

SUSTAINABLE ENERGY NEWS on EMAIL (SENSE)

Number 31

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

Two major events have kept the SECCP office extremely busy over the last few months. The first was the launch of an SECCP commissioned but independent research project into the potential contribution of renewable energy (RE) in South Africa at the Third Sustainable Energy Symposium ([see report below for more information on Symposium](#)). The study finds that over 50% of South Africa's total energy supply can realistically be generated from RE sources by 2050. When presenting their findings at the Symposium, the researchers also noted that current energy planning of 20 years is too short, and that developing scenarios for 50 years highlights how important it is that South Africa move away from fossil fuels, the sooner the better. The truth of this was underscored in the Business Day (7 March 2005) which reported that "Electricity consumption in SA rose 2,1% or 1121GW/h in the three months to January this year compared with the same period at the end of 2003, increasing pressure on producers to meet rising demand...Based on the current rate of electricity consumption, the minerals and energy department says SA could run down its surplus power — currently 36 000MW — as early as next year. The department initially expected the country's electricity supply to be depleted between 2007 and 2010." [Editor: To clarify this quote, South Africa can currently generate 36 000MW of electricity, but with increasing consumption any excess is fast being used up.](#)

Second, was a South African Climate Action Network celebration/ demonstration marking the entry into force of the Kyoto Protocol on 16 February ([see report below](#)). As of mid-February 2005, RE and energy efficiency projects can now apply for credit under the Clean Development Mechanism.

So, South Africa has the potential to generate over 50% of its energy from RE sources, plus such projects can get some finance through CDM. Lets hope the equation equals the development of South African policy to facilitate more sustainable energy projects, instead of business as usual. This hope is given some boost by the Minister for Environmental Affairs and Tourism's call for South Africa to diversify its energy sources. According to the The Citizen (16 February 2005) Minister van Schalkwyk sees the Kyoto Protocol as a major stride forward in the fight against global warming and climate change. He said the challenge for SA would be to diversify its energy sources by developing alternative, renewable and non-carbon based sources.

In amongst all the planning hustle and bustle of the Symposium and celebration/ demonstration, we made time to welcome Jodi-Anne Williams. She joined the SECCP team as Climate Change and Information Intern in March, and will primarily be assisting Elin Lorimer with climate change issues. We are also pleased to announce the publication of the SECCP four-year review. It's a jam-packed read detailing the work of the SECCP in the 4 years that it's been in existence – mainly to inspire activism towards a just transition to sustainable energy. If you'd like a copy, please let me know.

Sustainable Energy Symposium III

Claire Taylor

Over 150 people attended SECCP's third Sustainable Energy Symposium on the 13th April 2005 at Development Bank of Southern Africa to launch its latest research into the potential contribution of renewable energy (RE) in South Africa.

After opening and key note addresses by Joanne Yawich, the Deputy Director General at the Department of Environmental Affairs and Tourism and Manny Singh, the General Manager of the Energy Development Corporation a division of the Central Energy Fund; the researchers, Douglas Banks from RAPS Consulting and Jason Schaffler from Nano Energy, presented their research through three case scenarios:

1. Business as usual

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 18 months to meet demand.

2. Progressive renewable scenario

In this scenario the researchers tried to grow renewable energy (RE) as realistically as possible, though the growth rate is still quite fast (20% per annum). Despite this accelerated RE growth, fossil fuel-generated energy would still play the major role in meeting energy demand. This has environmental and social implications – e.g. by contributing to climate change. In addition, the researchers predict that by 2025 the rising cost of fossil fuels and diminishing cost of RE options will make many of the latter cost competitive with the former.

3. High renewable scenario

In this scenario, the researchers modeled significant growths of RE – thereby showing that it would be possible for up to 90% of South Africa's electricity and 60% of South Africa's total energy mix to be generated from RE sources. The researchers noted the importance of energy efficiency in contributing to reducing demand.

Douglas Banks then made three important concluding remarks:

- That SA needs to reduce its dependence on fossil fuels – particularly because of their contribution to climate change.
- Current energy planning does not look far enough ahead – stopping at 2020 to 2025. As such SA has not anticipated the magnitude of the problem looming around the corner.
- Time is short – SA's RE industry has a small base at the moment, and needs very large investments to deal with the looming energy crisis. Developing the graphs has been an “eye opener” showing that meeting growing energy demand with any technology mix will be a significant challenge. Current resource allocations are not adequate to tackle the issue.

The rest of the day was spent looking at integrated energy planning and ways to finance renewable energy projects. [The requirements of integrated energy planning and the gaps in South African energy planning so far are outlined in the article on Integrated Energy Planning in South Africa and Appendix 1 below.](#)

When discussing ways to finance renewable energy, speakers made a number of important points. Kevin Nassiep, the Chief Director of Energy Planning at the Department of Minerals and Energy (DME) responded to a comment that Eskom is the only institution that can absorb the costs of investing in RE by noting first, that it makes sense for Eskom to absorb the costs; and secondly that DME are in tentative discussions with other government departments and Eskom around future commitments. He said that “in the coming year we will see the outcome of these discussions. Full cost accounting is the DME's intention, but before rolling this out government needs to know what the macro economic impacts will be and how consumers will manage the increased costs.” Responding to the question, “is government considering internalizing the costs associated with pollution to emitters? If so, what impact will this have on RE technology?” Joanne Yawitch reported that the

Department of Environmental Affairs and Tourism is working with Treasury to develop a Money Bill, which aims at internalizing these costs. She noted that this issue is complicated as it affects many sectors, including transport and energy and also has to grapple with how to factor in domestic fuel burning, as this is a significant polluter. She wasn't sure what impact this Bill would have on RE but noted that it would provide an incentive for cleaner production technology.

Richard Worthington the co-ordinator of SECCP concluded the day's proceedings by noting first, that the research presented at the Symposium gave lie to the claim by conventional energy proponents that RE is only suitable for niche applications. Secondly, he highlighted two exciting points made during the day's events, namely that pollution charges are being developed and that some people working for DME do want to include externalities in energy pricing. However, apparently their bosses have not yet mandated this. As such, SA needs a strong civil society to push for achieving the RE potential outlined in the research.

Note: Copies of the research, presentations and minutes from the Third Sustainable Energy Symposium can be downloaded from SECCP's WebPage: www.earthlife.org.za/seccp - follow the link to <Research> on the menu button on the right of the main page, then follow the link to <Sustainable Energy Symposium III> at the bottom of the Research page.

Kyoto Protocol Day – celebration and protest

Elin Lorimer, SECCP

(Note: this article was published in Climate Action News Volume 13)

On February 16th 2005 the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) entered into force. This long-awaited event, following Russia's ratification in November 2004, was cause for celebration around the world. The South African Climate Action Network (SACAN) chose to mark this day in two ways: with a press conference to celebrate the entry into force and explain its significance, and a demonstration outside the U.S. Consulate to call for honouring the U.S. Convention commitment to prevent dangerous climate change.

Around 150 demonstrators joined SACAN outside the U.S. Consulate in Killarney, Johannesburg, for a lunchtime demonstration on February 16th to call on the United States to stop trying to block multilateral efforts on climate change and to ratify the Kyoto Protocol. To the background of singing and chanting from a vibrant crowd, a letter was delivered to the U.S. Consul General voicing the concerns of SACAN. The demonstrators, from a range of backgrounds and organisational affiliations, came with one common purpose in mind: to challenge the US to join the multilateral action and stop being as destructive in the area of climate change as many feel they are on other issues of international concern.

It has been roughly seven years since the Protocol was developed in Kyoto, Japan and opened for signature. Russia's ratification of the Kyoto Protocol in late November 2004 tipped the balance and saved this agreement from failure, fulfilling the requirement that it be ratified by countries representing at least 55% of greenhouse gas emissions from industrialised countries. Many were concerned that the agreement would fail altogether following the withdrawal of the U.S. shortly after the 2001 election of the Bush Administration. However, now that the multilateral approach has triumphed in the face of concerted corporate opposition, it is time for those most responsible for escalating climate change to join the global efforts and take measurable action to reduce their greenhouse gas emissions.

It is unacceptable that the USA (and Australia) should renege on their commitments, as negotiated in 1997, and refuse to implement the very modest limitations they originally agreed to, when the consequences are global in magnitude and threaten the lives or livelihoods of the majority of humanity. The US, responsible for over 20% of global emissions, despite having less than 5% of global population, was a powerful player at the negotiations in Kyoto and largely responsible for some of the least appealing aspects of the agreement.

As long as the Bush administration refuses to implement the Protocol, all individual states should implement their own emissions caps, to facilitate a future administration bringing the US back into the global community. Other Kyoto parties should refuse any carbon trading deals with the USA and impose tariffs on US imports related to their continued free-riding on the efforts of others to address escalating impacts and ultimately prevent climate catastrophe.

Editor: Under the first commitment phase of the Kyoto Protocol (which ends in 2012) only Annexe 1 (developed) countries are required to reduce their greenhouse gas emissions. South Africa is not an Annexe 1 country, so hasn't had to make any commitments. However, as a major contributor to greenhouse gas emissions, the question now being asked is "Will SA commit to any carbon emissions reductions in the second phase of the Kyoto Protocol?" This was the question asked of Joanne Yawitch, the Deputy Director General at the Department of Environmental Affairs and Tourism at the Third Sustainable Energy Symposium. She responded saying that SA won't commit itself to anything until it more clearly understands the implications of such a commitment. Many models are being put forward, on which to base carbon reduction targets e.g. according to GDP. SA is starting to undertake research and scenario planning by looking at the implications of these different models. Only once this information is available will SA considering whether it will make any commitments and what these will be.

Integrated Energy Planning in South Africa

Claire Taylor

Editor: This article draws on Sustainable Energy Briefing 4, which explores what integrated energy planning is, what it should include, and reports on progress made by the Department of Minerals and Energy (DME) in undertaking IEP II (copies can be seen in Appendix 1 below).

South Africa has recently undertaken a first round of integrated energy planning. The Department of Minerals and Energy published the first Integrated Energy Plan for The Republic Of South Africa in March 2003. Unfortunately, IEP I is at best an Energy Plan, rather than an Integrated Energy Plan - as it makes forecasts about business as usual. In recognition of its shortcomings, IEP I concludes, "The gaps...are scheduled to be addressed in Phase II of the integrated energy planning programme."

Officials responsible for energy planning in the Department of Minerals and Energy report that IEP II is underway, with the DME in the process of:

1. Updating energy data
2. Reviewing the gaps of IEP I
3. Arranging for a workshop where stakeholders can give guidance on the most important issues to be included in IEP II.

In addition, DME officials made available a 14- step outline resulting in the completion of IEP II at the end of 2006. Two points need to be made with regards to this outline:

1. The DME still needs to develop a Workplan. It's critical that this allows for meaningful stakeholder input, including public participation to strengthen the process. For example, public participation in step 9 (present [reference] scenario to stakeholders), would:
 - Ensure that the reference scenario is integrated - that it includes the whole energy sector, as well as social, economic and environmental issues
 - Help shape the scenarios or forecasts that will be developed and modelled in steps 10 and 11, again ensuring that they are integrated
2. It's critical that policy makers are part of the stakeholder group that the findings are presented to in step 13, as they must be involved in step 14 - developing the final plan. This is because policy makers are best suited to ensuring that an energy plan for South Africa is based on the overall good of the country, rather than avoidance of short-term costs. This plan will not be a prescriptive blue-print, but rather provide guidelines for future energy development, for example, it could stipulate that all new coal-fired power generation must have an efficiency of no less than 45%.

DME's 14-step process leading to the completion of IEP II:

1. Current work, which includes:
 - Updating IEP data
 - Reviewing IEP 1 gaps
 - Arranging for a stakeholder workshop. *Editor: While this was originally planned for March 2005, it seems it has been moved further down, though where is not exactly clear.* Based on the inputs received from experts and government priorities the scenarios will be decided upon.
3. Develop strategy and the Work plan
4. Present the work plan
5. Contractual and Legal arrangement for consultants
6. Data collection
7. Build model – *Editor: This is being done in-house*
8. Develop a reference scenario
9. Present scenario to stakeholders
10. Develop scenarios
11. Evaluation of modelling results
12. Translate analysis result into conclusion and policy recommendations
13. Present Findings to Stakeholders
14. Develop final plan

Editor: Jeff Subramoney (Department of Minerals and Energy) made a presentation on Integrated Energy Planning at the Third Sustainable Energy Symposium, after which he answered some questions. In response to a question asking for more information on timelines and the kind of information currently being collected, Subramoney acknowledged that the DME has been constrained in data collection, and is hoping that the Energy Bill will address this. He also noted that DME doesn't want to duplicate existing data collection – so are in the process of identifying who else is collecting data and engaging with them e.g. working with Eskom. He finally noted that including external costs and benefits is difficult, and that the DME needs a process to include these, but that one way is by involving stakeholders. So all readers of SENSE – get involved in IEP II to ensure that the external costs and benefits of energy planning options are included!

Energy Caucus meeting
Claire Taylor

SECCP hosted an Energy Caucus meeting on 14 April 2005 as a back-to-back event to the Third Sustainable Energy Symposium. The Energy Caucus is an alliance of civil-society based organisations and networks including labour, faith and community based organisations that ascribe to a set of Principles, which include calls for no nuclear power and no waste incineration projects. The Caucus met to discuss its future work, including how to ensure a rigorous and forward-looking approach to Integrated Energy Planning II, which the DME is currently undertaking. Earlier this year the Energy Caucus made a presentation to the Parliamentary Portfolio Committee on Minerals and Energy – [see report in next section](#).

If you'd like to see a copy of the Energy Caucus Principles, please contact me. If you'd like to join the Energy Caucus list serve, please contact Olivia Andrews at: olivia@earthlife-ct.org.za

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2. SA's sustainable energy progress

Energy Caucus makes presentation to Parliamentary Portfolio Committee on Minerals and Energy

Summary of article published by News 24, which was edited by Andiswa Mesatywa 9 March 2005

Editor: Derick Elbrecht (NUM and COSATU), Leila Mahomed (Sustainable Energy Africa), Fikiswa Mahote (Development Action Group), Sibusiso Mimi (Earthlife Africa-Cape Town), Nkosana Rakitla (Daveyton Environmental Youth Counsel), Annie Sugrue (Ecocity Trust) and Richard Worthington (SECCP) made up the delegation representing the Energy Caucus, which made a presentation to the Parliamentary Portfolio Committee on Minerals and Energy on 9 March 2005. Here's a News 24 report on the meeting:

South Africa has put the cart before the horse when it comes to planning its sustainable energy needs, parliament's minerals and energy and economic has heard. Members were also warned against subsidies that had made the country's electricity the cheapest in the world, attracting industry, which could turn it into the "dirt house of the world economy".

Richard Worthington, of Earthlife Africa's Sustainable Energy and Climate Change Project said: "In our integrated energy planning, we... need to look at an energy services approach. Too often, there's a look at the supply, where we get the energy from, and how we're going to ensure that we can continue growing that supply to meet demand. What we really need to do is look at the end-use side first. What do we need energy for? What services do we need? How much heat do we need? How much light? And then work back to what the options are for providing those. If we adopt this approach, we will be initiating a just transition to sustainable energy for all the right reasons - because we want to reduce poverty, create jobs, and leave a world for future generations to enjoy."

Worthington also criticised plans to build more coal-fired power stations to meet future electricity needs, saying they had a 40-year life span, but could be forced to close down 15 years from now to prevent further climate change. Leila Mohamed of Sustainable Energy Africa said South Africa was "locked into a paradigm of electricity

as the only energy source. The provision of energy to the country's cities was supply driven "with little understanding of demand. This is not necessarily addressing poverty issues. She said about two-thirds of poor families' income was spent on their energy needs.

Annie Sugrue of EcoCity Trust said the answer laid in developing a "decentralised energy machine," and the promotion of small-scale, locally-produced energy for the residential and small-business sector. She said: "The best way of doing this is with renewable energy - solar and wind power and bio-gas technologies. " For small-scale production, you're better off using renewables."

In a background document distributed at the briefing, Sugrue stated it was unlikely South Africa would be allowed to continue to use coal for electricity generation when the true impacts of climate change became more apparent. The document says current government programmes were carried out "in an effort to retain a centralised energy production system, but, which continues to entrench poverty and destroy our ecological integrity."

SA has projects lined up to benefit from Kyoto Protocol

Linda Ensor, Business Day 21 February 2005

Projects have been proposed which, if implemented, would reduce SA's carbon emissions by 21-million tons by 2012 and generate revenue of R618m through carbon trading under the Kyoto Protocol, Minerals and Energy Minister Phumzile Mlambo-Ngcuka said at a briefing in Parliament.

Twenty-one million tons would represent an 11% reduction in the emissions of one of the country's main polluters, Eskom, which in 2003 emitted 190-million tons of carbon dioxide, mainly through its coal-fired power stations.

The Cape Times (10 March 2005) reports on what is likely to be SA's first CDM project – a low income housing project managed by SouthSouthNorth outside Cape Town, which has achieved international recognition for renewable energy use and helping reduce air pollution. The Kuyasa pilot project in Khayelitsha has been recognised as a gold standard clean development mechanism (CDM) project paving the way for low income housing across South Africa contributing to cleaner energy use.

The gold standard is a quality certification system developed by international NGOs to recognise projects most clearly contributing to sustainable development.

The installation of solar water heaters, ceilings and compact fluorescent lights in 10 existing RDP houses in Kuyasa would eventually be rolled out to over 2000 houses and prevent the emissions of 5500 tons of carbon dioxide annually for 21 years.

Lester Malgas, the Kuyasa Project spokesperson said that the Kuyasa project attained positive scores particularly for social sustainability and local development.

SA's wind to be used

SA powers ahead with inaugural wind farm

Reuters in Business Day 8 March 2005

SA has approved the construction of its first commercial wind farm, according to the environment department. The department said its director-general approved plans for

a wind farm in the Darling district of Western Cape after concluding that the positive effects would far outweigh any possible environmental impact.

The project would include four 50m-high Danish-designed wind turbines with blade spanning 31m and a combined output of 5,2MW. The Danish government aid agency Danida was helping fund the project, said the department. "It is being referred to as the national demonstration project because it will be used as an example for future public-private partnerships in the establishment of electricity generation, which has been the domain of Eskom," the department said.

Wind power on agenda for Eastern Cape

Sapa in The Citizen, 17 February 2005

The Eastern Cape's Nelson Mandela Metro is to investigate turbines as an option for generating 'clean' electricity. Spokesman Kupido Baron said the council's infrastructure and energy committee had recommended that about R200 000 be allocated to set up three wind monitoring sites to assess the potential for generation. It also urged that Minerals and Energy Affairs be approached about subsidies for wind generation projects. The metro includes Port Elizabeth, often nicknamed 'the windy city.'

Eco-school energy planning meeting

Nkosana Rakitla, SECCP and member of Daveyton Environmental Youth Counsel

On the 16th March 2005 representatives from five high schools (Hulwazi, Vezuknono, Dinoto, Unity and Phandimfundo) met under the banner of the Daveyton Eco-Schools Forum, which is coordinated by the Daveyton Environmental Youth Counsel. The aim of the meeting was to strategise how best they could counteract electricity related problems. Sixteen learners and four educators first identified key common hot spots, which are:

- Lights at schools are on 24 hours a day, seven days a week leading to them burning out quickly and the schools investing unnecessarily on lights.
- Heaters are turned on when not needed and left on throughout the nights, so speeding up their wear and tear and wasting energy.
- While computer classes are usually done after classes, computers are left running throughout the day.
- Stoves in cooking classes are turned on even when learners are doing theory.

To cool down these hot spots the learners devised an energy efficiency strategy, which entails:

- Turning off lights when they are not in use especially in the summer and every day after classes. Only outside lights can be left burning through out the night for security.
- In the summer heaters must not be turned on and in winter they must be turned off after classes.
- Computer monitors must be turned off when not in use.
- Learners doing cooking have to turn off stoves when doing theory.

The strategy also makes each school "responsible for raising awareness to the larger community on energy efficiency."

To ensure that this strategy is implemented, the learners and educators agreed that every classroom in the individual schools should have a representative in their eco-club, who is mandated to implement the strategy in their class. The learners and educators also agreed that they would compare electricity bills from their schools every month to assess if their efforts are working.

Learners and educators will meet regularly to assess the strategy.

Editor: A great example of what can be done at a local level to reduce energy consumption.

Killer paraffin stoves to be snuffed out

Summary of article by Linda Ensor, Business Day, 2 February 2005

Government plans to ban the production of substandard paraffin stoves, which currently generate about R25m in annual revenue for manufacturers, but are the cause of the many fires that rip through informal settlements.

An application has been made to the World Trade Organisation to prevent the import of unsafe, substandard stoves.

About 1-million paraffin stoves are sold annually for about R25 each, but the South African Bureau of Standards (SABS) found that none of the nine versions produced locally complied with its standards, minerals and energy deputy director-general Rod Crompton told Parliament's minerals and energy affairs portfolio committee.

In the long term, the minerals and energy department would like to promote the use of liquified petroleum gas produced in limited quantities at present for home cooking and heating. But first it has to deal with the excessively high retail price, which currently makes it unaffordable for the poor.

Whereas petrol has a retail markup of 39%, that of liquified petroleum gas is about 214%, even though the price ex-refinery for both products is roughly equivalent.

Crompton said paraffin stove manufacturers had agreed to produce stoves that complied with a standard laid down by the SABS. The bureau is still in the process of formulating this compulsory standard, which should take between nine months and a year to finalise. The new paraffin stove would have a safety mechanism that would turn it off if it fell over. While the new stove would cost about double the existing type, it would last at least 10 times longer than the six-month lifespan of the present one, resulting in an ultimate saving to consumers.

Biodiesel in SA reviewed

A report entitled "A Review of Biodiesel Related Activities in South Africa" is now available.

Very briefly, the report reviews the status of activities relating to biodiesel in South Africa, focusing particularly on the Western Cape, in order to fill information gaps preventing effective planning of biodiesel projects. Having identified one of the benefits of biodiesel use as its potential to stimulate agricultural production in marginal areas and to generate employment opportunities in the associated collection of feedstock, processing, manufacture, distribution and retailing sectors, the report then looks at how current policies and measures facilitate the production of energy crops in South Africa. The report then covers the activities and objectives of NGOs, information networks, and national actors in the public and private sectors within South Africa as they relate to biodiesel. Finally, a map describing a project to implement a project to introduce biodiesel at a Provincial level is given, which could be applied to other Provinces in South Africa.

Copies of the report can be requested from Simon Wilson - simon.wilson@adelphi-env.com

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3. SA's Unsustainable Energy

Eskom Watch

Eskom to play leading role in unsustainable development

Based on article by Khulu Phasiwe (Business Day 24 February 2005) who reports that "Eskom to play leading role in development"

Government has said that Eskom together with transport and logistics company Transnet will spend a total amount of R159bn over the next five years on infrastructure development. The two parastatals have been earmarked to take a leading role in "encouraging growth and development in the country while at the same time eradicating poverty and underdevelopment."

The national treasury said that Eskom would increase its generation capacity 15% to meet the growing demand for power. It aims to achieve this by 2010. Finance Minister Trevor Manuel said that Eskom would spend R110,3bn on infrastructure over the next five years. The projects include R74bn on generation, R11,8bn on transmission and R15,9bn on distribution. The greater generation was expected to increase Eskom's output 5300 MW, to 41500MW.

According to the budget review, new projects include plants at Ellisras, turbine plants at Saldanha and Coega, and an open-cycle gas turbine, the location of which is still to be determined.

The \$5bn Inga hydroelectric project in the Democratic Republic of Congo, in which Eskom is a partner, is another venture that should increase the parastatal's output.

Eskom's heavy capital expenditure follows government's decision last year to allow the company to help build new energy supplies for SA. Initially government had reserved the building of new power stations for independent power producers. The policy shift came as a result of the projected power shortage in the next two years. Eskom will now generate 70% of the country's energy supply while the private sector will generate the remaining 30%.

Public Enterprise Minister Alec Erwin said last year that various generation methods were being examined, including upgrades of existing plants, greenfield coal technology plants, and gas-turbine and pump plants.

A pebble-bed modular reactor proposed for Koeberg in the Cape would also be factored in, along with government's renewable energy targets.

Independent power producers such as the UK's International Power, CDC Globeleq and Berkshire Hathaway Mid-American Energy, India's Tata Power and Germany's Siemens Power Generation have already showed interest in the project.

Eskom CEO Thulani Gcabashe said recently that the company was confident that its

first new power station in 20 years would be in action by 2011. "The aim is to make sure that SA does not run out of electricity," he said.

A significant chunk of the financial requirements would be met from the company's cash flows and the remainder would be raised on the local capital market. Eskom's debt-to-equity ratio of 0,3 may attract capital investors.

Eskom told to fix bird fiasco

African Eye News Service, The Star, 4 February 2005

The Department of Environmental Affairs and Tourism has ordered Eskom to rehabilitate the breeding ground of an endangered bird, through which it bulldozed a road. The power company made the road through the sensitive Blue Swallow breeding area near Pilgrim's Rest, Mpumalanga in December to reach a pylon that needed maintenance. The bird is an endangered species with only about 80 nests left in SA.

PBMR to work with Chinese company in nuclear plant project

Summary of article by Khulu Phasiwe, Business Day 11 March 2005

A memorandum of understanding between pebble-bed nuclear technology developer Pebble Bed Modular Reactor (PBMR) and its Beijing-based counterpart, Chinergy has been described by the Business Day (11 March 2005) as boosting the advancement of the next generation of nuclear reactors. The agreement enables the two companies to share technical information on the development and construction of high-temperature reactor demonstration projects in both SA and China by 2010. The establishment of the nuclear demonstration plant is aimed at meeting the growing demand for electricity in the two countries.

While both the Chinese and South African technologies used the same pebble fuel concept as a source of heat, there were differences between the power conversion systems. The first of the high-temperature reactor plants in China will be indirect-cycle, steam turbine systems, while the first series of high temperature reactor plants in SA will be direct cycle gas turbine systems.

Construction of the \$300m Chinese project is expected to start in 2007 and the plant is expected to be fully operational by 2010. The construction of the R10bn PBMR project will run in parallel with its Chinese counterpart.

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4. SA's General Energy News

Department of Minerals and Energy Budget and Strategic Plan Briefing, 12 April 2005

Parliamentary Monitoring Group, www.pmg.org.za

The Department of Minerals and Energy presented three briefings to the Minerals and Energy Parliamentary Portfolio Committee.

- The first section comprised the Director-General's (D-G) overview, which included an overview of the Department's vision and mission, its key objectives and its programme key focus areas.

- The second section was the Department's resource plan and its administration.
- The third section concentrated on mine health and safety.

Department briefing

The Director-General (D-G), Advocate S Nogxina, explained that the Department's mission was to regulate and promote the minerals and energy sectors for the benefit of all. In turn, its vision was the formation of world-class minerals and energy sectors through sustainable development.

Advocate Nogxina also related the Department's five key objectives. Firstly, it wanted to actively contribute to sustainable development. Secondly, it wanted to redress past imbalances and bridge the gap between the "first" and the "second" economies. The Department saw the implementation of minerals and energy economic policies and legislation as its third objective. Its fourth objective concerned the improvement of the health, cleanliness and safety aspects of the minerals and energy sectors. Finally, it wanted to review, develop and maintain for itself appropriate enabling structures, processes, systems and skills.

Department's resource plan and administration

Mr A Simelane, Chief Financial Officer (CFO), reviewed the Department's 2004/5 financial performance and presented the financial projections for 2005/6 – 2007/8. The Department's 2005/6 budget revealed that of the total allocated budget of R2 117 585 000, the vast majority of the funds constituted transfer payments to the public entities that fell under its jurisdiction.

Of the remaining R496 million, almost half (R241 million) was earmarked for the compensation of employees. In terms of its various programmes, the Department would spend 23% on administration, 22% on mine health and safety and 37% on mineral development. Allocations to hydrocarbons and energy planning (7%) and electricity and nuclear power concerns (11%) constituted the remaining portion of the budget. **Editor: please note as Harald Winkler from ERC has,**

- The majority of the budget goes to minerals
- Within energy, more goes to nuclear and electricity than to hydrocarbons and energy planning
- Renewables does not even show up in the breakdown – because so little money has been allocated.

Mr Simelane isolated three areas for improvement: the alignment of the budget to work plans; the standardisation of inputs, and the itemisation of the budget.

The Chief Director of Management Services, Mr G Mnguni, spoke on matters pertaining to human resource development, the re-engineering of structures and processes to improve service delivery by the Department and the enhancement of the monitoring and governance of state owned entities.

It was pointed out that the number of vacancies within the Department currently stood at 163, of which 34 had yet to be processed. While the Department's staff compliment were 72% black and 47% female, only 22% of all middle and senior managers were female and only 1% of all staff were disabled.

Mr Mnguni expressed his concern at the high staff turnover (9%) of the Department and attributed it partially to the difficulty of attracting and retaining scarce skills. He mentioned the current development of a scarce skills retention strategy.

Mine health and safety

Ms M Hermanus, the Deputy Director-General for mine health and safety, focused

particularly on hazards emanating from mining that impacted on public health, fatalities, injuries and occupational disease.

Editor: The floor was then opened for discussion, which focussed primarily on filling vacancies and the impact of HIV-Aids on miners' health. Despite the fact that the Energy Caucus had made a briefing to the Portfolio Committee the previous month, not one question was asked about integrated energy planning or renewable energy!

State earmarks R128m for power regulators

Khulu Phasiwe, Business Day 2 March 2005

The national treasury has allocated a total of R128m to nuclear and electricity regulators to strengthen capacity and to ensure SA has sustainable adequate power supplies.

The treasury has allocated R17,1m to the National Nuclear Regulator to enable it to maintain safety standards and regulatory practices. The money will be paid out over three years. The nuclear regulator exercises safety regulatory control over the entire life cycle of nuclear installations and vessels propelled by or containing radioactive material.

About R3m will be allocated to implement the radioactive waste management policy, which the minerals and energy department says will be finalised in the 2007-08 fiscal year.

The national treasury has also allocated a total of R21m over three years to nuclear technology agency the South African Nuclear Energy Corporation, which is currently conducting research into the development of the mini nuclear pebble bed modular reactor.

Last year the soon-to-be-restructured National Electricity Regulator was allocated an initial R4,6m to accommodate extra regulatory functions for the gas and petroleum pipelines portfolios.

Once the restructuring process has been completed, the new regulator, to be called the National Energy Regulator, will be allocated a budget of R90,3m, the treasury says in this year's medium term expenditure framework document. The National Energy Regulator will not only be equipped with more resources than the current body but more powers as well. The department says that the new body will have the power to impose penalties of up to R2m a day to defaulters in the electricity, gas and petroleum pipelines sectors.

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5. SA Energy Policy

Integrated Energy Planning: progress

Claire Taylor

As reported under Sustainable Energy Briefing 4: Integrated Energy Planning above, the second phase of Integrated Energy Planning being undertaken by the Department of Minerals and Energy (DME) is underway. Currently, the DME is

- Updating IEP data
- Reviewing IEP I gaps
- Arranging for a stakeholder workshop, which was originally planned for March 2005, but which DME assures SECCP will be scheduled soon. The purpose of the workshop is to “review and to get the experts guidance on what they see as most pertinent issues in the South African energy economy and what should be the focus for IEP II.” We will keep SENSE readers informed about when this workshop will be, and urge you to participate to ensure that IEP II is as integrated as possible.

Energy Efficiency Strategy

South Africa's Energy Strategy (2005) is now available from the DME's WebPage: www.dme.gov.za

Designated National Authority

Summary of article by Elin Lorimer, SECCP, published in CCEN 21

The South African DNA has now been established, and is located within the Department of Minerals and Energy (DME). The DNA, which gives host-country approval for CDM projects, is currently headed by Lwazikazi Tyani and guided by an inter-departmental advisory committee. The sustainable development criteria by which projects will be judged have now been finalised and are available on the DME website. These will guide the assessment of submitted projects, which will rely on the subjective analysis of the officials involved rather than a formal scoring system. Project approval will be at no cost to project developers at present due to donor funding and money from the fiscus received to cover the costs entailed.

For more information contact: Lwazikazi Tyani; Tel: (012) 317 8227 E-mail: Lwazikazi.Tyani@dme.gov.za or see the DNA website: <http://www.dme.gov.za>

NERI calls for nominations

The South African National Energy Research Institute, funded by the Central Energy Fund, requested nominations for “persons to be appointed to the Board of Directors”. According to the advert, nominees must possess experience, expertise and knowledge of the following:

- Companies Act
- Public Sector , Public Finance Management
- Corporate Governance
- Finance and Relevant Legislation
- Broad Business Experience
- Energy and energy research

The deadline was the 24th March. NERI is mandated to engage in energy research and development.

Electricity Regulation Bill

Contact Trust www.contacttrust.org.za, 20 April 2005

The Electricity Regulation Bill aims to establish a national regulatory framework for the electricity supply industry. The regulator will be firmly established as the custodian and enforcer of the national electricity regulatory framework. The Bill will provide for the procurement of electricity generation capacity from independent power producers as

well as providing for registrations, licenses, and other regulatory mechanisms. This is in relation to generation, transmission, distribution, reticulation and trading of electricity.

Latest Developments: This Bill is still with the State Law Advisor and has not yet been brought before Parliament. However, the Minister of Minerals and Energy has signalled intent to introduce the Electricity Regulation Bill before Parliament during May 2005.

For more information contact: Nhlanhla Cebekhulu, Communications Department, National Energy Regulator, on: (012) 401 4600 or email: Nhlanhla.Cebekhulu@ner.org.za

Editor: SECCP endorsed a submission on the Electricity Regulation Bill that was made by the Sustainable Energy Society of Southern Africa.

Waste Tyre Regulations

Contact Trust www.contacttrust.org.za 15 April 2005

As reported in SENSE 30, an increasingly common trend is for businesses to want to burn waste, including tyres for energy. The Department of Environmental Affairs and Tourism is developing regulations, in terms of the Environmental Conservation Act No 73 of 1989, to deal with the problem of waste tyres. The regulations will address the management, illegal dumping and stockpiling of waste tyres.

Latest Developments: The Department has finalised the draft regulations and is awaiting the advisory opinion of the Competition Commission. The regulations will be published as soon as the Commission has agreed to the proposals in the Memorandum of Agreement between the Department and the tyre industry. This is expected by the end of April.

For more information contact: Rantsadi Moatshe on 012 310 3648

National Energy Bill

Contact Trust www.contacttrust.org.za 11 April 2005

The National Energy Bill is a broad Bill that aims to address many different aspects of the energy industry, especially where energy policies are not already implemented or covered through other Acts and Bills in the energy sector. The aim is to provide a more integrated energy planning system across issues such as renewable energy, energy efficiency, household energy access, and international energy obligations.

Latest Developments: The National Energy Bill is currently being amended in light of submissions received during the consultative period. Thereafter, the Bill will be tabled at Cabinet.

For more information contact: Dr. Tony Surridge at (012) 317 8000 or e-mail: tony.surridge@dme.gov.za

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6. Sustainable Energy News from Around the World

Africa

Burning wood for fuel could kill 10 million Africans

Kimani Chege, SciDev.Net, 1 April 2005

Widespread use of wood as a household fuel in sub-Saharan Africa will cause ten million premature deaths by 2030 and make a significant contribution to climate change, says a study published in *Science*.

The study predicts that unless African households adopt cleaner, more efficient fuels, the equivalent of 6.7 billion tonnes of the greenhouse gas carbon dioxide will be released into the atmosphere by 2050. This represents 5.6 per cent of Africa's total expected emissions.

In 2000, nearly 470 million tonnes of wood were consumed in sub-Saharan African homes in the form of firewood and charcoal. Per capita, this is more than is used in any other region in the world. For instance, China and India together used nearly one-third less in the same year despite a combined population that is more than three times that of sub-Saharan Africa.

As well as contributing to climate change by emitting greenhouse gases, wood burning poses a significant threat to human health in general, and to the health of women and children in particular.

The study, led by Daniel Kammen, director of the renewable and appropriate energy laboratory at University of California Berkeley, United States, estimates that unless patterns of fuel use are changed, about eight million children and two million women will die prematurely of pulmonary disease by 2030. Kammen says it is essential to research and adopt safer and less polluting fuel supplies across Africa. Switching to fossil fuels such as kerosene and liquid petroleum gas would reduce the amount of greenhouse gases emitted by African households by between one and ten per cent, and delay up to 3.7 million deaths, says the study. However, high costs put such fuels beyond the reach of many people in sub-Saharan Africa.

The other alternative is to use more charcoal instead of wood. This would also reduce the number of predicted deaths but it could nearly double greenhouse gas emissions. Kamman says that the most practical solution would be to combine sustainable forest management with more efficient kilns for making charcoal and stoves. According to his team's predictions, this approach could reduce greenhouse gas emissions from household fuel use by up to 65 per cent and prevent three million premature deaths.

Anthony Kariuki, a senior officer at Kenya's National Environmental Management Authority, told SciDev.Net that the act that established his organisation provides incentives for companies and individuals working on environmentally friendly technologies. He said it would support novel methods of burning charcoal in Kenya. He added, however, that the organisation's policy is to reduce the use of charcoal because of its contribution to greenhouse gas emissions.

Africa aims to harness earth's heat

Reuters, 23 March 2005

Jeremy Lovell reports on a UN-sponsored project, the African Rift Geothermal facility project, which aims to give Africa access to vast reserves of cheap, clean energy,

"Oil today is US\$57 a barrel. That is sucking up every cent of development aid to Africa," a spokesman for the UN Environment Programme said during a meeting of environment and development ministers from the Group of Eight rich nations.

A recent report by the US Geothermal Energy Association calculated that the hot rocks beneath the rift valley could produce up to 6.5 gigawatts of energy. But to date only Kenya is making any effort to exploit the resources that literally lie under their feet - and even then there are only 121 megawatts of geothermal electric power installed.

The Rift Valley runs through Sudan, Ethiopia, Eritrea, Djibouti, Somalia, Kenya, Uganda, Rwanda, Burundi, the Democratic Republic of the Congo, Tanzania and Malawi through Mozambique. "The potential benefit for these energy-starved countries is vast," the UNEP spokesman said.

A paper prepared for the World Geothermal Congress in Turkey in April makes the point that not only is geothermal energy an environmentally clean power source, but in Ethiopia, Eritrea and Djibouti it is the only indigenous energy source.

But there are huge technical and financial obstacles to overcome first. The existing drilling technology - mostly based on oil exploration - is not suited to the very high temperatures experienced when trying to tap geothermal sources and start-up costs can be prohibitive.

The UN and its partners are busy raising the finance for the pilot project which they hope will get under way this year.

Congo River to Power Africa out of Poverty, Says Eskom

Summary of UNEP News Release, 24 February 2005

Plans to harness the power of the Congo River to generate electricity are being drawn up by one of Africa's biggest energy companies, it was announced at the United Nations Environment Programme (UNEP).

The scheme, which will initially focus on the Inga Rapids, aims to eventually generate more than enough electricity to power Africa's industrialization. Surplus electricity can be sold to places like Spain and Italy in southern Europe via an inter-connector under the Mediterranean Sea.

The plan was announced by Reuel Khoza, Chairman of the South African-based power company Eskom Holdings. He was among a delegation of business leaders attending the "Africa Business and Sustainable Development" meeting taking place at UNEP headquarters where some 100 Environment Ministers from across the globe gathered for UNEP's 23rd Governing Council/Global Ministerial Environment Forum.

Mr Khoza said: "Africa urgently needs energy to lift its people out of poverty and deliver sustainable development. The Congo River offers enormous opportunities for doing this. We calculate that hydro electricity from the Congo could generate more than 40,000 megawatts, enough to power Africa's industrialization with the possibility of selling the surplus to southern Europe." He said the idea had been suggested in the past, but that it was now gaining real political momentum under the New Partnership for Africa's Development (NEPAD). The prospects of peace in the region were also concentrating minds, said Mr. Khoza.

He said the plans envisaged engineering works that would siphon off the river, divert it through electricity-generating turbines, before funneling the water back into the Congo.

At least half if not more of the electricity can be generated in this way, which, according to Eskom, makes the project environmentally-friendly.

Under the Kyoto Protocol developed countries can off set some of their emissions at home by clean energy schemes in developing countries. Mr. Khoza said it had been agreed that the Congo project would qualify for such carbon-offset projects, which are run under the Protocol's Clean Development Mechanism.

Co-organized by UNEP with the International Chamber of Commerce (ICC), the World Business Council for Sustainable Development (WBCSD) and the World Energy Council (WEC), the meeting examined how the provision of water and energy underpins the sustainable development needs of Africa and can contribute to the achievement of the Millennium Development Goals and the Johannesburg Plan of Implementation.

Today, only 64% of Africa's population has access to a reliable clean water supply. An estimated 526 million people in Africa do not have access to electricity.

Patrick McCully from the International Rivers Network responded to this report with some background on Inga, and IRN's view on the scheme:

There is currently 1775 MW of installed capacity at 2 run-of-river diversion projects at the Inga site. Both are operating at far below capacity - Eskom and EDF have done feasibility studies for their modernisation. About \$1bn is needed for this modernisation and associated transmission upgrades.

The state utilities of South Africa (Eskom), DRC (SNEL), Namibia (NamPower), Angola (ENE), and Botswana (BPC) formed the Western Corridor Power Project (Westcor) in November 2003. The first phase of the project will cost \$4bn, according to Eskom, and includes a 3,500 MW Inga III hydropower station with about 1,864 miles of transmission lines to supply the five Westcor countries. It is scheduled for completion in 2012, but this is very speculative given political and economic realities, especially in the DRC.

A further phase - beyond Inga III - is Grand Inga, with a potential output of some 39 GW. Feasibility studies were done in early 90s for feeding Inga power into transmission lines going from Cape Town to Cairo, and beyond to Europe & Middle East.

An article in a recent dam industry journal puts the cost of Grand Inga at \$30bn - although this seems to include the Inga III costs. I don't know if transmission costs are included. We haven't seen any info on what impacts of Grand Inga might be. The impacts of Inga I to III seem low, especially relative to their capacity, because these do not involve damming the Congo mainstem.

The rest of the world

Hydroelectric power's dirty secret revealed

Summary of article by Duncan Graham-Rowe, New Scientist 24 February 2005

Contrary to popular belief, hydroelectric power can seriously damage the climate. Proposed changes to the way countries' climate budgets are calculated aim to take greenhouse gas emissions from hydropower reservoirs into account, but some experts worry that they will not go far enough.

The green image of hydro power as a benign alternative to fossil fuels is false, says Éric Duchemin, a consultant for the Intergovernmental Panel on Climate Change (IPCC). "Everyone thinks hydro is very clean, but this is not the case." Hydroelectric dams produce significant amounts of carbon dioxide and methane, and in some cases produce more of these greenhouse gases than power plants running on fossil fuels. Carbon emissions vary from dam to dam, says Philip Fearnside from Brazil's National Institute for Research in the Amazon in Manaus. "But we do know that there are enough emissions to worry about."

In a study to be published in *Mitigation and Adaptation Strategies for Global Change*, Fearnside estimates that in 1990 the greenhouse effect of emissions from the Curuá-Una dam in Pará, Brazil, was more than three-and-a-half times what would have been produced by generating the same amount of electricity from oil. This is because large amounts of carbon tied up in trees and other plants are released when the reservoir is initially flooded and the plants rot. Then after this first pulse of decay, plant matter settling on the reservoir's bottom decomposes without oxygen, resulting in a build-up of dissolved methane. This is released into the atmosphere when water passes through the dam's turbines.

Seasonal changes in water depth mean there is a continuous supply of decaying material. In the dry season plants colonise the banks of the reservoir only to be engulfed when the water level rises. For shallow-shelving reservoirs these "drawdown" regions can account for several thousand square kilometres. In effect man-made reservoirs convert carbon dioxide in the atmosphere into methane. This is significant because methane's effect on global warming is 21 times stronger than carbon dioxide's.

World Solar Industry Growth Jumped 70 Pct In 2004

Reuters news service <http://www.reuters.com> 17 March 2005

Solar electricity production growth jumped 67 percent last year as established industry players increased output and new players entered the industry, a survey said.

Last year, world solar cell production reached 1,256 megawatts (MW) or about enough to power more than 1.2 million average American homes during daytime. That was a 67 percent increase over the 750 MW produced in 2003, according to PHOTON International, a German magazine. "In Japan they're making solar cells because of high electricity prices. Solar panels are selling like hot cakes there," said Colin Murchie, director of legislative affairs at Solar Energy Industries Association in Washington, D.C. "Germany is boosting output because they want to meet Kyoto Protocol goals," said Murchie. Under the international pact that went into force earlier this year most industrialized nations, excluding the United States and Australia which did not sign the pact, must reduce emissions of greenhouse gases. Utilities and cars mostly produce such gases.

In 2002 the world solar market increased 40 percent.

U.N. Maps World's Best Solar and Wind Power Sites

www.GreenBiz.com 19 April 2005

Thousands of megawatts of new renewable energy potential in Africa, Asia, South, and Central America have been discovered by a pioneering project to map the solar and wind resources of 13 developing countries. The countries are: Bangladesh, Brazil, China, Cuba, El Salvador, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Nepal,

Nicaragua, and Sri Lanka.

The multi-million dollar project, called the Solar and Wind Energy Resource Assessment (SWERA), is proving that the potential for deploying solar panels and wind turbines in these countries is far greater than previously supposed.

First results from the project were released in Washington D.C. at an international meeting of scientists and policy-makers organized by the United Nations Environment Program (UNEP), which is coordinating the \$9.3 million SWERA project on behalf of more than 25 institutions around the world.

"As energy planners seek cleaner energy solutions using renewable energy technologies, the availability of reliable, accurate and accessible solar and wind energy information is critical and can significantly accelerate the deployment of these technologies," said Klaus Toepfer, UNEP's executive director.

The SWERA team has assessed wind and solar energy resources using a range of data from satellites and ground-based instruments – often with surprising results. In Nicaragua, for example, SWERA assessments of wind resources demonstrated a much greater potential than the 200 megawatts (MW) estimated in the 1980s. The results prompted the Nicaraguan National Assembly to pass the Decree on Promotion of Wind Energy of Nicaragua 2004 that gives wind generated electricity "first dispatch," meaning it has the first priority over other options when fed into electricity grids. The U.S. Trade and Development Agency and the Inter-American Development Bank have subsequently launched wind energy feasibility studies in Nicaragua, and wind investment projects are now advancing with 40 MW planned in two projects and two more exploration licenses granted.

In Sri Lanka, the SWERA assessment found a land wind power potential of about 26,000 MW representing more than ten times the country's installed electrical capacity.

While an initial assessment in Ghana reveals more than 2,000 MW of wind energy potential, mainly along the border with Togo. In Africa, this is quite a significant amount, as by some UNEP estimates, the continent needs just 40,000 MW of electricity to power its industrialization.

SWERA's data collection and analysis network of international and national agencies is also creating a global archive of solar and wind energy resources and maps that is available on CD-ROM or through the Website (see <http://swera.unep.net>).

Analysis of the International Action Programme (IAP) now available

The IAP is the central outcome of the International Conference for Renewable Energies - renewables2004. It contains almost 200 actions and commitments from governments, international organisations and stakeholders from civil society, the private sector and other stakeholder groups participating in the conference. A detailed analysis of the IAP is now available.

Actions and commitments in the IAP will create an additional 163 GW capacity from renewable energies by 2015 in the electricity sector alone. Additionally, heat from RES will be provided which cannot be precisely quantified. This corresponds to investments of USD 326 billion.

The implementation of the IAP will lead to an estimated CO2 reduction of 1.2 billion tons/annum in 2015. Also, the implementation is estimated to bring access to energy to a large number of people by 2015. The actions contributing the most to ensuring access to energy are the actions submitted by China, the Global Market Initiative (GMI), the Philippines, South Africa and Egypt.

The Analysis of the International Action Programme is available for download at http://www.renewables2004.de/en/2004/outcome_actionprogramme.asp

WISIONS calls for renewable energy and energy efficiency projects

Wisions an initiative of the Wuppertal Institute for Climate, Environment and Energy has started its 2nd round of Sustainable Energy Project Support - SEPS.

SEPS, the Sustainable Energy Project Support, aims at identifying promising project ideas on a worldwide scale and seeks to overcome the existing barriers by providing expert advice, financial and other support. There have been more than 40 applications in the first SEPS round from all around the world. The submitted project ideas were often of high quality and ranged from biomass in DC to energy efficient lighting in Europe. Five projects have been selected for additional financial support and another three are supported by expert advice and other activities.

So, if you have a project concept in renewable energy or energy efficiency that you want support on, submit it to Wisions at www.wisions.net by 1 June 2005.

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7. Events

South Africa:

Invitation To Dialogue With Richard Heinberg

In South Africa 2 – 17 May 2005

Heinberg's current focus is on the challenge of 'Peak Oil', a subject he has researched extensively and which he believes carries far-reaching economic, social and political implications, most of them inadequately understood. He writes: "The world is about to plunge into a new era of dwindling fossil fuels, and no one is prepared. If the leadership of the US (and other countries) continues with current policies, the next decades will be filled with oil wars, economic collapse, and environmental catastrophe. The political elites find it difficult to understand or deal with the depletion of the resources that fuel the modern world. As a result, our global industrial civilization is likely to collapse as others have in the past, but this time the scale will be global."

Contact: Peter Willis, Southern African Director, Cambridge Programme for Industry (021) 671 8803 or 082 378 2384 or Vanessa Johnstone, Executive Director, SANE (021) 689 6892

SADC Programme in Rural Energy Planning & Environmental Management: *Data Survey Method and Applications*

9-20 May

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

Management programme in Energy Industry

6-10 June
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

**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:

Windpower 2005: Conference and Exhibition

15-18 May
Denver, Colorado, USA
Tel: +1 202 383 2500
Fax: +1 202 383 2505
Email: sminer@awea.org
Website: www.awea.org/wp05.html

**The Second China International Renewable Energy Equipment & Technology
Exhibition and Conference**

25 to 27 May
Beijing, China
Organized by: China Association for Science and Technology
The objective of NRE 2005 is to provide a platform for showcasing renewable energy technologies, products and services for worldwide buyers and sellers.
Contact: Beijing International Convention Center,
Tel: +86-10-64290047.
Fax: +86-10-84255706.
E-mail: gyic2004@vip.bbn.cn
Website: www.nre2005.com

4th International Conference for RE, Energy Saving and Energy Education

25-28 May
Havana, Cuba
Tel: +537 260 5060
Fax: +537 267 1644
E-mail: cier2005@ceter.cujae.edu.cu
Website: www.cujae.cu/eventos/cier

Second World Renewable Energy Forum: Renewing Civilization by Renewable Energy

29 to 31 May

Bonn, Germany

Organized by: EUROSOLAR

The Forum will show the manifold ecological, economical and cultural benefits for civilization by implementing Renewable Energy.

Contact: EUROSOLAR

Tel: +49-(0)228-362373 or 362375.

Fax: +49-(0)228-361279 or 361213.

E-mail: inter_office@eurosolar.org, info@wcre.org.

Website: www.eurosolar.org, www.wcre.org

Fuel Cell 2005

7 to 8 June

Minneapolis, Minnesota, U.S.A.

Organized by: Fuel Cell Magazine

Conference and Exhibit on Advancements in Fuel Cell Applications and Technology

E-mail: marshah@infowebcom.com.

Website: http://www.fuelcell-magazine.com/fc_conf_index.htm

Intersolar 2005

23-25 June

Freiburg, Germany

Tel: +49 7231 585 980

Fax: +49 7231 585 9828

E-mail: elsaesser@intersolar.de

Website: www.intersolar.de

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8. Appendix 1

Sustainable Energy Briefing 4: Integrated Energy Planning

Claire Taylor

South Africa is currently embarking on a second phase of integrated energy planning, as required by the 1998 White Paper on Energy Policy. This briefing explores what integrated energy planning is, what it should include, and reports on progress made by the Department of Minerals and Energy (DME) in undertaking IEP II.

What is integrated energy planning?

Put very simply, integrated energy planning involves estimating how much energy all the different consumers (e.g. industry or households) will need in the future to deliver certain services; and then identifying a mix of appropriate sources and forms of energy to meet these energy service needs in the most efficient and socially beneficial manner.

Integrated energy planning is much more than just energy planning. Energy planning has traditionally been done by energy companies to work out their company strategy. Since this was aimed at increasing their share of the market and making profit, energy planning only considered the economic benefits to the company, without taking into

account the nature of users' real needs, nor the macro-economic, social and environmental consequences of different options.

In contrast, integrated energy planning allows for a departure from business as usual, and has three key requirements:

- The inclusion of all energy service needs and supply side options, including energy savings and efficiency interventions
- The inclusion of all costs and benefits (economic, social and environmental), including long-term benefits and costs and macro-economic impacts (e.g. economic competitiveness in 20 years) in describing possible futures (scenarios) for the entire energy sector
- Setting goals for the future, based on a description of the most desirable situation at the end of the planning horizon, that embrace the whole energy system and its impacts

Why do integrated energy planning?

The objective of integrated energy planning is to decide how to meet energy service needs in the most efficient and socially beneficial manner, keeping control of economic costs while also serving national imperatives such as job creation and poverty alleviation. It also allows for consideration of substitution between energy carriers, e.g. reducing electricity demand through mandatory introduction of solar water heating or fuel switching away from imported oil.

Phases of integrated energy planning:

There are three main phases to integrated energy planning:

Phase 1: Reference Energy System and how it evolved

The foundation for energy planning is a comprehensive description of the whole energy system for the country (or city, or region), as it exists at present. This is known as the reference energy system (RES). Due to the challenges of data collection and processing, the RES will generally be two or three years in the past by the time it is completed. The core of the RES is an 'energy balance' that records, in a standard energy unit (e.g. Gigawatt hours), all:

- primary energy supply (e.g. oil, coal, hydro; including imports and exports);
- transformation to secondary energy (electricity generation, oil refining, coal to gas and liquid fuel etc.);
- transport and distribution (including a reflection of system losses) &
- final consumption, per sector (e.g. iron & steel, mining and quarrying, rail transport, residential).

This information is presented for all the energy carriers, both primary sources: coal, oil, natural gas, nuclear, hydro, solar, geothermal, wind; and secondary carriers: petroleum products, electricity, manufactured gas and heat. A complete energy balance will reflect losses in transformation, such as approximately 65% of energy lost in thermal electricity power plants (coal and nuclear), energy used in mining coal and consumed by utilities, as well as losses in distribution.

The RES should also take account of the modes of final consumption, in other words differentiate between final energy, as delivered to customers, (electricity, petrol, gas) and useful energy, i.e. the energy output (light, heat, movement) of the end-use appliance (e.g. lamp, stove, geyser, pump or car). This is important because the ultimate objective of the energy system is to deliver energy services (e.g. heat for cooking, water heating and industrial processes or mechanical power for processing, manufacture and transport).

In addition to this 'snapshot' of the energy system, we need information on the trends and dynamics that led to the current situation (the video as well as the latest snapshot). This will include data showing the drivers of supply and demand (including economic growth, international markets and political agendas) and how they interacted - for example if rising oil prices led to increased energy efficiency, as in the USA in the early eighties, or high prices and sanctions leading to an emphasis on energy security in South Africa, sufficient to justify massive subsidies for coal to liquid fuel and electricity plants.

Phase 2: Energy forecasting and scenarios

Energy forecasting involves using the snapshot and video taken in phase 1 to map possible evolutions of the energy system. The first step is to choose a time horizon for the planning exercise. The energy forecast must then describe the evolution of the reference energy system from the base year to the horizon year. In doing this, the energy forecast consists of two parts:

- Future energy demand
- Future energy supply to meet that demand (from sources through to useful energy)

Energy forecasting does not simply mean predicting the future based on business as usual. It should also take account of 'suppressed demand' (needs that are not expressed through purchasing power e.g. services for the poor) and the potential for changes in market conditions e.g. commodity prices and pollution charges. Thus forecasting will indicate a range for future energy demand under different assumptions.

Scenarios then examine the conditions under which future energy demand can be met in ways that are most beneficial socially, economically and environmentally. By considering which systems would be best for the future, and not simply assuming business as usual, we can then decide what policies (for example increasing the current renewable energy target of less than 1% by 2013 to 20% by 2020) and strategies (once off subsidies versus feed-in-tariffs to support the introduction of renewable energy into the power market) are needed to transform the energy system to best serve the needs of society as a whole, rather than simply increasing sales or profits for business on the supply side.

To help determine what is viable (within given constraints such as resource availability) and how policy instruments are likely to impact on the energy system and beyond, many models are available. These models produce different scenarios or possible futures. While these models are very useful in energy forecasting, they are not perfect. Rather they're tools to test the impacts of possible strategies and policies.

Phase 3: Planning

With these different future energy scenarios in mind, the actual plans to reach the best possible future can be drawn up. It's important that policy makers are involved in this phase, as they are the people responsible for ensuring that the good of South Africa's society as a whole is prioritised over sectoral interests. So for example, policy makers may well decide to pass laws to support the introduction of renewable energy because thousands of jobs will be created, even if in the short term this choice is more expensive than business as usual. Similarly parliament may call for mandatory standards for energy efficiency and conservation.

Integrated energy planning in South Africa

South Africa has recently undertaken a first round of integrated energy planning. The Department of Minerals and Energy published the first Integrated Energy Plan for The Republic Of South Africa in March 2003. Unfortunately, IEP I is at best an Energy Plan, rather than an Integrated Energy Plan - as it makes forecasts about business as

usual. To its credit, IEP I does recognise this, and identifies eight significant gaps, including that IEP I:

- Failed to consider the impact of legislation that would "facilitate the expansion of renewable energy and energy efficiency measures."
- Did not include "Environmental Externalities." South Africa currently has the cheapest electricity in the world because the price paid for coal-generated electricity includes less than half of all the costs incurred in producing it. Externalised environmental costs that are not integrated in the sales price include the impacts of air pollution and greenhouse gas emissions. When these externalities are included, coal generated electricity becomes much more expensive, and renewable energy options become more competitive.
- Did not consider the trade off between least cost energy production and other factors such as job creation and social development - despite both of these being priority areas for South Africa
- Did not include the effects of certain interventions, for example environmental funding in the modelling "because policy regarding national environmental taxing/funding is not yet resolved." Yet the whole purpose of modelling is to model the effect of such interventions, rather than waiting for them to be in place. By modelling interventions you are able to see their effect, and so decide whether you do actually want them.
- Did not include all stakeholders.
- Traded off developing optimal models for future scenarios against the need to speed up results.

Clearly, IEP I was undertaken with good intentions, though as the process progressed, DME officials realised that the project was much bigger than anticipated, requiring far more data and resources than was allocated. Instead of being a planning document, IEP I ended up being a discussion document of the different components of the energy system.

In recognition of these shortcomings, IEP I concludes, "The gaps listed above are scheduled to be addressed in Phase II of the integrated energy planning programme."

Officials responsible for energy planning in the Department of Minerals and Energy report that IEP II is underway, with the DME in the process of:

1. Updating energy data
2. Reviewing the gaps of IEP I
3. Arranging for a workshop, scheduled for March 2005, where stakeholders can give guidance on the most important issues to be included in IEP II.

In addition, DME officials made available a 14- step outline resulting in the completion of IEP II at the end of 2006 (see Appendix 1 below). Two points need to be made with regards to this outline:

1. The DME still needs to develop a Workplan. It's critical that this allows for meaningful stakeholder input, including public participation to strengthen the process. For example, public participation in step 9 (present [reference] scenario to stakeholders), would:
 - Ensure that the reference scenario is integrated - that it includes the whole energy sector, as well as social, economic and environmental issues

- Help shape the scenarios or forecasts that will be developed and modelled in steps 10 and 11, again ensuring that they are integrated
2. It's critical that policy makers are part of the stakeholder group that the findings are presented to in step 13, as they must be involved in step 14 - developing the final plan. This is because policy makers are best suited to ensuring that an energy plan for South Africa is based on the overall good of the country, rather than avoidance of short-term costs. This plan will not be a prescriptive blue-print, but rather provide guidelines for future energy development, for example, it could stipulate that all new coal-fired power generation must have an efficiency of no less than 45%.

Appendix 1: DME's 14-step process leading to the completion of IEP II:

1. Current work, which includes:
 - Updating IEP data
 - Reviewing IEP 1 gaps
 - Arranging for a stakeholder workshop, which has been planned for March 2005. The purpose of the workshop is to review and to get the experts guidance on what they see as most pertinent issues in the South African energy economy and what should be the focus for IEP II.
2. Based on the inputs received from experts and government priorities the scenarios will be decided upon.
3. Develop strategy and the Work plan
4. Present the work plan
5. Contractual and Legal arrangement for consultants
6. Data collection
7. Build model
8. Develop a reference scenario
9. Present scenario to stakeholders
10. Develop scenarios
11. Evaluation of modelling results
12. Translate analysis result into conclusion and policy recommendations
13. Present Findings to Stakeholders
14. Develop final plan

Note: Previous SE briefings, covering issues such as electricity pricing, the potential for renewable energy to create jobs, and the implications and alternatives to the increasingly common trend to burn waste for energy can be downloaded from SECCP's WebPage: www.earthlife.org.za/seccp