution in this scenario would be limited to a maximum of 4 percent.

Progressive renewable scenario

In the 'progressive renewable' future the researchers tried to grow renewable energy (RE) as realistically as possible, though the growth rate of about 20% per annum. In this future, renewable energy plays a moderate role in electricity generation by 2020 (about 13.3 percent contribution) and contributes about 70 percent by 2050.

Both the above scenarios illustrate how short time really is, particularly in light of the required growth rates for emerging industries such as solar PV, wind and solar thermal electricity. Effective large-scale industries will take time to develop and at a 20 % annual growth rate it will take several years before they can start to add energy capacity to the grid on the scale required.

² One Petajoule is equivalent to 277 777 777 kWh – an enormous amount of energy

The researchers also found, somewhat surprisingly, that renewable energy options are likely to be the most cost-effective options for energy supply in the future, if rapid local development starts now. Fossil fuel pricing is particularly difficult to predict (e.g. oil price in 2004/5), but if prices do continue to rise, it will not be long before solar thermal electricity generation technologies in particular present a large-scale, economically competitive power supply option.

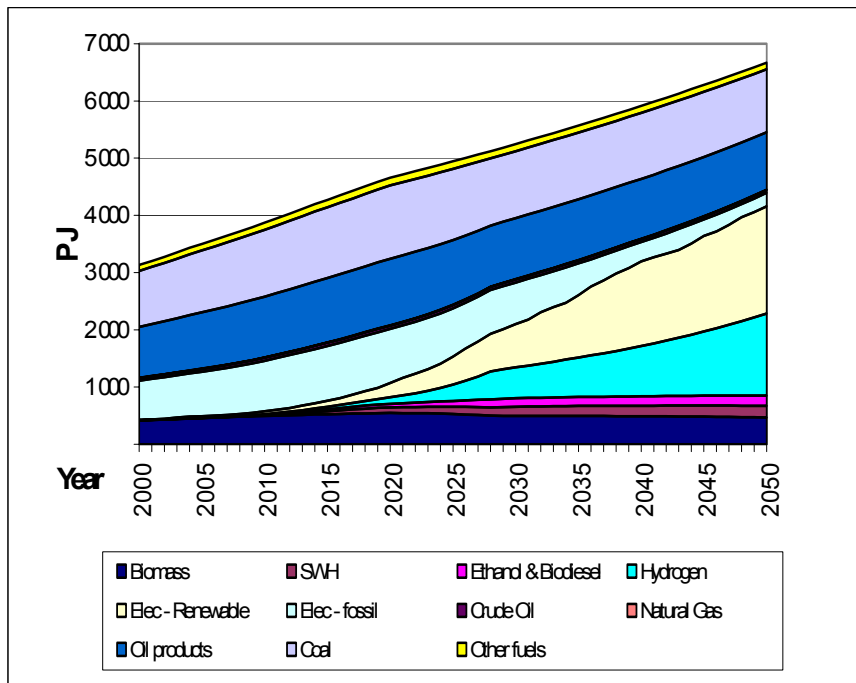
High renewable scenario

A third scenario called the ‘High renewable’ scenario was then developed. This scenario looks at the options to achieve a net reduction in fossil fuel consumption by 2050, and could be considered as a climate change driven scenario. It differs in two primary ways from the ‘Progressive renewable’ scenario:

- it is assumed that a larger proportion of the current non-electrical energy demand in South Africa (e.g. transport, coal or oil based process energy supply in industry) can be met by electricity (produced using *renewable* resources).
- it is assumed that Hydrogen can be generated from renewable resources on a large scale, starting within two decades. This can be stored and transported and used as required, much like coal, oil and natural gas – thereby replacing a significant part of the remaining non-electrical demand.

In this scenario, the researchers modeled significant growths of RE – showing that it would be possible for between 90% of South Africa’s electricity and 60% of South Africa’s total energy mix to be generated from RE sources. To achieve such a long-term transition requires that South Africa start to develop the foundations in the short term. While considerable costs will be involved, they will be investments in the local economy that have massive social and environmental benefits.

Figure 1: High Renewable Scenario: Total energy supply mix



As shown in Figure 1, renewable energy has the potential to meet 60% of South Africa's total energy mix by 2050. In particular, the researchers grew the potential of biomass and hydropower, while noting that there are environmental and human rights constraints that would need to be taken into account.

The illustrative increase in supply allows scope for economic growth, particularly given South Africa’s enormous potential for efficiency improvements.

The researchers regard achieving the *progressive renewable* scenario to be very challenging. For South Africa to make the necessary shifts in the energy economy to achieve something like the *high renewable* scenario would be significantly more difficult. However, if the total energy requirement of the country is allowed to increase to 6 700 PJ by 2050 then investments in energy supply will in any event be very large. It is possible to develop the economy using approaches that do not require such an

increase in energy consumption, and if energy efficiency can be effectively promoted at all levels, then the average annual growth in energy demand could be reduced, or even pushed into the negative. This would obviously make it far easier to reduce the total fossil fuel contribution, without stretching the renewable energy resources and technology production facilities as much as indicated in the *progressive or high renewable* scenarios.

Conclusions:

The researchers concluded their findings with four points:

First, they highlight that this research provides clear evidence that there are sufficient renewable energy resources in South Africa to provide for 13 to 20 percent of the electrical demand by 2020, and easily 70 percent or more by 2050.

Second, they identify two key weaknesses in existing energy plans:

- 1) Very little long-range planning is being undertaken in South Africa. Given the possible large-scale changes in the energy supply system indicated in the scenarios, they feel that this is a critical oversight.
- 2) Although the recent National Electricity Regulator's (NER) Integrated Resource Plan did take some account of large-scale renewable generation potential, it seems to have been done as an afterthought. It appeared to rely on a very limited range of technologies and cost/resource analysis that lacked detail. Electricity and energy planning should anticipate longer-term cost and policy trends, and seek to integrate sustainable energy planning more fully into the process.

Third, the three scenarios illustrate how short time really is, particularly in light of the required growth rates for emerging industries such as solar photovoltaic (PV), wind and solar thermal electricity. Effective large-scale industries will take time to develop. Even at a 20% annual growth rate, it will take several years before these industries can really start to add generation capacity to the grid on the scale required.

There is an interesting development of the technology selection process in the scenarios. Initially, lower cost options, such as biomass, landfill gas and selected wind sites, are more attractive than solar and large-scale wind. However, because these low-cost options have a limited resource base, it is very important to balance development efforts – first harvesting the lowest cost resources, but at the same time developing the necessary technical capacity to harness the larger scale solar and wave technologies.

Finally, although not specifically explored in detail, energy efficiency is clearly identified as a crucial element in energy planning. If the South African economy is allowed to grow in such a way that energy intensity per unit of GDP remains similar to current levels, it will have adverse environmental and economic implications. Even the current growth rates used by the Department of Minerals and Energy and the NER for planning would result in a tripling of energy demand if extended through to 2050. The scenarios explored in the report assume that total energy increases by slightly more than double by 2050. It would be prudent to use energy efficiency measures that allow economic growth, but with more limited energy demand growth.

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2. SA's sustainable energy progress

May marks start of Energy Efficiency Month

Summary of speech made by Minister of Minerals and Energy, 4 May 2005

In a speech marking the launch of Energy Efficiency Month (which should be 'Months' as this year Energy Efficiency 'Month' stretches from May to August) Minister of Minerals and Energy Phumzile Mlambo Ngcuka made a number of important announcements.

First, was her approval of the Energy Efficiency Strategy for South Africa, which in her words made SA one of the few countries in the world with such a strategy. The Strategy sets out energy efficiency targets to be achieved by 2015 for the different sectors as follows:

- A total final energy demand reduction of 12% (all sectors combined)
- Industry and Mining 15% reduction in energy demand
- Power Generation - 15% reduction in parasitic electrical usage
- Commercial and Public Building sector - 15%
- Residential sector - 10%
- Transport sector - 9%

Secondly, she launched the energy efficient appliance labeling initiative, starting with fridges. She explained that the initiative involves informative labels being affixed to manufactured products indicating the products' energy performance and efficiency in a way that allows for comparison between similar products or endorses the products' use. Products will be graded either A or down to G - with G being the poorest performing product in electricity terms. The DME in close collaboration with all the sector players decided to start the labeling initiative with labeling of refrigerators because all electrified households typically purchase a fridge as the first electrical kitchen appliance. She said she expected the label to be in some stores as from late May 2005 and from next year labeled refrigerators will be found all over South Africa. Parallel to household refrigerators the DME was also ensuring and supporting the labeling of household freezers. Hereafter follows products such as front-loading washing machines, tumble driers, electrical stoves etc. Of importance, is that the Minister noted that the SABS has agreed to make energy efficiency labels and standards mandatory, starting from April 2005.

Finally, she announced that the South African National Energy Research Institute, or SANERI, will be launched in 2005. This is a joint project with the Department of Science and Technology and places energy research firmly on the government's agenda for research design and development. SANERI will be a subsidiary of CEF (Pty) Ltd and will be funded through the Science Council Vote. An allocation of R20 million has been secured for the 2005/6 financial year through the Medium Term Expenditure Framework, with R40 million available in 2006/7. Energy efficiency has been included in the Research Strategy, which will govern SANERI's operations in the first few years. The focus is on the development of innovative products and strategies that promote energy efficiency.

Monitoring whether SA's meeting its RE target

Jason Schaffler from Nano Energy reports back on a Department of Minerals and Energy workshop held to develop mechanisms to monitor whether SA's meeting its RE target

The South African Government has established a target for the role that renewable energy will play in the energy generation mix in South Africa. This target is documented in the Cabinet approved White Paper on Renewable Energy, (Nov 2003). The target is stated as 'an additional 10 000 GWh of renewable energy contribution to

final energy consumption by 2013'. The renewable energy is to be utilised for both power generation and non-electric technologies such as solar water heating and biofuels.

Progress towards achieving the target will need to be monitored on a periodic basis to determine the effectiveness of measures and technologies employed through policies such as the national renewable energy strategy. Therefore, an effective monitoring model needs to be developed and put in place.

As part of the DANIDA funded Capacity Building in Energy Efficiency (EE) and Renewable Energy (RE) (CaBEERE) initiative within the Department of Minerals and Energy (DME) a project was initiated to set a renewable energy target monitoring endeavour underway. This project is being undertaken by a consortium led by Nano Energy.

As part of the project, a stakeholder workshop was held on the 26th of April 2005 to present a draft data collection methodology, identify both data providers and information recipients and capture their inputs on a target monitoring system.

Most workshop participants were not yet producing (or consuming) renewable energy but developing projects. As potential data providers their inputs were valuable for at least two reasons. The first is precisely for their inputs on their preferences as future data providers. The other is in terms of the broader monitoring framework's need to capture the non-numerical aspects such as reasons for lack of uptake of renewable energy and the feedback of these into the design of implementation strategies supporting renewable energy.

The workshop highlighted that monitoring system should seek to be more concrete or official than that through which data is currently garnered through individual relationships and on an ad hoc basis. The responsibility for data collection rests with the DME and use of external service providers is one of the options explored in terms of collection of data.

The project will conclude early in June. For more information or to provide details on projects active since the approval of the renewable energy white paper and which should therefore be included, contact Brett Dawson, Director Renewable Energy, DME at brett.dawson@dme.gov.za or 012-317 8617 or for details on the CaBEERE project you may contact Helene.Gron@gov.co.za

Green power up for grabs on the national grid - but at a premium

Alistair Thomson, Reuters in Business Day 20 April 2005

SA companies can now buy electricity from renewable energy sources over the national grid and will be able to trade certificates proving their green power credentials, officials said.

Amatola Green Power is the first company to trade electricity from renewable energy sources over the national grid. Initially it will match power from a Tongaat-Hulett sugar mill, which feeds surplus power from its in-house generator fired by dried sugar cane waste or bagasse, with customers willing to pay a premium for "green power". Amatola was launched at the Pan African Power Conference and Exhibition at Gallagher Estate, the venue of the exhibition was one of Amatola's first customers.

Kevin Nassiep, chief director of energy planning at the Department of Minerals and Energy said his department was setting up a system of certificates which customers of companies such as Amatola would earn by using sustainable power, and would then

sell on a secondary market. "The certificate is actually a commodity now" he said. The value of such certificates is hard to quantify. JSE Securities Exchange SA created a Socially Responsible Index last year to allow investors to put their money in listed companies, demonstrating environmental, economic and social sustainability policies.

But with companies facing no requirements to have the green power certificates, the system is entirely voluntary. **Editor: This is a major problem of Tradeable Renewable Energy Certificates (TRECs), and means that government leaves the buying and selling of green power to market forces, instead of implementing policies and measures to increase the generation and use of green power.**

Alternative fuel cells in production

Carli Lourens, Business Day 18 April 2005

The Alternative Energy Development Corporation has opened a factory outside Johannesburg to produce fuel cells it claims are the first affordable, environment - friendly energy solution in the world that can be mass produced and are designed specifically for rural users.

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3. SA's Unsustainable Energy

Eskom Watch

Eskom wins prize at SA's first award for corporate bad practice and abuse The Corpse Awards!

Eskom won the Pick the Public Pocket Award for its "nuclear fantasies" at the recently held Corpse Awards in KwaZulu Natal. Eskom won the award because of its efforts to resuscitate the nuclear industry with its pebble bed modular reactor. Thus far it has cost R1.5-billion in public money and is likely to cost R10-billion more.

The Corpse Awards (a joint venture of groundWork and the Centre for Civil Society at the University of Kwa Zulu-Natal) recognise worst corporate practice in producing environmental injustice. The nominations for the awards were made by the people living next door to the corporate plants and by civil society organisations concerned at the trashing of people and environments.

The leading contenders for the awards were oil giants Sasol, Sapref and Engen, steel giant Ispat Iscor, pulp and paper giants Sappi and Mondi, Eskom and one of the leading proponents of genetically modified technology, Monsanto. All boast their commitment to Corporate Social Responsibility and the environment. Their advertisements and publications claim best practice and continuous improvement, their commitment to health and safety and to corporate social responsibility. Some have even won awards for environmental and social reporting.

None of them have convinced their neighbours who live with the burden of ill-health - cancers, asthma and other breathing difficulties, eczemas and allergies, and a variety of conditions affecting the blood, nerve and immune systems.

The award ceremony took place on 10 June.

Eskom sheds 950 workers in two years

Donwald Pressly, I-Net Bridge in Business Day 24 March 2005

Power parastatal Eskom lost 3 306 workers in 2003 and last year but hired 2 356 new workers in that time Public Enterprises Minister Alec Erwin has reported. This amounts to a net loss of 950 workers over the period. In reply to a question in parliament from the UDM Erwin said 1 711 workers left Eskom in 2003: there were 649 retirements, 220 workers died and 842 workers were considered "normal attrition." Last year there were 569 retirements, 298 workers died and 728 workers left through normal attrition - a total of 1 895. Appointments made during these years included 1 293 workers in 2003 and 1 063 workers in 2004 - a total of 2 356.

Editor: These latest figures are part of an ongoing trend of job losses in the energy sector - in the period 1980-2000, 70 000 jobs were lost (130 108 to 59 987) even though the amount of electricity generated increased by over 60%. Why has increased electricity generation been accompanied by massive job losses? Blame it on the centralised, hierarchical and increasingly mechanised nature of electricity supply in South Africa.

Government's plans to provide electricity in the future reveal little basis to expect more jobs. The emphasis is still on a centralised and hierarchical system, which is increasingly skills rather than labour intensive, as illustrated by the development of pebble bed modular reactors. If the PBMR is allowed to go ahead, it will not be available to deal with the looming energy crisis envisaged from as early as 2007, as South Africa's demand exceeds capacity, while renewable energy technologies can be rapidly deployed.

If government decided that just 15% of our total electricity in 2020 should be generated using renewable energy technology (RET), it would create 36 400 new jobs without taking any jobs away from coal-based electricity. This is according to a study commissioned by the SECCP. The study looks at the number of people needed to generate 267 terra watts an hour - the amount of electricity that SA is predicted to need in 2020. For copies visit our WebPage at www.earthlife.org.za/seccp/ - follow the link on the main menu to Research.

Nuclear power "very important as no greenhouse gases emitted" says Minister

During her speech marking Energy Efficiency month, the Minister for Minerals and Energy emphasised the importance of nuclear power, "Nuclear remains very important to the Government of South Africa as there are no green house gases emitted from nuclear sources of energy and alternatives to nuclear are very expensive. The DME will therefore continue to focus its attention on nuclear research and development as it will also contribute to the diversifying of energy resources."

Meanwhile the Pebble Bed Modular Reactor Company is negotiating with local and international consortiums, including French energy giant Areva, about raising funding of R11.3bn for its nuclear energy project. Negotiations should be concluded by the end of the year (Summary of article by Roy Cokayne, Business Day 5 May 2005).

Editor: Clearly the outgoing minister believes everything she is told by the nuclear industry. There are in fact substantial greenhouse gas emissions from the nuclear fuel chain, particularly where energy-intensive uranium enrichment is powered by fossil fuels (long-distance transport before and after enrichment is also required). The majority of comparative studies put greenhouse gas emissions well above those of renewable energy technologies (though not the studies done by the nuclear industry) and indicate that it is amongst the most expensive climate change mitigation options. If

the assumptions made for the PBMR programme were applied to solar thermal electricity generation – technology that has been demonstrated, unlike the PBMR, for which the design is not sufficiently advanced for a licensing process to commence – solar thermal would also emerge as the cheaper generation option.

Civil Society's response: Remembering Chernobyl

Nuclear Energy Costs the Earth Campaign, Earthlife Africa

26 April marked the 19th anniversary of an international nightmare, the explosion at the Chernobyl nuclear reactor in Ukraine. This accident, where a radioactive fire burned for 10 days and tons of radioactive materials were expelled into the atmosphere, is blamed for killing thousands of people and affecting millions of others. The disaster was the product of a flawed Soviet reactor design coupled with serious mistakes by the plant operators. It also demonstrated that the effects of any nuclear accident are not localized, but rather spill over into neighbouring countries and have global consequences.

The Heinrich Boell Foundation and Earthlife Africa held a commemorative event in Atteridgeville, noting the link between Chernobyl 19 years ago and South Africa today, as Eskom continues with its planned construction of a Pebble Bed Modular Reactor (PBMR). The message is clear - nuclear energy is not a solution to the energy demands of Southern Africa.

At the Chernobyl Day Commemoration, Earthlife Africa also launched its latest research into the health impacts of nuclear energy. As Shaun Smillie reports ('Disease stalks workers at nuke plant', The Star 2 May 2005), the Nuclear Energy Corporation of South Africa (Necsa) has launched an investigation into claims that former employees of the Pelindaba nuclear facility contracted serious diseases after being exposed to radiation. Some of the workers - who worked at the facility outside Tshwane in the 1980s and 1990s - have lung cancer and other cancers, serious neurological disorders, and have suffered miscarriages. Their plight came to the fore after an occupational health expert found that out of a sample of 23 former Pelindaba workers, 10 showed signs of having been exposed to hazardous substances "which could cause adverse health effects".

The study, commissioned by Earthlife Africa, also found that there were no follow-up medical examinations of former Necsa employees. More than 200 former Pelindaba employees had asked Earthlife to help them get their medical files from Necsa, and compensation in terms of the Compensation for Occupational Injuries and Diseases Act.

Occupational and environmental health expert Dr Murray Coombs, of the Health Gap Network, who conducted the study on former Pelindaba workers, said: "The occupational diseases rate (at Necsa) is at 50 percent, which is heavy. It is the highest I have seen. The norm is about 10 percent to 12 percent." Coombs had also been surprised at how poorly Necsa maintained the medical files of its employees. There were also no follow-up medical examinations once employees had left Necsa. "The radiation and chemical industries should follow people through to their deaths," said Coombs.

Commenting on the investigation, Necsa spokesperson Nomsa Sithole said: "We are in phase one of the process. We are identifying people who will lead the investigation. While these are allegations, we are taking them seriously."

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4. SA's General Energy News

Minister of Minerals And Energy Budget Speech, 19th May 2005

Parliamentary Monitoring Group: www.pmg.org.za

Phumzile Mlambo Ngcuka had some interesting things to say about energy in her Budget Speech

She first noted that the DME's Energy Policy is based on the following key objectives:

- Attaining universal access to energy by 2014
- Accessible, affordable and reliable energy especially for the poor
- Diversifying primary energy sources and reducing dependency on coal
- Good governance, which must also facilitate and encourage private sector investments in the energy sector
- Environmentally responsible energy provision

She then remarked that progress has been made with regard to each of the above objectives:

"We have continued to progress the electrification programme although we have slowed down as we do sparsely populated areas. We now do 635 connections per day as opposed to 800-day connections in the past. Access to electricity is now at 71%. We have advanced plans for the establishment of the South African National Energy Regulator (NERSA), which will replace the National Electricity Regulator (NER) and also regulate gas and petroleum pipelines

We are ready to hand over Free Basic Electricity policy implementation to the Department of Local Government and we have identified barriers and solutions to implementation. Our intervention has added 3.5 million qualifying recipients and much more needs to be done, to bring in more recipients

We have an energy efficiency strategy, which sets targets to be achieved by 2014. Progress is being made in the procurement of generation capacity. Eskom will bring to production 3000MW from mothballed power stations. DME is busy with a tender process for the procurement of 1000 MW through Independent Power Producers which should be commissioned in 2008

The first Regional Electricity Distributor will be established in July as announced by the President."

With regards to Renewable Energy, she noted that "the act will be passed this year." We are not sure what act this is, but assume it's the renewable energy strategy.

Eskom gears up for restructuring

Linda Ensor, *Business Day* 2 June 2005

Eskom, about to embark on a five-year R93bn capital expansion programme, needed assurances that it would be fully compensated for the transfer of its assets to the regional electricity distributors, CEO Thulani Gcabashe has said. The first regional electricity distributor will be established in Cape Town on July 1 and will be expanded to include other municipalities in Western Cape, Northern Cape and later Eastern Cape.

Gcabashe told Parliament's minerals and energy affairs committee Eskom would have to borrow locally and abroad to fund the expansion of its generation and transmission capacity, and the cost of borrowing would increase if its financial integrity was

compromised. "We have to retain our credit rating," he said, adding that the compensation formula proposed by Electricity Distribution Industry Holdings appeared to address Eskom's concerns.

Another concern was the ring-fencing of regional electricity distributors as municipal entities, to ensure they were able to carry out their mandate without being encumbered by other municipal processes of which Eskom was not a part. He said Eskom was not currently planning price increases.

Gcabashe said Eskom was "very ready" for the distributors restructuring. He hoped the new system would allow Eskom's larger customers to choose whether they got their electricity supply from the regional electricity distributors or Eskom at a wholesale tariff.

SA power still cheapest in the world

Leo Kok, Beeld - Translation, 13 May 2005

South African electricity is still the cheapest in the world, but the pressure on Eskom's available capacity will also put pressure on its prices shortly. This is evident from the latest survey of electricity prices in a group of 14 countries by the international NUS group. South Africa, with an average price of \$0,0389 per kilowatt hour (kWh), is the cheapest country. Its price is considerably lower (approximately 27%) than that of Canada, which is at \$0,0531 per kWh the second cheapest country.

But not for long as SABC News (13 May 2005 reports), "The price for electricity is expected to rise in the coming five years, despite Eskom's recommissioning of three power stations in Mpumalanga. Alec Erwin, the public enterprises minister, has visited one of them, Camden Power Station near Ermelo.

Erwin says the R12 billion cost of the recommissioning, and the need to maintain existing power stations as well, will result in more electricity price increases. He says the demand for electricity increases annually, as South Africa's economy grows by 2.5% per year."

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5. SA Energy Policy

Request for Input: South Africa's Country Report for CSD 14

Government is currently developing its Country Report in preparation for the 14th session of the United Nations Commission on Sustainable Development. The theme of CSD 14 is Energy, Atmosphere/air pollution, Climate change and Industrial development.

An intergovernmental working group of the Departments of Minerals and Energy, Science and Technology and Trade and Industry has been established to support and guide the compilation of the country report and the overall preparations for CSD 14. In addition, a national government and stakeholder workshop will be convened towards the end of June 2005, to discuss and consolidate preparations.

For more information contact:

Ms Dorah Nteo

Deputy Director: Sustainable Development Policy and Research

Department of Environmental Affairs and Tourism
Tel (012) 310 3779
Fax (012) 322 1003
Email: dnteo@deat.gov.za

Editor: The following dates are being circulated in preparation for CSD-14:

- CSD-14 is scheduled from 1 – 12 May 2006
- Major groups' contributions to the Secretary-General's reports: a call for input is currently being circulated to all major groups. The target date will be 1st September 2005.
- Major groups discussion papers: subject to discussion with the organising partners on the expected framework of these papers, the likely target date for submission 15 November 2005.
- Regional Implementation Meetings: these are tentatively scheduled on the following dates:
 - ESCWA (western Asia): 11-13 November 2005
 - ECA (Africa): November 2005
 - ESCAP (Asia and the Pacific): to be decided
 - ECE (western, central and eastern Europe, central Asia and North America): Geneva December 15 and 16
 - ECLAC (Latin America and the Caribbean): to be decided

Approval of the Energy Efficiency Strategy for South Africa

Contact Trust, 14 May 2005

On 4 May 2005 the Minister for Minerals and Energy launched Energy Efficiency month 2005. During the launch event the Minister announced that she had approved the Energy Efficiency Strategy for South Africa. This strategy aims to build upon the existing energy guidelines that are captured within the White Paper on Energy Policy (1998). South Africa currently uses around 40% of the total electricity that is consumed on the continent and it is a major aim of this new strategy to reduce that figure.

Background: The strategy was first released for public comment in May 2004 and was met with mixed reactions. There was a degree of criticism that came from civil society with regards to the draft version of the strategy. The strategy introduces energy efficiency targets that are to be met by 2015 and envisages a total final energy demand reduction of 12% across all of the sectors combined. Industry and mining must reduce energy demand by 15%, as must the commercial and public building sector. The power generation industry must reduce parasitic electrical usage by 15%, the residential sector must reduce energy demand by 10%, and the transport sector by 9%. The strategy also attempts to further address some of the World Summit for Sustainable Development goals that were set out in 2002 by encompassing issues such as energy efficient housing, bio-diesel and bio-ethanol gel, wind farms, and electrical appliance labelling.

The strategy can be found at <http://www.contacttrust.org.za/docs/EEStrategy.doc>

RED's on line 1 July 2005

Summary of Briefing by the City of Cape Town, EDI Holdings and Eskom on establishment of the Regional Electricity Distributor (RED 1) produced by Contact Trust www.contacttrust.org.za 1 June 2005

The Portfolio Committee for Minerals and Energy was briefed on the progress made by the City of Cape Town, Eskom and EDI Holdings with regard to establishment of RED 1. All parties indicated that an Operation Agreement had been signed and they were

ready to meet the date of 1 July 2005. Communication with municipalities emerged as a challenge.

Pelindaba Nuclear Contract Awarded

Contact Trust, 4 May 2005

Uhde, the South Africa based division of German company Thyssenkruup, has been awarded a \$20 million contract by nuclear power company Pebble Bed Modular Reactor (Pty) Ltd for the design, procurement, construction, and cold commissioning of its pilot fuel plant utilities and infrastructure at Pelindaba, near Pretoria. PBMR (Pty) Ltd is continuing to implement the first phase of the project, which involves the design of the fuel facilities and the costing process but must wait for the Environmental Impact Assessment (EIA) to be passed before construction can begin. PBMR (Pty) Ltd are hopeful that the EIA will be cleared by the end of this year but any sort of timeframe upon when such a clearance could be made is unknown. Should a positive Record of Decision (ROD) fail to materialise, then the first phase of the project will not be in vain, claims Tom Ferreira, Communications Manager at PBMR (Pty) Ltd, as the intellectual property rights behind the process would still be of saleable value.

Background: The last twelve months have seen a number of high profile contracts being awarded. On 16th November 2004, a contract for the basic design and research and development of the PBMR helium driven Turbo Generator System, as well as the core barrel assembly, was awarded to Mitsubishi Heavy Industries (MHI) of Japan. Supporters of the project also celebrated on 22nd November 2004 with the turning of the first sod for the construction of a helium test facility (HTF) at Pelindaba. The PBMR project entails the building of a demonstration reactor project at Koeberg near Cape Town and a pilot fuel plant at Pelindaba near Pretoria. Although Eskom will ultimately control the sites, PBMR (Pty) Ltd is a company created by investors in such as Eskom, the Industrial Development Corporation of South Africa, and British Nuclear Fuels Plc (BNFL) in order to develop the technology. Earlier this year Earthlife Africa successfully lodged a claim through the courts that the EIA carried out for the project had been flawed. Earthlife Africa made a number of claims such as that safety concerns should have been considered further by deferring the issue to the National Nuclear Regulator and that information and documents that were used in the final EIA report had been held back from the public. Earthlife Africa also argued that the final report should have been available for interested parties to comment upon before it had been submitted to the Department of Environmental Affairs and Tourism (DEAT). Earthlife Africa was successful in its case and the positive ROD upon the EIA that had been made by the Director General of DEAT was overruled.

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6. Sustainable Energy News from Around the World

Africa

NEPAD develops short term action report, which includes energy focus

NEPAD has circulated a short-term action report. Here's a Summary:

1. Introduction

One of the main priorities of NEPAD is the promotion of regional integration in the continent because individual African economies are typically too small to generate the

economies of scale that can be found in larger markets. Bridging the infrastructure gap has been identified as an important element of promoting regional integration in Africa.

In developing the action plan, the approach adopted by NEPAD is two-pronged: a short-term action plan has been developed based primarily on a survey of the infrastructure projects and initiatives in the countries and included in the programs put forward by the regional economic communities (RECs). For the short term plan, the main emphasis has been on selecting projects and initiatives with a strong facilitation element. The project selection process was guided by the following criteria: projects that are at an advance stage of preparation and that can be fast-tracked; projects that support both a regional approach to infrastructure provision and regional integration; projects that have stalled for political reasons and where NEPAD's intervention could be expected to make a difference; and initiatives that offer solutions to regional policy, regulatory or institutional constraints to infrastructure development. The Short-term Action Plan will be linked to and complemented by a Medium- and Long-term Action Programme that will take up projects and initiatives that require more time for preparation and development.

The role of NEPAD in ensuring the successful implementation of the Short Term Action Plan will be: a) Mobilising political will and actions to implement policy and institutional reforms in the sectors, b) Facilitating the mobilization of resources for regional projects and c) Facilitating knowledge sharing, networking and dissemination of best practices among countries, RECs and technical agencies.

2. Energy Sector

The challenge for NEPAD's Energy Infrastructure Initiative is to develop fully the energy resources of the continent in order to deliver affordable energy services to economic and social sectors. This will enhance economic and social development and improve the standard of living of the continent's population.

Under the Initiative, the continent's rich energy resources will be developed through regional cooperation. Guaranteeing a sustainable supply of affordable energy will contribute to a significant reduction in poverty, inequality, and environmental degradation.

The projects identified in the Short Term Action Plan include the following:

- Mepanda Uncua Hydropower
- West Africa Power Pool (WAPP) Program
- Algeria-Spain Interconnection & Algeria Gas-fired Power Station
- Mozambique-Malawi Interconnection
- Gas/Oil Transmission Projects
- Kenya-Uganda Oil Pipeline
- West Africa Gas Pipeline (WAGP)
- Libya-Tunisia-Gas Pipeline Studies
- Grand Inga Integrator
- DRC-Angola-Namibia Interconnection
- Nigeria-Algeria Gas Pipeline
- Cooperation in Oil and Gas trade, refining

Two sustainable energy activities:

- Cooperation in new and renewable energy
- Cooperation in improving energy efficiency & reliability of supply

Are noted, though no further details are given

The list of Projects also includes:

- Capacity Building, which "is intended to operationalise and strengthen the African Energy Commission (AFREC) and build capacity in the sub-regional organizations. As regards AFREC, it is intended to transform the institution into a legal entity through the ratification of the Convention and operationalise it through the appointment of the Board and the Technical Advisory Body by providing the appropriate technical support to discharge its responsibilities."
- Facilitation Projects, which "will promote reforms and cooperation among African countries, donors and the private sector for energy infrastructure development."
- An Energy Protocol, which "will assist in attracting more, less costly investment, as it will include establishing legal, regulatory and institutional frameworks, assisting in providing the necessary enabling environment to attract investors. This will help to reduce the risks and enhance the perceptions of investors with respect to private sector investments."

African Western Corridor power project under way

Summary of article by I-Net Bridge, printed in Business Day 2 June 2005

Five African state power utilities have committed a total of \$500 000 as start-up capital for the first phase of studies surrounding the Western Corridor (Westcor) power project proposed under the auspices of the New Partnership for Africa's Development (Nepad). The project involves harnessing the hydroelectric resources from the Democratic Republic of Congo's (DRC) Inga rapids to power a 3,500 megawatt (MW) power station at Inga, which would be exported to SA, as well as assisting in developing the power export potential in Angola and connecting it to the power grid to form part of the Southern African Power Pool.

According to a Nepad progress report released at the World Economic Forum (WEF)'s Africa Economic Summit 2005 in Cape Town, the five utilities - SNEL of the DRC, ENE of Angola, Nampower of Namibia, BPC of Botswana and Eskom - plan to carry out a feasibility study for the project between 2005 and 2007, with commissioning expected by 2011.

While the five are dividing the funding burden equally for the project's first stage - each contributing \$100 000 - other stakeholders are being considered, including development agencies like the African Development Bank, the World Bank, and the Development Bank of Southern Africa, as well as the Southern African Development Community (SADC) and other regional economic communities.

Electricity demand in the southern networks of Southern Africa has outstripped expectations, with studies showing that additional electricity generation capacity is required in the Southern African Power Pool by as early as this year.

The Westcor project is designed to exploit the Inga rapids site in the DRC, where SNEL owns and operates two existing power stations, Inga 1 and Inga 2, which have a combined output of 1,770MW. Inga 3 would be the newest addition to the site, with a proposed rated output of 3,500MW. Apart from Inga 3, the Westcor project includes the development of hydroelectric plants on the Kwanza river in Angola with an estimated capacity of some 6,700MW.

According to the report, it has been found that conventional HVDC technology is the optimum transmission technology for the application. Two bipole HVDC circuits are planned with source at the Inga 3 power station, and at the Kwanza power generation node in northern Angola. The two circuits will have tap-offs at Windhoek, Namibia and at Gaborone, Botswana, and terminate on Eskom's national grid near Cape Town and at Dundee in KwaZulu-Natal. A 400 kilovolt HVAC transmission line is planned to supply Kinshasa, DRC.

Review of Kenya's Geothermal and Cogeneration Technologies launched

AFREPREN has announced the publication of a booklet, titled "Renewables in Kenya's Electricity Industry: A Review of Geothermal and Cogeneration Technologies - AFREPREN Occasional Paper No. 26". The booklet is authored by Paul Mbuti and David Yuko, and is available at the following links:

Summary:

http://www.afrepren.org/Pubs/Occasional_Papers/summ/oc26_sum.htm

Full paper: http://www.afrepren.org/Pubs/Occasional_Papers/pdfs/op26.pdf

The rest of the world

Call for Civil Society to be involved in international meetings

Two important international meetings need civil society input to make a difference:

UNEP GMEF (Global Ministerial Environment Forum) meeting, 7-9 February 2006 in Dubai United Arab Emirates

The three main policy issues will be:

1. Energy and Environment (the primary issue)
2. Chemicals Management
3. Tourism and the Environment

NGOs are reminded to become officially accredited by UNEP in order to access all documents being given to national governments and to be invited to the Governing Council.

For information about how to do this, see

http://www.unep.org/DPDL/civil_society/About/accreditation.asp

For more information about the GMEF meeting see

<http://www.unep.org/Documents.Multilingual/>

Millennium + 5 meeting in September 2005

This meeting will address the Millennium Development Goals five years after the Millennium Declaration, as well as issues of Peace and Security and U.N. Reform. Both topics address important environmental issues, but there is virtually no official opportunity for directly providing input from civil society during them. There will be side events organized by civil society, both before and during the meeting.

For information, see <http://www.un-ngls.org/MDG/unaction.htm>

See also, <http://www.millenniumcampaign.org>

Call for papers for 4th World Wind Energy Conference Melbourne, Australia, 2-5 November 2005

The organizers of the 4th World Wind Energy Conference are calling for abstracts for. Abstracts should be submitted before 30 June 2005 on the themes as indicated in the call for papers, which can be downloaded from

http://www.wwindea.org/WWC/2005/WWEC05_call-s_4-05.pdf

Further information is available on the conference website: www.wwec2005.com or on the WWEA website www.wwindea.org

Bonn renewables2004 follow up

Two follow on events to Bonn renewables2004 need to be noted:

- First, is the launch of the "Renewable Energy Policy Network for the 21st Century" (REN21), which will be officially launched on the first anniversary of

renewables2004. The REN21 Interim Steering Committee will hold its second meeting in Denmark on 2-3 June 2005, at which it will become the regular Steering Committee, and further define the network's governance and structure. For more information on REN21 go to: www.ren21.net

- Second is the announcement that the much speculated about follow on conference to renewables2004 will most likely be held in Beijing on 7 and 8 November this year.

The Future of Fuel

Summary of article by Peter Willis, Business Day 19 May 2005

US author Richard Heinberg recently undertook a lecture tour of SA, focusing on his contention that the global peak in oil extraction is very close and significant. His message is sobering.

He and others point out that oil - the most potent form of easily accessible energy we have found - is a finite resource that we have been extracting for 150 years. Not surprisingly, we have found it convenient and profitable to extract the most accessible deposits first and in the past few years we have witnessed a marked failure to find major new oil fields, while existing ones are heading into decline.

What is perhaps surprising is how the world has preferred not to think about this until it is - arguably - too late to take sufficient avoiding action.

Meanwhile global demand continues to rise for the black gold upon which we have resolutely built our entire modern way of life, with China and India now stepping on the gas in imitation of so many other countries. Demand is strong in SA, too. Short of a couple of mega-field discoveries soon, the world faces a classic supply-demand crunch. By Heinberg's reckoning, the crunch is due within two or three years.

How do we respond to such information? We would be wrong to imagine the free-market pricing mechanism will effortlessly match supply to demand and that technological innovation, driven by higher oil prices, will effect a smooth transition to the next generation of personal transport and air travel. Yet, to judge by the reactions of many to Heinberg's lectures, this is a popular response.

To be sure, prices will play a role in moderating demand as supply diminishes. New technologies will emerge to replace some of our dependence on oil. But our touching faith in the omnipotence of technology, coupled with our preference for not looking at awkward truths like the inevitable end of cheap oil, has meant that we as nations and corporations have failed to invest heavily enough and early enough in possible alternatives to petrol and diesel (and there are few), leaving a yawning gap today between the 800-million cars running on oil-based fuel and the state of readiness of bio-diesel, electricity stored in batteries, or hydrogen-based fuel cells. While these alternatives all have potential, none is in a position to replace oil at the time when we need it to.

Meanwhile, there is every likelihood that the geopolitical landscape will change to reflect the desperation of consumer nations to secure supplies from oil-producing nations, at whatever the cost. We can therefore expect high and volatile fuel prices, coupled with periodic shortages of supply. These will probably lead to a slowdown in economic activity and the loss of many jobs. This in turn will mean there is less money available to invest in making the technological and infrastructural changes necessary to shift us away from our oil dependency. It's a catch 22.

Ultimately, as Heinberg said to a group of eager executives who were coming up with ingenious solutions to the challenges that "peak oil" might present to their company: "Remember the end of cheap oil is not the sort of problem you can solve. It's like growing old. You can't solve that. However, you can choose to respond respectfully, wisely and imaginatively to it, so that even ageing can become a source of unexpected riches."

The peak in global oil production, whether it comes very soon or just soon, is not the end of the world. It is an opportunity for us to think, plan and act together in unprecedented ways. Let's not find out what happens if we ignore the warning signs.

*Peter Willis is southern African director of the University of Cambridge Programme for Industry, and a board member of the South African New Economics Network, which invited Heinberg to SA. Heinberg is author of *The Party's Over: Oil, War and the Fate of Industrial Societies*, and *Powerdown: Options and Actions for a Post-Carbon World*.*

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7. Events

South Africa:

SADC Programme in Rural Energy Planning & Environmental Management: *Communication Planning and Mass Awareness Education*

27 June – 15 July

Johannesburg, South Africa

Minerals and Energy Education and Training Institute (MEETI)

Tel: +27 11 709 4311

Fax: +27 11 709 4657

E-mail: info@meeti.org.za

Website: www.meeti.org.za

The rest of the world:

Power-Gen Europe 2005

28-30 June

Milan, Italy

Tel: +44 1992 656 600

Fax: +44 1992 656 704

E-mail: attendingpge@pennwell.com

Website: www.powergeneurope.com

International Hydrogen Energy Congress and Exhibition

13 to 15 July

Istanbul, Turkey

Organized by: HEF- Hydrogen Energy Forum

The Conference objective is to bring together both research and industry organizations which are related to the Hydrogen Energy Sector, to facilitate communication and to promote the use of Hydrogen as a fuel.

Contact: Prof. Dr. I. Engin Ture,

Tel: +90 212 584 16 00.

Fax: +90 212 275 46 42.

E-mail: secretariat@ihec2005.com.

Website: www.ihec2005.com

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8. Appendix 1

Integrated Energy Planning for a Just Transition to Sustainable Energy

Presentation by Richard Worthington

Sustainable Energy and Climate Change Project Co-ordinator

Earthlife Africa Johannesburg

For the Pan African Power Congress - April 2005

The title of this session is: "Developing strategies for feasible instruments to support more sustainable energy service delivery." It is reminiscent of the concluding phrase of South Africa's National Climate Change Response Strategy - the final item in a list of Key Actions: "Set a timeframe for action, with specific milestones and responsibilities, to formulate appropriate national policies and measures for climate change action and develop a practicable plan of implementation." So the SA strategy identifies the need to set a timeframe to formulate policies ... we thought that the Response Strategy would propose such policies, but it doesn't even propose a timeline for their development. There comes a point at which discussion of the need for plans is simply a delaying mechanism.

At Earthlife Africa and the Sustainable Energy and Climate Change Project (SECCP) we believe that action is overdue. We first made inputs to a Renewable Energy Strategy in January 2001, although I understand that there was a draft strategy in about 1995. With each iteration the commitment to renewable energy declines, and we are now awaiting a new strategy to realise a target, approved in November 2003, that is less than 0.01% of total primary energy supply - a cumulative ten year target that is equivalent to less than 0.15% of anticipated energy consumption per annum in the final year of the target period. And officials and project developers are pretending that this is real challenge.

With respect, we believe the necessary strategy is quite clear and has been articulated for many years: essentially policy (including regulation, strategic development planning, tax incentives and political sponsorship of specific projects) based on Integrated Energy Planning with full-cost accounting - in other words implementing rhetorical commitments to 'triple-bottom-line accounting' based on inclusive cost-benefit analysis of all social, environmental and economic impacts. This implies a strong role for government - at local, national, regional and global levels - championing public benefits and not resigning responsibilities to the private sector.

Another way to articulate the over-all strategy is as a just transition to sustainable energy, where sustainable energy is understood as renewable energy, with optimisation of energy efficiency and conservation. The justice component refers to equitable distribution of the costs and benefits of necessary changes. Ensuring affordable access to basic energy services is both necessary for sustainability and a requirement of a just system.

Unpacking A Just Transition to Sustainable Energy

We need to level the playing field for renewable energy technologies (RETs), which requires allowing the overall price of energy to increase - consistent with the 1998 White Paper policy for moving to cost-reflective pricing - while ensuring affordable access to basic energy services for the poor, principally by adopting a stepped block tariff for electricity, with the first increment free to all. Such cost-reflective pricing will also decrease the payback period for many energy efficiency interventions. However,

as cost-reflective pricing will need to be phased in to mitigate recessionary pressures, the public and longer term macro-economic benefits justify that more efficient energy use and conservation (e.g. solar water heating) should be enforced through regulation, with further continued improvement supported by market-based incentives and voluntary agreements. Planned generation investments of many billions could be deferred for years, making finance available to develop local industries in renewable energy technologies.

Levelling the playing field for RETs requires addressing past and on-going subsidies to conventional energy technologies, including the externalisation of most of the costs of using such technologies. This should be tackled from both the demand and supply side, to optimise result and avoid market shocks: air pollution charges must be introduced, both for direct use of fossil fuels and for electricity supply (with revenues kept apart from the general fiscus), while a feed-in tariff for renewably generated electricity ensures demand, at a fully cost-reflective price.

Some parties prefer a renewable energy obligation or portfolio standard, at least for electricity, that mandates a minimum level of RE deployment, as a more predictable mechanism, but many in the financial sector do not find sufficient security in this arrangement to support major investments. Furthermore, ensuring that a target or portfolio standard is met requires substantial penalties for non-compliance, sufficient to provide finance for RET production should the standard or obligation not be met. It would be more efficient and timely to use revenue from pollution charges, or at least a large share thereof, to underwrite financing of the development of local industries in RETs.

A portfolio standard or obligation is in effect a surrogate for setting a feed-in tariff, pandering to 'free market' theory - it allows for greater market flexibility, with the possibility of some efficiency gains. It would provide pressure for cost-reflective prices for renewably generated electricity to be negotiated, but does not ensure investor confidence. A combination of the two approaches is also possible, but system complexity would delay implementation and impact.

Regarding air pollution charges: some of the revenue should certainly be directed to healthcare in the most directly impacted communities, but since the broader, cumulative and less conspicuous impacts on the health of people, land and vegetation cannot be remedied, the revenue must be directed to avoidance - i.e. to finance sustainable energy at least for as long as it takes to fully internalise all the costs of all energy options. Given the additional costs of conventional energy (principally fossil fuels and nuclear power) in terms of national and international security, and the fact that the costs through climate change will continue to escalate even after we reverse the global growth of greenhouse gas emissions, we are definitely talking about a long-term process.

Water use should also be considered in Integrated Energy Planning, including the impacts of water cooling of thermal power plants, which often have preferential supply contracts and prices, and the consequences of managing water flow from large dams to meet generation requirements as competition for water resources increases and we move to realise water and sanitation objectives of the Millennium Development Goals.

Integrated Energy Planning

Integrated Energy Planning (IEP) is a demanding discipline, particularly with regard to accessing necessary data, but we do not have to wait for the perfect plan or totally comprehensive computer model before taking decisive action. The principle policy and market instruments, at least for South Africa, are already well understood and implementation could start tomorrow. IEP will quantify the rationale for redirecting

investment, the scale of required market transformation and inform the detail of policy, regulation and market mechanisms.

What is also clear is that if we get serious about efficiency we can create time for developing RET industries in developing countries (India provides a learning opportunity) and more comprehensive assessment of emerging technologies, before sinking more capital into readily available options that may result in stranded assets once their full impacts, as well as the escalating constraints of climate change, are gradually translated into market forces. However, we can't simply wait for market forces to manifest, as they are the result of human choices and there are concerted efforts to prevent full costs being manifest in markets.

This is another value of IEP: to counter a growing tendency to regard market forces as somehow inevitable, almost as forces of nature. (Similarly, many people find the prospect of a completely new currency for international trade, not issued by any nation, to be almost inconceivable.) With advanced modelling techniques, we are reminded that the outcomes of current decisions can be strongly directed by our long-term objectives. We can investigate the best means to achieve these objectives and compare the consequences of different types and levels of intervention.

All the necessary inputs to achieve a just transition to sustainable energy are available: opportunities for efficiency and conservation, renewable energy resources, technologies (some quite immature), labour, skills and finance. The main barriers to this strategy - and accompanying job creation benefits and business opportunities - are a lack of political will and the resistance of vested interests in the energy and energy-intensive industry sectors, which are impatient for profit and apparently still believe in trickle-down of benefits from simple economic growth, despite the still growing poverty divide.

Currently major players with a vested interest in retaining business-as-usual actively undermine political will for change, in the absence of which, much of the population believes that there is no viable alternative to business-as-usual, which builds the credibility of the vested interests and further undermines political will, becoming a vicious cycle of self-fulfilling prophecy and defeatism, or of complacency and greed.

What if? - Unquantified Risks

Before you haul me down from the podium, let us contemplate some of the risks and possible consequences of current energy development proposals - say by about 2030, when my baby daughter may be contemplating having children:

The Congo River is been dammed at Grand Inge - despite loss of land, displacement of communities, ecosystem disruption and large-scale methane emissions (greenhouse gas emissions that cannot be mitigated) from decomposition of flooded forests:

- How long will it take for this dam to silt up, or what will be the costs and energy requirements of dredging and silt removal?
- How well will the turbine blades survive the stream of varied debris, which is likely to increase with the impacts of climate change?
- How much water vapour (also a greenhouse gas) will evaporate from the vast body of water and how will this impact local climate?

A western corridor exports "cheap" electricity into Europe:

- Will Europeans remain happy to externalise the impacts of electricity generation to Africa, or will they further prioritise energy security and local utilisation of renewable resources;

- If they remain happy to import electricity, will investment in the expansion of capacity require long-term supply contracts, of the kind that Mozambique grew to regret concluding with South Africa?
- Will poor communities in Africa be able to compete with prices paid by Europe?
- How much will it cost to protect transmission lines from disaffected groups and remote-controlled weaponry, or to repair the damage (including loss of service penalties)?

South Africa is gasifying deep coal reserves in the Waterburg to feed the Southern Africa Power Pool:

- Will we be able to control underground fires - some of which still continue to burn in Mpumalanga?
- Will such inefficient exploitation of hydrocarbons ever generate sufficient income to remediate the environmental consequences?

Massive investments are made in increasing oil exploration and extraction:

- Will 'probable reserves' live up to expectations of optimistic economists, or be closer to the verdict of geologists who consider that we are already on the brink of peak oil production?
- Relevant to both oil and coal:
- At what point will 'border tax adjustments' or carbon-related trade tariffs, currently being advocated for imposition on American exports, be imposed on developing countries?
- At what point in our technological progress will demand for hydrocarbon reserves as feedstock, rather than fuel, take prices beyond the reach of the energy sector?
- Are we gambling major investments on the viability of proposals for carbon capture and storage, most of which remain speculative?

Some high voltage lines carry "cheap" power to extractive industries and primary processing far from the western corridor, perhaps even around the circumference of Africa, drawing more people from rural areas to cities or Industrial Processing Zones:

- When will the details and timelines of so-called 'long value chain' projects be specified?
- What level of finance will be available for energisation of communities not close to the large-scale centralised infrastructure?
- If energy is available on a purely commercial basis, how do we ensure that it is not just another means of extracting revenue from communities already struggling to retain and build local wealth?

Challenges of global capitalism

I do not mean to suggest that people promoting such projects have malicious intent, but I am here, with a popular mandate through the Energy Caucus, to ask you to step back for a moment.

Forget for a moment the most promising deal on the market today, the most immediate prospects for attracting foreign direct investment, the ambitious schemes that assume more business as usual.

Think about what would work best in Africa, for Africans, and still be working in 2030 and in 2060.

Do we want African resources feeding over-consumption in the North while communities not on main grid routes continue to depend on dwindling biomass for energy, or struggle to earn high levels of cash to meet their basic needs? Or do we want to see decentralised energy technologies, managed and owned at least in part by

communities (thus deriving direct benefit from utilisation of their land and other resources) and designed to conserve, rather than sell off, the natural resource base?

Market forces are not forces of nature (nor very responsive to forces of nature, such as climate change), but the result of human actions and human perceptions, including the expectation that they will prevail. The very act of planning purely for profit under prevailing market conditions reinforces these market forces and thus entrenches the conditions that keep Africa dependent and subservient to the "first world" that has built and maintains its wealth largely on exploitation of a "third world".

The conventional energy industries (extractive industries) are central to the continuing trend of concentrating wealth in the hands of an elite (albeit a broadening elite at least in some countries). Just as control of land and labour is the seat of power in a feudal society, so the control of concentrated (stock) energy resources tends to continue the concentration of wealth and power. However, in Africa we aspire to empower the masses, to realise the wealth within communities and keep it local. This requires transformation.

You can think and plan outside the box (the prevailing market conditions under global capitalism) while continuing to do business within that box. You can support a progressive policy agenda and adapt to public-benefit oriented regulation. Indeed, it is only by supporting more proactive policy and regulation that public benefits can be delivered in a competitive system. A just transition to sustainable energy is not only feasible and desirable; it is the only sure path to the empowerment of Africa. It may well be enterprises that are best aligned with a just transition that endure. (If you're not part of it, you may become redundant, although possibly after the damage is done and a personal/corporate fortune made.)

Prioritising Social impacts

There is another key component of Integrated Energy Planning, and this is contained in the objective of the subject of this discussion: "...more sustainable energy service delivery."

A key strategy is implicit: planning based on energy service needs. Such planning will prioritise small-scale localised supply - to meet service needs as directly as possible. Maximising participation of those needing the services in the provision of the services will support sustainability (reduce dependence on imported supply and the extraction of wealth from communities needing the services); it will also provide incentives for efficiency.

Too often macro-economic planning and top-down development obscures the opportunities for directly empowering communities, including local job creation, and ignores the potential for meeting local needs with locally available resources. We certainly need to see the big picture, but we also need full cost-benefit analysis of all options for meeting the energy service needs, including evaluation of whether meeting proposed additional industrial demand will in fact achieve national or regional objectives. This detailed understanding of the nature of demand is an essential element of Integrated Energy Planning.

In the long term - thinking forward to the seventh generation - moving to sustainable energy is inevitable, whether it takes 50, 150 or 250 years. What we stand to lose by putting off the initiation of change is the justice component and with it possibly even the survival of the majority of communities. There is no need to regard a just transition as a threat to short-term success, an idealistic irrelevance or a task for our children, but we do need to move together; to build political and shareholder will, to agree on the broad parameters of a just transition.

To touch briefly on the subtopics of our programme:

Principles for regulation for renewably sourced electricity: management of the wires (transmission and distribution) for public benefit & full-cost accounting along complete fuel chains (with consideration of past subsidies); regulation can also be used to influence or even direct technology choices e.g. through efficiency standards for the use of fossil fuels.

Sources of funding: voluntary certification schemes and carbon finance are currently a distraction from substantial action; they have a role to play, but not a decisive one for some time; we must address the current bias of the energy market and the most direct way is through pollution charges going to a dedicated fund to finance demonstration and underwrite investment in local industries for the production of RETs.

Energy centres: public participation in design and implementation should ensure a focus on meeting energy service needs - transferring responsibility to corporates such as Total introduces conflicting agendas.

Energy Agencies: could play an important role if they have a strong mandate, with standards for efficiency and the ecological footprint of commercial activities; the prospects of Energy Service Companies supporting implementation of efficiency and renewables are poor as long as most energy costs are external to pricing.

Reviewing global and regional policy for renewable energy: This is imperative if we are to realise the Millennium Development Goals at the grassroots level. We may dump up coarse indicators such as GDP and average per capita income, but until people start to access power directly from commonly available resources and industries reduce their negative social and environmental impacts, we will not realise a broad-based African Renaissance. We need global and regional agreements and standards to collectively raise the bar and counter the competitive race to the bottom.

All of the actions required at the national level will be a lot easier, and less detrimental to competitiveness of national economies, if sufficient countries agree to co-ordinate their activities. The benchmark should be that any changes in balances of trade and power are towards greater equality, rather than greater disparity. Trade-related measures are justifiable to offset any advantages that would otherwise accrue to countries refusing to co-operate with multi-lateral agreements (e.g. seeking to free-ride on efforts of others to avoid catastrophic climate change).

Of course, it is hardly surprising if a department of MINERALS and energy is defensive when this subject comes up. Corporate and quasi-corporate (e.g. Eskom) entities need to rise above shortsighted resistance to multilateral agreements. Scepticism of Northern proposals is perfectly in order, but portraying to African leaders that all multilateral agreements are part of a neo-colonial agenda is disingenuous. Recent progress on ratification of the establishment of AFREC (African Energy Commission) is an encouraging development.

In Conclusion:

- All political support and market mechanisms for energy and related development should be premised on Integrated Energy Planning, which at a minimum requires some estimation of all costs and benefits and analysis of social and environmental, in addition to economic impacts.
- Mandatory standards are required for energy efficiency and conservation (incl. SWH for commercial and public buildings and affluent households), which can be supplemented by incentives and voluntary agreements for further improvement.

- Full-cost accounting should be introduced across the energy sector, with special provisions to ensure the realisation of basic human rights; this should include:
- Air pollution charges introduced to account for the impacts of fossil fuel use (except for direct use at household level as a consequence of poverty).
- A feed-in tariff for RE electricity, as the most direct and investor-friendly strategy to ensure development of local industries for production of renewable energy technologies while the playing field is being levelled.

With such policies and measures we can prioritise the generation of wealth by harvesting and concentrating renewable energy, rather than destroying wealth by burning our finite and diminishing hydrocarbon stocks just for their energy content - of which so much is directly lost to the atmosphere - and thereby also poisoning people, degrading land and polluting water resources. We could be preparing our economy for a carbon-constrained world with emissions-related trade tariffs, while developing export industries in RETs - amongst the fastest growing markets in the world.

We can initiate a just transition to sustainable energy, but the longer we hold off, the greater the real cost will be.