SUSTAINABLE ENERGY NEWS on EMAIL (SENSE)

Number 36

Welcome! SENSE is a service of the Energy Policy Unit 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, or know someone else who should be receiving SENSE.

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1. SECCP News

From the Editor

Dear reader

Welcome to this year's first SENSE edition. I hope that you all had a smooth beginning to the New Year, and that by now everyone in back into the swing of things. I would like to inform you that the first phase of SECCP (DANIDA Funded) terminated at the end of February, but this doesn't mean we closed shop. We will be continuing with our work under current funding from Heinrich Böll Foundation for the Energy Policy Unit, plus a small grant from the EU to work on long-term climate change policy.

Please note that due to this, other services like Climate Change Email News (CCEN) will be discontinued for a while - resuming CCEN is contingent to successful fund-raising. However SENSE, which will be sent out on a monthly basis, will endeavour to report major national developments on climate change.

I hope you will enjoy this edition of SENSE

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

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Renewable energy the cheaper option!

A new study ***"The Potential Contribution of Renewable Energy in South Africa"*** on costing energy options into the future, was launched in Pretoria on 16 February. It shows that renewable resources can offer a lower cost energy development path for South Africa. The study finds that the costs of generating electricity at new power plants using stock energy sources - fossil fuels and uranium – could exceed the costs of generation with new renewable energy technologies within ten years.

The study was commissioned by the SECCP and carried out by independent researchers (Jason Schäffler of Nano Energy and Douglas Banks of RAPS Consulting) who are quick to emphasise that their projections are the output of a very modest level of research and modeling. The latest study builds on the original report launched in April 2005, with detailed consideration of the costs of the original long-term scenarios (Progressive Renewable & High Renewable) integrated into the original publication - it is published as appendix D.

The findings suggest that realizing targets of 20% of electricity from renewable energy by 2020 and 80% by 2040 would reduce costs per unit of energy from about 2028, compared to business as usual, while slightly less ambitious targets would yield lower unit costs within just 10 years. This illustrates that energy planning in South Africa is based on old assumptions that no longer apply. The relatively high capital (short-term) costs continue to be regarded as prohibitive by investors and our government is not acting to level the playing field for investment in our most abundant resource.

Solar thermal electricity generation would, if developed aggressively as a local industry, not only generate more jobs and avoid pollution, but also cost less than conventional energy options within the medium term. With new power plants designed for a lifetime of over 40 years, fossil-based generation plants will be more a more expensive source of electricity well within the first half of their operational life. Wind power is already economically competitive from the best sites and/or where some of the externalized costs of conventional generation, or the benefits of localized generation, have been taken into account. Solar energy can be concentrated to power any existing process or mode of transport if developed on the same scale as coal mining and combustion.

"Renewable Energy is Peoples' Power," says Richard Worthington (SECCP Coordinator). "It may not offer the spectacular profits to investors, such as earned by oil companies - at the expense of public health, our ecosystem and future generations - but it provides many times more jobs than fossil and nuclear options, and allows for community participation. We can reduce our climate impact and provide the kind of growth and development that embraces the 'second economy', while also reducing the unit cost of energy."

Projecting energy costs into the future is not an exact science (and these latest findings should prompt further study), but these findings could be used in the current Integrated Energy Planning (IEP) process. These illustrative figures, together with the employment potential of RE development[i], should provide the basis for developing a scenario that takes public benefits as the primary driver, focusing on the priorities of poverty reduction and job creation. We challenge any stakeholder to provide more convincing costings, in a manner equally as transparent as this study.

A copy of the study can be downloaded: **http://www.earthlife.org.za/seccp/research**

Sustainable Energy? – discussion document

The Energy Policy Unit (EPU) launched ***Sustainable Energy? Towards a Civil Society Review of South African Energy Policy and Implementation***, by David Hallowes, at a civil society workshop on the morning of 16 February.

The discussion document presents an overview of South Africa's policies and initiatives on Renewable Energy and Energy Efficiency in the context of overall energy policy. It provides an opening discussion of the views of civil society organisations concerned with energy, informed by the views of a small sampling of organisations represented on the civil society Energy Caucus.

The EPU will host a series of workshops with civil society stakeholders during 2006, using this paper as a point of reference, with a view to producing a more representative civil society review, analysis and critique of energy policy and implementation in September or October. The collection of views will particularly target the participants of the civil society Energy Caucus, but all and any stakeholders are invited to submit commentary and critique for possible inclusion in the final publication. The only requirement is that submissions, or the individuals making them, carry some form of organisational mandate.

To request copies and give feedback on this document, contact Nkosana Rakitla: **nkosana@earthlife.org.za**. It is worth noting that the views expressed in this document are not necessarily the views or positions of Earthlife Africa, SECCP or any other civil society organization, but an attempt to initiate debate on South Africa's evolving policy and energy development.

Energy Caucus meeting

SECCP hosted a meeting of the civil society Energy Caucus on 17 February, where participating organisations provided mandates for a number of specific actions in 2006, including securing a meeting with Minister Hendricks and participating in the Steering Committee of the IEP. The meeting was preceded by three days of capacity building workshops, providing an intensive introduction to energy technologies, policy and development options for 18 participants.

The meeting adopted the following resolution:
Consistent with the Principles of the South African civil society Energy Caucus (EC), the EC participants call on the Department of Minerals and Energy to consider a suite of public benefits, particularly job creation, equity and poverty reduction, as a primary driver of one of the scenarios to be modelled as part of the Integrated Energy Planning process. We further call for a timeline of at least 30 years to be used in the scenario modelling process.

2. SA Sustainable Energy progress

Bio-fuels possible way to address economic and social challenges

Extract from Address By Minister Lindiwe Hendricks (DME)
Source: Parliament Monitoring Group

Growing the bio-fuels industry and job creation, the establishment and growth of the bio-fuels industry is one possible solution to addressing both the economic and social challenges and is an important contributor to ASGI-SA, led by the Deputy President. South Africa imports about 60% of its crude oils requirements, which has economic implications in terms of balance of payments as well as vulnerability to rising crude oil prices. Increasing the volumes of ethanol in petrol and increasing the use of bio-diesel would therefore have macro economic benefits for the country. In addition, converting sustenance farmers into cash crops producers to supply the crops or input into

bio-fuels will start to address the high level of unemployment in the country, particularly in rural areas.

In short we are looking at creating approved a value chain for bio-diesel and bio-ethanol that would result in significant job creation opportunities throughout the value chain. Most of theses jobs could be realised in the second economy, which would assist government in meeting its objectives of bridging the gap between the first and the second economies and halving unemployment t by 2014.

In December 2005, Cabinet approved the establishment of a Task Team to develop the appropriate strategy by the fourth quarter of 2006. The Task Team, which is led by DME, comprises representatives from Department of Water Affairs and Forestry (DWAF), Department of Science and Technology (DST), Department of Trade and Industry (DTI), National Department of Transport (NDOT), Department of Agriculture (DoA), National Treasury (NT) and The Presidency.

The key activities to be undertaken by the Task Team would include:

- Identification of resource requirements e.g. land, crops, incentives, and human capital.
- Feasibility studies for plant construction (where required).
- Long term feedstock supply contract aspect and farmer outreach activities.
- Cost benefits analyses to determined optimal use of land, water etc.
- How to move farmers from subsistence farming to commercial crop farming, including what support they might need such as in agricultural extension services and advanced farming methods.
- Dealing with issues such as land tenure, reform and usage.
- Protecting vulnerable participants, such as farmers from food price volatility, oil prices drops and currency fluctuation.

To ensure the success of bio-fuels we will need to consider the cost of technology, human resources development and appropriate regulatory changes. Consultative forums will be established to support the Task Team and will be made up of Science Councils, higher education institutions and industry specialist on the technical side and on the commercial side we will have our state-owned enterprises (SOEs), industry players and business associations in particular Grain SA and the South African Petroleum Industry Association (SAPIA). A project team will be established within the DME to maintain momentum over the coming few years. The Team will be co-operating with international players in Brazil and the United State of America who are active in this area. In addition to the benefits that bio-fuels will bring to farmers, new job opportunities will be created in the refining, blending and distribution of the bio-fuels products.

Editorial comment: The Task Team, when developing the Bio-fuels Strategy, must consider sustainability of bio-fuels agriculture and the balance of all energy inputs (including transport of product) vs the energy content of output. This must go beyond security of supply, to include the strengthening of agro-ecology and family agriculture as a transformative model, with self sufficiency in food and energy, prudent and efficient usage of resources, improvement of income distribution, social accountability of what is produced and how, decentralisation of production and consumption and the lowest possible impact on natural resources.

According to another report, South Africa and Brazil are in process of signing a memorandum of understanding where Brazil will promise technical assistance. The South Africa's ethanol programme is focusing on E10, where petrol is mixed with up to 10% ethanol to allow petrol engines to run E10 without any modifications. Annual petrol consumption is about 11 billion litres a year, meaning that E10 could save R3-bililion a year at current prices and benefit the rural economy by a similar amount.

Hydropower Conference

Based on an article Hydropower 'can benefit the poor' by Chris van Gass

According to a report ***"Meeting Africa's Energy Needs – the costs and benefits of hydropower"*** published by WWF, Oxfam and WaterAid, Hydropower has the potential to contribute to reducing Africa's energy poverty. This report details two case studies from Zambia and Kenya that shows how hydropower can deliver benefits with minimal effect. The report coincides with the opening in Johannesburg of an African ministerial conference on hydropower. It calls for a greater emphasis on providing benefits for poor and reducing damage to ecosystems in future energy policies. Dr Ute Collier, dams and hydropower manager for WWF and report author, said "the importance of sustainable development needs to be made clear to ministers at the conference".

More than 500 million have no access to regular energy supply in Africa. This means no refrigeration for medicine or food, as well as no effective lighting. Improving this situation is vital if the United Nations Millennium Development Goal (MDG) of halving poverty by 2015 is to be achieved. The report also warns that Africa has a legacy of environmental and social problems linked to existing hydropower plants. Large hydropower plants rarely serve the needs of the very poorest people; therefore there is a need to follow a very cautious approach.

The report says decision-making should follow recommendations of the **World Commission on Dams** (WCD) as a guide to good practice. The recommendations aim to ensure that dams are economically and environmentally sustainable by ensuring that construction plans are given public approval, comprehensive assessment of other options are made and that the economic benefits of any Dam are shared with local communities. According to a researcher at Oxfam, large hydropower plants are rarely the best option to provide electricity to the poor, solar and small hydropower are better alternatives.

3. SA Unsustainable Energy: Eskom Watch

Eskom's coal research programme

Based on an article by ESI Africa issue 4 2005

The Eskom coal research programme focuses on combustion as a priority and gasification research will be conducted in the short or medium term. According to the report gasification will initially be conducted on selected Eskom coals for the purpose of assessing [synthetic gas as a co-firing and NOx reburn fuel for Eskom's PF boilers – too cryptic – does not make sense].

The research also proposes co-firing of Majuba boilers based on Underground Coal Gasification (UCG). The combustion test is presently focussing on blends of low-grade coals from different colliers; sorbents are also being evaluated for their ability to scrub SO2 emissions. The Majuba coal deposit and specifically the selected site, was found to be technically suitable for UCG technology and properties of the coal such as its reactivity, char structure and the composition of volatile matter were found to be favourable for the UCG process. The Majuba pilot project will provide an initial generating capacity of approximately 6Mega Watt electricity (6Mwe) and is sufficient to co-fire a single burner at Majuba power station. Pending the success of the pilot programme, gas production will be scaled up with potential of eventually providing 30% of the primary energy requirements of Majuba Power Station on a commercial basis.

According to the research the benefits of an indigenous gas source would be for usage in high efficiency gas turbines, either in simple or combined cycle mode. Eskom has initiated the next phase of the research; to derive performance estimates, generation costs and environmental

benefits for these options. The research reports that UCG technology with a combined cycle (termed UCG-IGCC) has the potential to be one of the most efficient coal based generating technologies, and exceeds or compares with the emerging IGCC and more radical ultra-supercritical pulverised fuel developments. It would generate around 25% less green house gas emissions than the most efficient of Eskom's current coal fired stations.

Editorial comment: Given uncertainties of impacts of UCG - it has proven far easier to start underground gasification (partial combustion) than to control or stop it - there should be an Environmental Impact Assessment of the UCG activities. Integrated Gasification (IG) involves gasification of coal within a special pressure chamber, while UGC uses/accesses less of the energy in the coal and can involve fugitive gas emissions. It is not clear whether such losses are considered in claims for efficiency, as UGC is generally applied where extraction of the coal is not feasible (either economically or technically).

Eskom's Matimba B vs Botswana coal-fired plant

Based on article by financial times 30 January 2006

Eskom's plans to build a R27bn power plant at Lephalale (Ellisras) in Limpopo province could change now that Botswana is likely to get a new 3 600 MW coal-fired power station just across the border. Eskom's new 2 100 MW plant was to be situated close to its existing Matimba station and use coal from the Waterberg coalfields. Now, with plans by Canadian group Coal Investment Corp (CIC) far advanced to build a 12 Mt /year mine and US$6bn power plant at Mmamabula, a mere 100 km from Matimba, that may well change. Eskom Generation MD Ehud Matya says a decision on a new coal-fired power station will be taken this year. Coal reserves in Limpopo, Mpumalanga and northern KwaZulu Natal make any of the provinces a possible location. Eskom has indicated that buying power from Mmamabula is one of the options for future power capacity.

CIC expects the mine and power projects to proceed from pre-feasibility to feasibility stage this month. The company, founded by Canadian resource development group Tau Capital, is listing on the Toronto Stock Exchange in March to raise the R100-R200m it will require to fund the feasibility study. If all goes according to plan the first power unit will be completed by April 2011, with the other five units to follow in six-monthly intervals. Most of the power will be sent to SA. An agreement between the Botswana and SA governments regulating the flow of electricity is likely to be signed shortly. CIC say the pre-feasibility study confirmed extensive coal reserves that could supply a power plant for at least 40 years. CIC would be looking for investors and operators for both the mine and power station.

In mean time in South Africa, Bohlweki Environmental Consultant is proposing to conduct individual meetings with Interested and Affected Parties, to discuss concerns and the way forward on the Mathimba B Environmental Impacts Assessment. For more information contact **matimba-b@bohlweki.co.za** or **info@bohlweki.co.za**

EIA for PPC cement secondary fuels & raw materials project

The proposed project is identified as an activity that may have detrimental effects on the environment, thus requiring an Environmental Impact Assessment (EIA). The EIA process is being conducted for each of the six Pretoria Portland Cement (PPC) cement-manufacturing plants. These include:

- The Hercules plant, located in Pretoria West in a mixed industrial and residential is.
- The Dwaalboom plant, in Thabazmbi municipality in Limpopo Province.
- The Slurry plant, in Mafikeng municipality in North West Province.
- The Port Elizabeth plant, in Port Elizabeth, Eastern Cape.

- The Riebeeck plant, in Riebeeck West municipality, Western Cape.
- The De Hoek plant, in Pieketberg municipality, Western Cape

Individual applications for the environmental authorisation have been lodged with the individual Provincial Environmental Authorities and they are currently entering the stakeholder engagement phase of the project. Environmental Business Strategies (EBS) has been appointed to conduct the EIA. EBS is currently identifying Interested and Affected Parties (I&APs) and meeting with the I&APs to introduce the project and to establish a forum for further engagement. For more information contact: **gbothma@kv3.co.za**

4. SA general energy

Free State to get "4MW" hydropower

Based on an article by Creamers media

An independent power producer (IPP) project in the Free State will see the construction of two hydro power stations that will partially eliminate dependence on Eskom by the Dihlabeng Municipality. Bethlehem Hydro (BH), a new black economic-empowerment (BEE) IPP, will lead the construction of the hydro power stations. The project is funded by the Development Bank of Southern Africa (DBSA) to the tune of R30million, with the balance of the required capital provided by the South African Energy Corporation, Nu Planet BV from the Netherlands, the Dihlabeng Local Municipality and investors from the region.

The two-hydropower stations will have a combined output of about 4 MWs. Each power station will generate and sell 28 GWh per annum to the Dihlabeng Local Municipality (DLM). The project will supply the equivalent of 15% to 20% of Bethlehem's power needs, at a tariff competitive to that of Eskom. The project is estimated to create about 200 jobs, while the construction period is expected to transfer skills to the community. The parties have warehoused equity in BH for local women's group investors, while other local investors may buy into the shares from the funders in due course, in order to ensure full community participation and beneficiation.

DBSA said the project ties in with its mandate of developing infrastructure and funding the provision of energy through innovative methods that not only contribute to the sustainability of South Africa's energy sector, but also ensures that the communities benefit from the government's measures of deregulating the generation, reticulation and supply of electricity.

SA's first large scale ethanol project

Based on an article by Business Day

The project was given a kick-start with the announcement of an R7billion venture to build the first of eight ethanol plants in major maize – producing areas. The initiative could supply up to 12% of South Africa's fuel needs by 2015. The investment, by Sterling Waterford and Ethanol Africa, will also be a relief to long suffering commercial farmers, who se the initiative as an opportunity to reduce bulging maize stocks that contributed to last year's free fall in the maize prices. Government has identified the conversion of excess maize into fuel as an initiative likely to add impetus to its Accelerated and Shared Growth Imitative of SA (ASGI-SA).

The first ethanol plant would be built in the Bothaville industrial area because of the availability of maize there. Of the 400 000 tons of maize produced in Bothaville annually, the first plant will be capable of consuming as much as 375 000 tons and estimated to produce more than 470000 litres of ethanol daily. Construction of the first plant is expected to commence this year and should be in full production by the middle of the next year.

5. SA Energy Policy

Update on Integrated Energy Planning II (IEP2)

By: Nkosana Rakitla

The Department of Minerals and Energy (DME) is currently updating the IEP **discussion document** in response to inputs submitted at the 6th December 2005 stakeholder meeting. The scenario modelling will make use of data collected by Energy Research Centre. This data will be submitted to the Integrated Energy Planning Steering Committee, which will break into different working groups that will look at the different aspects of the data and report back to the Steering Committee. Regarding composition of the steering committee, officials still trying to obtain approval of who should be on the committee and how many members the committee should have. The first meeting has been promised for the first quarter of 2006.

Regarding the scenarios, the proposal for modelling work makes assumptions that public benefits would be achieved under its diversification and low carbon scenarios. Looking at what is proposed thus far, it looks like the diversification scenario is looking to optimise security of supply and reduce the contribution of imports (oil is our most costly import item), with nuclear suggested as an alternative to fossil fuels. The low carbon scenario looks at optimising for the mitigation of climate change by moving away from fossil fuels. What doesn't come out clearly in the scenarios proposed by DME is the optimisation of public benefits.

The Sustainable Energy and Climate Change Project is making a strong pitch for the IEP modelling to include a "Public Benefits" scenario, either as an addition or in place of the ''Diversification' scenario. The main objective of diversification is security of supply, which can be included in a suite of public benefits, that would include poverty alleviation, job creation, local economic development (communities generating their own economy), public health and decentralised energy service delivery. To make your submissions to the IEP process email to **Janneke.wiedema@dme.gov.za**

Electricity Pricing Policy might resurface

By Nkosana Rakitla

According to informal communication with Department of Minerals and Energy (DME) officials, the Electricity Pricing Policy is being revised, given the status of restructuring of the electricity supply and distribution industry. The Department of Minerals and Energy Chief Director of Electricity Ompi Alphane is hoping for the revised draft to be issued for public comment by mid-year this year.

For clarity on any issue regarding the Electricity Pricing Policy contact: Chief Director: Electricity, Department of Minerals and Energy
+27 (0) 12 317 8217

Contact: **Nkosana@earthlife.org.za** to request Earthlife Africa Johannesburg comments to the Electricity Pricing Policy

6. Sustainable Energy News Around the World and Africa

In Africa:

Turning wind turbines in Ghana

Based on article by African Journal
January – February volume 7

Ghana – 48% of the community, or 83 % of the rural community are not connected to the national electricity grid, and most are most likely not to be connected, because extension to the grid is expensive and in many cases unlikely at least for the next decade. In Ghana villages without electricity remain isolated and are limited in the quality and quantity of services delivered and that they can offer. Local economy moves to where electricity is, leaving villages without access to electricity marginalised.

At present, all other standalone electricity generating devices in Ghana, such as solar panels and fuel powered generators are imported and are therefore expensive and difficult to maintain. EnterpriseWorks Worldwide (EWW) pilot wind project is being implemented in partnership with Rural Energy and Environmental Systems (REES) of Ghana. The Project, with a budget of about US$180 000, is funded by World Bank's Development Marketplace Competition.

The project saw the training of rural community on the technical maintenance and operation of the 500-watt wind turbines. The model used, is a standard 2,4 meter diameter axial flux machine, with a few small modifications. The group of trainees was selected from four community enterprises that had demonstrated their interest in renewable energy and a capacity and enthusiasm to break into this new market. The first step in training was to source the required material locally. The turbines are carved from a lightweight, close grain timber that is called "Emory" and is widespread in Ghana. All the material is available locally with the exception of the high-strength magnets, which are imported.

The first locally manufactured turbine was erected by the group of trainees at the Council for Scientific and Industrial Research (CSIR) in Accra. The performance of this turbine is monitored by CSIR and EWW. Initial reports indicate that it is generating a steadily output of power. The Turbine does produce a whistling sound and this is attributed to the blades being slightly warped because they were cut from unseasoned timber.

The manufacture of the small –scale wind turbines introduces an affordable and reliable source of electricity for off-grid communities where the wind resource is high enough to support wind generated electricity. It can help economic development in these remote and most marginalised areas. Local manufacture also provides a source of revenue for the trained turbine technicians, with scope of training others. Since the turbine was installed another additional eight have been produced and installed at selected demonstration sites.

If after six months the users are satisfied that the turbines meet their needs, the turbines will be made available for sale from the trained manufactures. An alternative credit-to-purchase option has also been considered. This would involve providing local enterprises with assistance in developing a business plan and repayment schedule for the purchase of wind turbines on credit through AREED, which is part of the United Nation Environmental Programme.

7. Events

National Stakeholder Consultation on Gender and Energy for CSD 14 workshop
Date:08 March 2006

Venue: Novafrica Conference Centre
Contact: **secretariat@novafrica.org.za**

Domestic Use of Energy (DUE) 2006
Date: 4- 5 April 2006
Venue: Cape Peninsula University of Technology

Industrial and Commercial Use of Energy (ICUE) conference
Date: 22-23 May 2006
Lagon Beach Hotel, Minetown, Cape Town

African Utility Week
Date: 7-10 May 2006
Venue: Cape Town, Contact: Andrew Evans
Contact: +27 011 700 3500, Fax: +27 011 700 2501
Andrew@spintelligent.com

African Bio-Fuels: E10 & Bio-Diesel
Date: 5,6 &7 June 2006
Venue; Southern Sun Cape Sun, Cape Town
Contact: **csteward@iir.co.za**

International Ministerial Meeting on Climate Change
(Follow-up to the Greenland meeting of 2005)
Date: 16 – 18 June
Venue: Cape Town

Commission on Sustainable Development (CSD) 14
Date: 1 – 12 May 2006
Venue: New York

8. Appendix 1

Sustainable Energy Briefings 1- 8: can be downloaded from our website
www.earthlife.org.za/seccp/