

# SUSTAINABLE ENERGY NEWS on EMAIL (SENSE)

## Number 24

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Welcome! SENSE is a service of the Sustainable Energy and Climate Change Partnership (SECCP), a project of Earthlife Africa Johannesburg in partnership with WWF, Denmark.

SENSE is a monthly 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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#### Note from SENSE editor

We congratulate Minister Mlambo Ncguka on her re-appointment as Minister for Minerals and Energy. In the past five years as Minister of this Portfolio, she has gained significant knowledge and experience of the energy sector, and has shown that she can be a tough and firm leader. We hope in the next five years she will use this knowledge, experience and reputation to establish new and ambitious long-term targets for renewable energy, despite strong opposition from conventional energy sector components.

A significant opportunity for doing this is at Bonn *renewables2004*. SECCP have sent letters to Minister Mlambo Ncguka and other selected Ministers, as well as the Development Bank of Southern Africa, the African Development Bank, and the National Electricity Regulator to tell them about Bonn *renewables2004*, the CURES Declaration and Network, and to lobby them to support a commitment to new and ambitious RE targets, particularly through funding. You can request copies of the letters from me.

### **Info share – safe and clean energy services save lives**

SECCP hosted an informal info share in April, which focused on energy services, and aimed at exploring some of the misinformation and facts around energy service provision in South Africa:

*Misinformation: Electricity saves lives. The costs of not having electricity, which include thousands of deaths and injuries due to burns, sickness due to smoke inhalation, and the loss of thousands of homes in fires far outweigh any costs associated with providing electricity.*

#### Fact:

- Safe and clean energy services, and not necessarily electricity, save lives.
- Electricity is much more costly overseas than in SA, because in SA Eskom doesn't add up what the full cost of providing electricity is. If we include some of the externalised costs of:
  - Doctor and hospital bills because people get sick from breathing in poisons that are released into the air when coal and oil are burned
  - Land that is degraded for grazing or agriculture because it's been poisoned by acid rain that brings poisons in the air down to the ground
  - Acid rain damage to crops and forests
  - Rivers and aquifers (underground water stores) that are polluted from mine and mine-dump run-off and acid rain – so people can't use this water for themselves, their animals or their land
  - The deaths and damage caused by floods and droughts, which are happening more and more often, because when we burn fossil fuels (e.g. coal and oil) for electricity, we release gases like carbon dioxide. These gases act like a big blanket, which traps the heat, and make our earth hotter and hotter. As the planet heats up, the weather changes – which means more floods and droughts.
  - Depletion of our natural resources, which belong to all of us, and which should not be burned as fast as possible for quick profit and without paying to use these resources.

Then our electricity would be more expensive and other energy service options would be more competitive.

An increase in the over-all price of energy (consistent with the 1998 White Paper on Energy Policy for South Africa, which requires full-cost accounting) should be accompanied by an introduction of a stepped block tariff to ensure that basic energy services are affordable for poor households. This would compliment the free basic service provision that has been promised to all - only 50 units (kWh) per month per household – by making the next 'block' of consumption very cheap, with the price going up as consumption increases. This would help to reverse historical injustice through affluent households paying a larger share of the over-all costs for residential electricity supply and would also provide an incentive for more efficient use. (Currently the affluent spend around 2-3% of income on electricity while poor households need to spend 30% or more of household income to access adequate electricity.)

*Misinformation: The key to developing a modern economy in South Africa, as is clear from the development of Europe and the USA, is national electrification.*

#### Fact:

- We need to develop an African model of sustainable development, which learns from the mistakes made in Europe and the USA.
- People in SA need energy services. Electricity is required for lights and communication (television or radio), but other energy technologies are often more appropriate for other services, such as to cook and keep warm. The challenge is for energy services to be suitable and affordable to people's energy needs.

- Electricity generated from fossil fuels is very centralized and hierarchical, which means that the people using this electricity are excluded from the process. South Africa must rather develop a decentralized model of energy services that involves participation and ownership by the people.
- The development of local industries for production of renewable energy technologies (e.g. for biogas, wind and solar) would provide on average 10 times more jobs (per unit of energy) than electrification based only on coal. The rapid international growth of these technologies also means excellent prospects for an export industry, which will do far more to develop our economy, sustainably, than exporting fossil-fueled electricity

### **Media exposure**

SECCP had 2 Opinion pieces published in newspapers last month. Claire's (my first for SECCP) focused on the employment potential of renewable energy (see SENSE 22) and the project co-ordinator focused more on Bonn *renewables2004* as an opportunity for SA to set new and ambitious RE targets in order to profit from the social, economic and environmental benefits of RETs.

### **Did You Know?**

*Clean Energy NEWS Vol. 4, Number 22, 27 April 2004*

Computer monitors use the same amount of electricity as a 60-watt light bulb. So rest your screen when you rest your eyes. Don't wait for your screen saver to kick in; if you are going to be away from your computer for more than 10 minutes, turn the monitor off.

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## **2. SA's sustainable energy progress**

### **Report back On SA government *renewables2004* prep meeting**

*Claire Taylor*

In SENSE 23 we reported on a DME hosted workshop that was held to help government prepare a position paper for Bonn *renewables2004*. At this workshop, Kevin Nassiep, the Chief Director of Energy Planning in the DME, assured delegates that a draft copy of the SA government's position paper would be available for comment by 20 April 2004, to be finalised by end April. We are still waiting to see a draft copy, and have been told that one will be available on 14 May. We will forward you anything we get.

### **2<sup>nd</sup> workshop on formulation of renewable energy market rules**

The 2<sup>nd</sup> DME workshop on the formulation of renewable energy market rules scheduled for 29 April was postponed indefinitely. We'll let you know the new date when it's set.

### **Is there a future for renewable energy cooking in SA?**

*Claire Taylor*

This was the question posed at a Solco presentation I attended last week. The answer? A resounding yes. In fact, not only is there a future in RE cooking, there's a lot of money to be made too.

The Business Case put forward at the Solco meeting is based on a number of research projects, including an RE Study and a Solar Awareness Study among lower income households (LSMs 2 to 5). The results showed that the average household within these households uses 2 different cooking technologies, with the key criteria being speed and cost – a technology must be either fast or cheap. In addition, the safety of a technology is also a consideration.

The studies then explored people's perceptions of cooking technologies, most notably around whether they are fast, cheap and safe:

	<b>Fast</b>	<b>Cheap</b>	<b>Safe</b>
<b>Electricity</b>	√		
<b>Coal</b>		√	
<b>Paraffin</b>	√	√	
<b>Wood</b>	√	√	
<b>Gas</b>	√	√	
<b>Solar</b>	√	√	√

So, solar came out tops – it's fast, cheap, and it's safe.

The Business Case presentation then explored the market potential for RE cooking technology within lower income households. Assuming that just 10% of the 3.6 million households in this group bought these technologies, then 360 000 units would be bought at an average cost of R500 per unit. The benefits?

- **For buyers** – an alleviation of poverty as the potential fuel cost saving is between R332 and R528 per annum (based on conservative usage in only 20% of cooking occasions)
- **For suppliers** – R 125 million sales revenue over 5 years and R50 million in year 5 (based on estimate of 250 000 appliances sold at accelerating rate over next 5 years, and 100 000 per annum in 5<sup>th</sup> year)

Want more info? Call Dave Hancock, the Solar Cooker Project Manager at GTZ on (011) 535-7000 or e-mail him at [david.hancock@gtz.de](mailto:david.hancock@gtz.de)

*The Solco Project was initiated by the German Organisation for Technical Co-operation (GTZ) in conjunction with the Department of Minerals and Energy (DME). It promotes the concept that the best way to meet the social and environmental agendas of solar cooking technology is through a commercially viable approach.*

## **Restructuring SA's Electricity Supply Industry**

*Adapted from article by Zonika Botha, Creamer Media's Engineering News, 16 April 2004*

The South African government is currently in the process of restructuring the electricity supply industry (ESI), a process which will allow the private sector to build new power stations to meet the need for additional generating capacity that experts predict the country will need before 2010.

Government's National Integrated Resource Plan indicates that, in order to meet the forecast peak demand, additional generation capacity (from a demothballed plant or a new plant) of about 1 000 MW/y from 2007 will be needed to keep up with the demand for electricity in the country.

The year 2004 has been earmarked as the one in which government intends to go out on competitive tender for an independent power project to meet the forecast growth in demand. The Department of Minerals and Energy (DME) recently called for proposals for legal and technical advisers to assist the department in tendering for the new generation capacity.

According to Dr Elsa Du Toit, the DME project co-ordinator, by the March 10 deadline, 16 proposals were received from interested parties, of which only 12 met the criteria as set out by the department. She notes that the evaluation panel has already made a decision on who the preferred bidders are, but declined to name them.

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### **3. Unsustainable Energy**

#### **South Africa**

##### **Eskom increases executives pay despite falling profits**

*Claire Taylor from articles in Business Day, 21 and This Day 21 April 2004*

The release of Eskom's 2003 annual results in April shows that:

- Eskom lost R803 million against its 2003 net profit after tax, reducing it to R3.5 billion, compared with 2002's R3.7 billion.
- Electricity sales grew by 4.8% compared with 3.5% in 2002, boosted by heavy demand from the Mozal aluminium smelter in Mozambique.
- Willem Kok, Eskom's financial director was paid R27 million, despite a 5% fall in profits
- Thulani Gcabashe, Eskom's Chief Executive officer got a 26% pay increase – earning R5 million, including a R2.32 million bonus

##### **Waste to Energy**

*Claire Taylor*

Waste to energy projects are enormously attractive to big business, so Holcim's (ex Alpha all purpose cement) recent interest in setting up an "Alternate fuels and resources project" at its Dudfield Plant in the North West Province should come as no surprise.

Despite it being a precedent setting project, Holcim has been exempted from doing Scoping as part of its EIA. Together with the Legal Resource Centre, Earthlife Africa Johannesburg is trying to uncover why and how this happened. Other issues of concern include:

- Whether all stakeholders are being consulted in a way that allows them to make an impact e.g. using accessible materials in people's home languages, and having meetings that they can get to and which are structured in a way that facilitates participation
- Whether a thorough investigation of alternative ways of dealing with the proposed waste will be considered
- Whether the waste streams being considered will be fully specified, and if limits will be put on the wastes that may be introduced to the kiln.

- Since plastics are being considered, whether a thorough investigation of the potential for the formation of organochlorines, such as dioxins and furans, will be undertaken.
- Whether the EIA will include a full energy input-output analysis, including alternate ways of using the inherent energy in waste through re-use or recycling.

If you register as an interested party in the EIA, contact Karen Kück from Bohlweki Environmental (the consultancy running the EIA process), Telephone: 011 466 3841, E-mail:

[dudfield\\_afr@bohlweki.co.za](mailto:dudfield_afr@bohlweki.co.za)

## **Africa**

### **Hydropower touted as solution**

*Adapted from article in Creamer Media's Engineering News April 9-15 & 16-22 2004*

With the countries of the southern African Power pool (SAPP) estimated to run short of capacity after 2007, attention is being given to the possibility of sourcing electricity from the Inga site on the Congo river. To this end a Western Corridor (Westcor) Steering Committee has been formed under SAPP, to examine the viability of creating a Western Power Corridor for Southern Africa running from Inga in the Democratic Republic of Congo (DRC) to South Africa via Angola, Namibia and Botswana. The requisite engineering and financial studies are being carried out by the Westcor joint venture company, which was formed by 5 southern African power utilities, including Eskom.

And in another hydropower development, Mozambique is currently developing a Power System Master Plan, to be completed this year. The aim is to increase the electrification of the country and provide 15% of the population with electricity by 2020. Central to the plan is the construction and commissioning of a hydroelectric power station at Mphanda Nkuwa on the Zambezi River by 2010. At present Mozambique's electricity generation capability comprises the Cahora Bassa hydroplant on the Zambezi, commissioned in 1975 with an installed capacity of 2 057 MW, five smaller hydropower plants with a combined capacity of 109 MW and an installed thermal capacity of 202 MW. The plan is that the first stage of Mphanda Nkuwa will have an installed capacity of 1 300 MW, and the main challenge is the transmission of the power generated to the main market, which would be South Africa – some 1 600 km away. The total cost – dam, power plant, transmission system etc. is estimated at €2.6 billion. Studies forecast that the growth in the south African demand and increases in electricity prices will make Mphanda Nkuwa financially viable

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## **4. General Sustainable Energy News**

### **Africa**

#### **Kenyans put geothermal on African power map**

*Adapted from article by Keith Campbell, Creamer Media's Engineering News, 2 April 2004*

The Kenyan government's most recent Least Cost Power Development Plan (LCPDP) is emphasising the development of geothermal power to meet the country's growing need for electricity.

Not that geothermal power is new to Kenyans – the country already has three operating geothermal power plants, Olkaria I has been operating for over 20 years now and produces 45 MWe. The \$174-million Olkaria II was recently finished and, with a capacity of 70 MWe, is the biggest geothermal plant in Africa. Like Olkaria I, Olkaria II is owned and operated by KenGen. Olkaria III is owned and operated by independent power producer Ormat and currently generates 12 MWe. Production wells for an additional 36 MWe have already been drilled at Olkaria III.

All three are located in the Olkaria geothermal complex, which lies in the southern part of the Kenyan portion of the Great Rift Valley. The complex has potential for a fourth power plant, and KenGen is undertaking appraisal drilling for a planned 70 MWe plant, to be commissioned by 2010. The total estimated potential for the entire Olkaria complex is 400 MWe. The whole Olkaria complex is located within the Hell's Gate National Park. (Olkaria I was developed before the park was pro-claimed).

### **What is geothermal power?**

Geothermal power comes from underground natural heat energy sources. In areas of geological faulting – like the Great Rift Valley – the faults (cracks) allow molten magma to rise towards the surface. Geothermal reservoirs are created when this magma is trapped before it reaches the surface, solidifying and discharging intense heat into the surrounding rocks and groundwater.

That water, depending on its depth and thus the pressure it is under, can start boiling at hundreds of degrees. (At Olkaria, temperatures of up to 341 °C are encountered). Some of this water can escape to the surface as hot springs, geysers, or steaming grounds.

The extent of such a reservoir can range (in Kenya) from 20 km<sup>2</sup> to 80 km<sup>2</sup>. Their depth can range from one to three kilometres below the surface.

They are tapped by drilling wells, the upper, cold, sections of which are cased with thick pipes and the lower, hot, sections with slotted pipes.

The hot water (often in the form of brine) and steam enter through these slots and rise to the surface, where the steam is separated and used to drive turbines and generate power. To be economic, a geothermal field must be able to sustain production for more than 25 years.

## **International**

### **Bonn renewables2004**

*Claire Taylor*

### **Statement on Renewables in Africa**

#### ***Adopted by the 8 May 2004 Africa Ministerial Preparatory Meeting for the International Conference on Renewables***

While the statement is fairly general and does not consider targets, it does recognize a substantial role for renewable energy resources in meeting energy needs. Participants agreed on 19 actions, including to:

- Promote the incorporation of renewables in existing and planned energy master plans (inclusive of power/electricity master plans), and associated investment programmes

- Promote increased community public and private sector participation in renewable energy development and dissemination for poverty alleviation, empowering women, income generation and enterprise creation.

The **preliminary conference programme** is now available. The programme gives an overview of the four conference days:

11 June: Multi-Stakeholder Dialogue

22 June: Presentations: Opportunities for Renewables – Best Practices and Success Stories

33 June: Ministerial Segment: Keynote Statements and Ministerial Working Groups

44 June: Ministerial Panels: Adoption of Conference Outcomes and Closing Session

For a preview, please go to [renewables2004 Programme](#)

The conveners have selected the organisers of the side events and the exhibitions that are running parallel to the conference. For more information please visit the conference website [renewables2004 Side events](#) or [renewables2004 Exhibitions](#)

For more information on the International Conference for Renewable Energies, Bonn 2004, please visit [renewables2004](#)

### **China's push for a renewable energy future**

*Adapted from article in Clean Energy NEWS, Volume 4, Number 20, 13 April 2004, Source: [Greenpeace](#)*

What if the world's most populous nation had the necessity-driven willpower to develop the massive uptake of renewable energy like wind and solar power to offset the catastrophic effects of climate change and to secure clean, safe, abundant energy for 1.3 billion people?

It's not a 'what if', this is the new reality in this huge rapidly developing country according to Greenpeace. Ahead of last month's National People's Congress (NPC) the talk was of ending the 'cult of GDP' and of a 'Green GDP' which factors in the environmental costs of economic development. The energy sector is key to this. China is seeking more aggressively to curb pollution and address rapidly growing energy demands. The 2003 NPC ordered the drafting of a Renewable Energy Promotion Law by the end of 2004. All of which signals the intent of the Chinese government to draw in the massive amounts of clean energy investments and financing waiting to be tapped from strong advocates of renewable energy like the EU.

April saw two further examples of China's intent. First, a high level EU-China Conference on Renewable Energy Policy and Financing took place in Beijing. This was followed by Renewable Energy Asia 2004, running from 7th-9th April. This was both a landmark industry event and a great indicator of political intent as it was supported and endorsed by many central government and international agencies.

If China does adopt large scale renewable energy production, this will boost worldwide markets, speed up technological advances and allow China to not only tip the balance of the global market, but of our planet's ecological equilibrium as well.

### **Wind forecast for Europe predicts 67,600 MW by 2010**

*Adapted from article in Refocus Weekly 7 April 2004*

Europe could install 67,600 MW of wind turbines by 2010, well ahead of EU targets, suggests a coalition of renewable energy groups. The White Paper had called for 10,000 MW by the end of 2003, but that goal was “greatly exceeded” with the year-end total of 28,700 MW, explains the latest ‘Wind Energy Barometer’ produced by EurObserv’ER. The longer-term trend on the continent remains “rather favourable” with strong confirmation for offshore installations, growth in Spain and new installations in the Netherlands, Belgium, Portugal and Austria.

The European Wind Energy Association predicts 75,000 MW by the end of 2010 (including 10,000 MW offshore), up from its previous estimate of 60,000 MW (including 5,000 MW offshore), and the group says that will allow wind to generate 168 TWh, or 5.5% of the continent’s electricity.

In the EU, the wind sector employs 80,000 people and the average size of turbines in Germany has gone from 473 kW in 1995 to 1,553 kW last year. “Since the sites best exposed to the wind are now becoming more and more rare, the installation of more powerful wind turbines of greater capacities makes it possible for investors to improve the profitability of their projects while reducing installation costs at the same time,” the report explains, and size will grow with development of the offshore wind market.

### **European petition: 1 million Europeans demand exit of nuclear power**

*Adapted from press release sent by Ulla Klotzer, Women against nuclear power, Finland*  
[ullaklotzer@yahoo.com](mailto:ullaklotzer@yahoo.com)

Almost 50 organisations and movements from some 20 European countries launched a European Campaign to collect 1 million signatures against nuclear power to commemorate Chernobyl Memorial day on April 26<sup>th</sup>.

For a period of one year, the aim is to collect signatures and activate more organisations to join the campaign in order to convince all European countries to take the following measures without delay:

- to stop or prevent the construction of new nuclear power plants and facilities in the European Union,
- to launch a plan to abandon nuclear power within the European Union,
- to invest massively in energy saving and the development of renewable energies,
- to repeal the Euratom Treaty which massively supports nuclear power in Europe by means of public funding

### **UK – World’s biggest wind farm proposal**

*Adapted from article in Clean Energy NEWS, Volume 4, Number 20, 13 April 2004, Source: [Evening Star story](#)*

A massive wind farm planned off the Suffolk coast - comprising more than 100, 146-metre high turbines - is set to become one of the biggest in the world. New details have emerged about the site, which is 16 miles off Orford and could potentially produce enough electricity for around 300,000 homes. It is located on sandbanks known as the Inner Gabbard and The Galloper, in an area currently used for the dumping of material dredged from shipping channels. The company behind the scheme, Airtricity, based in Dublin, said it is carrying out an environmental impact assessment and feasibility study which is due to be completed in the autumn of 2005. If the necessary permissions are eventually granted, it plans to start building the wind farm in 2008.

### **US – RE means more jobs**

Investing in renewable energy would produce more American jobs than a comparable investment in the fossil fuel energy sources in place today; say researchers at the University of California, Berkeley. See [Berkley media release](#)

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## 5. SA Energy Bills

### Energy Efficiency Strategy Launch

The Department of Minerals and Energy is presenting a 1-day workshop/ seminar to launch a Draft Energy Efficiency Strategy for SA at Caesars Gauteng Convention Centre on 17 May 2004. If you want more information, or want to go, contact Nikki Nel at 082 828 8546, [info@saeec.co.za](mailto:info@saeec.co.za)

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## 6. Events

A full calendar of energy events for 2004, local and international, is available on request from: [seccp@earthlife.org.za](mailto:seccp@earthlife.org.za)

### South Africa

#### **May 10 – 11 Industrial and Commercial Use of Energy**

Lord Charles Hotel, Somerset West  
Registration Fee: R1 650 – R1750 (discounts offered)  
Contact: Industrial & Commercial Use of Energy Secretariat  
Fax: (021) 460 3701  
E-mail: [icue@ctech.ac.za](mailto:icue@ctech.ac.za)  
Website: [www.ctech.ac.za/conf](http://www.ctech.ac.za/conf)

#### **May 12 – 14 Domestic Use of Energy**

Lord Charles Hotel, Somerset West  
Registration Fee: R1 650 – R1750 (discounts offered)  
Contact: Domestic Use of Energy Secretariat  
Fax: (021) 460 3701  
E-mail: [due@ctech.ac.za](mailto:due@ctech.ac.za)  
Website: [www.ctech.ac.za/conf](http://www.ctech.ac.za/conf)

#### **June 7-9 The Power Africa Summit**

Midrand, Johannesburg, South Africa  
Contact: L Schnettler  
Tel: (+27 11) 880 6000  
Fax: (+27 11) 880 6789  
E-mail: [Lschnettler@iir.co.za](mailto:Lschnettler@iir.co.za)

Website: <http://www.powerafrica.co.za>

## **International**

### **June 23 - 25 Africa Energy Forum 2004**

Amsterdam, Netherlands

Contact: Rachel Hirschler, EnergyNet Ltd

Tel: (+44 20) 8547 0698

Fax: (+44 20) 8541 3244

E-mail: [rachel@energynet.co.uk](mailto:rachel@energynet.co.uk)

Website: <http://www.energynet.co.uk/market/infosite.htm>

### **May 17-18 13th Annual Latin American Energy Conference**

La Jolla, (San Diego) California

Organized by the Institute of the Americas

Contact: Susana Crews,

Tel: (858) 453-5560 ext. 103

E-mail: [susana@iamericas.org](mailto:susana@iamericas.org)

Website: [www.iamericas.org](http://www.iamericas.org)

### **May 20-22 5th SOLAREXPO**

International Conference & Exhibition on Renewable Energy,

Distributed Generation and Green Building

Vicenza Trade Fair (Italy)

Contact: International Desk: Dr Max Cecchin

E-mail: [exhibition@solarexpo.com](mailto:exhibition@solarexpo.com)

Ph: +39 (0) 439 849 855

Fax: +39 (0) 439 849 854

Website: [www.solarexpo.com](http://www.solarexpo.com)

### **May 23-28 Workshop: Poverty alleviation with decentralized energy supply**

Successful technology transfer with renewables and energy efficiency

Glucksburg, Baltic Sea, Germany

Contact: Werner Kiwitt, artefact gGmbH

E-mail: [info@artefact.de](mailto:info@artefact.de)

Fax: 0049 4631 6116 28

Website: [www.artefact.de](http://www.artefact.de)

### **May 25 - 27 27th Annual International Conference – Energy & Security in the Changing World**

Tehran, Iran

Contact: IRAEE and IICIC

Tel: (+9821) 204 8859

Fax: (+9821) 204 4769

E-mail: [iraee2004@iicic.com](mailto:iraee2004@iicic.com)

Website: <http://www.iraee.org/>

### **May 25 - 27 Power-Gen Europe 2004**

Barcelona, Spain

Contact: Jane Sounes, PennWell

Tel: (+44 1992) 656 635

Fax: (+44 1992) 656 700

E-mail: [janes@pennwell.com](mailto:janes@pennwell.com)

Website: <http://www.powergeneurope.com/>

**May 29 - 30**

**Second World Renewable Energy Forum: Global Benefits and Policies**

Bonn, Germany

Contact: EUROSOLAR

Tel: (+49 228) 362 373

Fax: (+49 228) 361 279

E-mail: [info@wcre.org](mailto:info@wcre.org)

Website: <http://www.wcre.org/>

**May 30 - 31**

**World Renewable Energy Forum: Policies and Strategies**

Bonn, Germany

Contact: World Council for Renewable Energy (WCRE)

Tel: (+49 228) 36 23 73

Fax: (+49 228) 36 12 13

E-mail: [info@wcre.org](mailto:info@wcre.org)

Website: <http://www.wcre.org/>

**June 01 – 04**

**International Conference for Renewable Energies**

Bonn, Germany

Contact: Secretariat of the International Conference for Renewable Energies, Bonn 2004, Postfach 5180, 65726

Tel: 49-6196-794404

Fax: 49-6196-794405

E-mail: [info@renewables2004.de](mailto:info@renewables2004.de)

Website: <http://www.renewables2004.de/>

**June 07 - 11**

**19th European Photovoltaic Solar Energy Conference**

Paris, France

Contact: Christine Flingelli, WIP

Tel: (+49 89) 720 12 735

Fax: (+49 89) 720 12 791

E-mail: [christine.flingelli@wip-munich.de](mailto:christine.flingelli@wip-munich.de)

Website: <http://www.wip-munich.de/>

**June 11 - 13**

**Energy Forum 2004**

Varna, Bulgaria

Contact: Scientific and Technical Union of the Power Engineers

Tel: (+359 2) 965 2309

Fax: (+359 2) 987 9360

E-mail: [nts\\_e@hotmail.com](mailto:nts_e@hotmail.com)

**June 28 – July 01**

**Renewables 2004 - International Conference on New & Renewable Energy Technologies For Sustainable Development**

Evora, Portugal

Contact: Maria Fernanda Afonso, Instituto Superior Técnico

Tel: +351 21 841 7378/841 7186

Fax: +351 21 847 5545

E-mail: [renewables@navier.ist.utl.pt](mailto:renewables@navier.ist.utl.pt)

Website: <http://navier.ist.utl.pt/renewables2004>

