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The World Wind Energy Association  
The African Wind Energy Association

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South African Minister for Minerals and Energy

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**Cape Town, South Africa**  
**23–26 November 2003**

# **The World Wind Energy Conference and Renewable Energy Exhibition**

[www.sbs.co.za/wwec2003](http://www.sbs.co.za/wwec2003)

# The World Wind Energy Conference and Renewable Energy Exhibition



Cape Town, South Africa  
23–26 November 2003

clean power for the world

## WELCOME

May I welcome you to join us and participate in the second World Wind Energy Conference and Renewable Energy Exhibition taking place from 23 — 26 November 2003 in Cape Town, South Africa.

Wind energy has become widely recognised as a source of energy that can contribute substantially to a clean, affordable and sustainable energy supply system. The world community has set wind energy — like all renewable energies — on the agenda for sustainable development. The concluding statement of the Earth Summit in Johannesburg 2002 placed renewable energy as the future high priority obligation for the international community in the transition from fossil fuels and atomic energy to clean energies, particularly benefiting the many millions living in the unserved areas in developing countries.

Astonishing technological progress is being made by way of constantly improved, economically efficient, multi-megawatt wind turbines as well as new, off-shore applications. This has given wind energy a status as a future primary energy carrier which nobody could anticipate just a few years ago.

The WWEC 2003 will tackle the full range of wind energy subjects and will especially focus on developing strategies and instruments for wind energy in less- and non-industrialised countries. The adaptation of successful technologies and strategies to specific regional and local conditions will be the central theme of our conference. We invite the world wind community to participate in this transfer and dissemination of expertise and bring their success stories and encouragement.

Situated at the foot of Table Mountain, Cape Town is considered by many to be one of the most beautiful cities in the world. Centrally located on Cape Town's foreshore, the newly opened Cape Town Convention Centre offers state-of-the-art equipment providing a venue above all expectations.

We are looking forward to a conference that will open new windows for the global breakthrough of wind energy in all your countries.

**Dr Preben Maegaard**  
*President, The World Wind Energy Association*

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The South African Wind Energy Association  
Danish International Development Assistance  
InWEnt — Capacity Building International, Germany  
German Federal Ministry for Environment, Nature Conservation and Nuclear Safety  
The International Solar Energy Society  
More than 60 national, international and global organisations

## WHO SHOULD ATTEND?

Over six hundred delegates and speakers are expected to attend from both developed and developing countries in order to share their knowledge and experiences in developing clean and affordable wind energy supplies as one cornerstone of a future energy system completely based on renewable energies.

*Delegate profiles include:*

- **government and municipal officials and politicians**
- **entrepreneurs and individuals involved in energy production, distribution, product design and manufacture**
- **researchers and academics**
- **environmental planning and protection agencies**
- **consulting engineers, architects and planners**





## THE VENUE CAPE TOWN INTERNATIONAL CONVENTION CENTRE

The CTICC is a world class convention centre offering superb facilities, fitted with the latest state of the art technology. It is ideally situated between the city centre and the V & A Waterfront, in close proximity to hotels, restaurants, entertainment and shopping centres.



## RENEWABLE ENERGY EXHIBITION

The 2003 event will consist of a highly prestigious conference, exhibition and a number of social functions, providing an excellent opportunity for sponsors to promote themselves to the influential participants. There will be a trade exhibition on renewable energy supplies, products and services where suppliers stand the chance of gaining exposure to the influential delegates and decision makers attending the conference.

Stand packages are available in modules of 9m<sup>2</sup>, 18m<sup>2</sup>, 27m<sup>2</sup>, 36m<sup>2</sup> and 54m<sup>2</sup> (and larger on request) at R1500 per square meter plus Vat. Space only stands are available in modules of 36m<sup>2</sup>, 54m<sup>2</sup> and larger at R1250 per square meter plus Vat. Exhibitors are entitled to one free floating ticket for the conference.

The German Ministry for Economics and Labour has sponsored a German stand at the Renewable Energy Exhibition.

For an updated list of exhibitors, visit the WVEC 2003 website:  
[www.sbs.co.za/wwec2003](http://www.sbs.co.za/wwec2003)

## SPONSORSHIP OPPORTUNITIES

Several major branding opportunities are available for companies to gain significant exposure to the influential delegates, speakers and organisations participating in WVEC 2003.

These include structured Gold and Silver sponsorship packages along with name branding of: Welcome Cocktail Party, Wind Instruments Music Festival, Gala Dinner and sponsorship of the many items required for the event such as Conference Bags, Pads, Pens and Delegate Gifts.

Visit the WVEC 2003 website for details: [www.sbs.co.za/wwec2003](http://www.sbs.co.za/wwec2003)  
or email Erika Schutze at SBS Conferences: [erika@sbs.co.za](mailto:erika@sbs.co.za)

## MEDIA PARTNERS

International: New Energy

South African: Energize



# SPEAKERS

 **Argentina**  
Florencio Gamallo  
Erico Spinadel

 **Australia**  
Heinz Dahl  
Ian Lloyd-Besson  
Peter Rae

 **Belgium**  
Benjamin Marrant  
Wolfgang Palz  
Thomas Verhey

 **Brazil**  
Ana Castro Lacorte  
Maria Pereira de Araújo  
Gustavo Bodstein  
Everaldo Feitosa  
Vanessa Guedes  
Andre Leal  
Dario Schultz

 **Canada**  
Susan Aris  
Gilbert Parent

 **Chile**  
Arturo Kunstman  
Miguel Mansilla

 **China**  
Chen Li  
Shi Pengfei  
Hong Shen  
He Dexin

 **Cuba**  
Conrado Moreno

 **Denmark**  
Soren Gjerding  
Frede Hvelplund  
Jane Kruse  
Preben Maegaard  
Per Stig Moeller

 **Egypt**  
Galal Osman

 **Finland**  
Timo Vekara

 **Germany**  
Heinrich Bartelt  
Hans-Joachim Buehring  
Jens Drillich  
Manfred Fishedick  
Norbert Gorißen  
Stefan Gsänger  
Rainer Hinrichs-Rahlwes  
Martin Hoppe-Kilpper  
Markus Kurdziel  
Klaus Knecht  
Johannes Lackmann  
Harry Lehmann  
Andreas Lietzmann  
Detlef Loy  
Ulla Meixner  
Frank Menzl  
Ulrich Plantikow  
Markus Poller  
Reimund Ruethlein  
Oliver Ristau  
Uwe Ritschel  
Kurt Rohrig  
Carsten Ropeter  
Enrique Rodriguez-Flores  
Hermann Scheer  
Juergen Schmid  
Christof Schwarz

 **India**  
Anil Kane  
Krishna Raghavan  
Chintan Shah

 **Japan**  
Takao Maeda  
Yukimaru Shimizu  
Izumi Ushiyama

 **Kenya**  
Klaus Toepfer

 **Korea**  
Choong-Yul Son

 **Lebanon**  
Ahmad Hourii

 **Libya**  
Mohamed Muntasser

 **Malaysia**  
Zamani Bin Hamzah

 **Mali**  
Ibrahim Togola

 **Mongolia**  
Baataryn Chadraa  
Ts Boldbaatar

 **Morocco**  
Khalid Benhamou

 **Philippines**  
Esperanza Castro-Lee

 **Russia**  
Sergey Kulagin  
Victor Elistratov  
Yuri Makarov  
Grigori Dmitriev

 **Spain**  
Jose Ramón Zugadi Garcia

 **South Africa**  
Paul Barendse  
Nico Beute  
Johannes Bosman  
Thomas Harms  
Dieter Holm  
David Johnson  
Hermann Oelsner  
Patrick Saendker  
Jason Schäffler  
Riaan Smit  
Frank Spencer  
Johan van den Berg  
Theo von Backstrom  
Sarah Ward  
Harald Winkler  
Richard Worthington

 **Swaziland**  
Jonathan Curren

 **Sweden**  
Hans Bergstrom  
Gunnar Grusell  
Åke Larsson

 **The Netherlands**  
Jan de Jongh  
Benjamin Marrant

 **Turkey**  
Tanay Sidki Uyar

 **United Kingdom**  
Amal-Lee Amin  
Matthias Mohr

 **USA**  
Randy Abernathy  
Ken Bradley  
Michael Brower  
Philip Doyle  
Ed Feo  
Paul Gipe  
James Manwell  
Alan Miller  
Kenneth Visser  
Peter Woicke

 **Zimbabwe**  
Dorothy Manuel

# POSTER SESSIONS

## GLOBAL, REGIONAL AND NATIONAL POLICIES AND MARKETS

<i>B. Marais</i>	Wind power for unserved areas
<i>E. Moses</i>	Wind energy for Liberia's reconstruction and development
<i>N. da Silva</i>	Evaluation of sustainability in the Brazilian Wind Power Enterprise
<i>G. Tavares</i>	Brazil — The Next Huge Wind Energy Market
<i>G. Braun</i>	The potential of Wind Energy for Indonesia
<i>P. Busch</i>	Competitive Diffusion: Feed-in-Tariffs and Quotas for the Promotion of Renewable Energy
<i>A. Mhlanga</i>	Defining the potential role of wind energy among Zimbabwe's rural population
<i>K. Dev Bhattarai</i>	Wind Energy and its Potential in Nepal
<i>P. Shipkovs</i>	Development of Wind Energy Utilisation in Latvia
<i>R. Kipke</i>	Wind conditions and farm projects in Egypt; Korea; Jordan; Sri Lanka

## INTEGRATION AND IMPLEMENTATION

<i>C. Korte</i>	Energy Prediction in Complex Terrain — an alternative to WASP
<i>M. Çaliskan</i>	Wind Energy Development in Turkey
<i>G. Tavares</i>	Estimation of Data missing Values in Wind Measurements Data Set
<i>I. Proshkina</i>	Legislative measures and information dissemination as tools to promote wind energy in Russia
<i>J. Rozenkrons</i>	The Influence of Wind Power Plants to Reactive Power Balance on Load Centres in Latvia
<i>G. Dmitriev</i>	Legislation for the Russian power sector to advance wind power
<i>L. Procopiak</i>	Development of a new methodology for wind resource assessment
<i>K. Törnblom</i>	Simulations and measurements of mesoscale flow modifications in the Baltic Sea area
<i>N. Johnson</i>	Status and Challenges for Norwegian Wind Power
<i>T. Sharpe</i>	The Potential for Urban Turbine use on Multi-Storey Housing in Glasgow
<i>C. van Wyk</i>	Beaufort West, South Africa, wind project
<i>H. Mwanyika</i>	Determination of the power law at Makambako-Iringa, Tanzania

## TECHNOLOGY DEVELOPMENT AND CERTIFICATION

<i>T. Uyar</i>	Wind Turbine Technology Scaling Up
<i>M. Luhrs</i>	A statement on the service life of wind turbines: practical results after more than 20 years of experience
<i>A. Hwass</i>	Determination of Geometrical Shape and Theoretical Performance of a Wind Rotor Blade of 1 MW WECS at Low Wind Speed Regions
<i>F. Akwensivie</i>	An Assessment of Wind Energy Potential in Ghana using WASP

## OFFGRID AND SPECIALISED APPLICATIONS

<i>S. Szewczuk</i>	Hybrid mini-grid energy systems — its contribution to an integrated approach to sustainable development
<i>S. Dechang</i>	China set up small wind power station in Pakistan
<i>Y. Hangye</i>	Investigation of the Control of Variable-Speed Constant-Frequency WECs
<i>R. Oliva</i>	Operation and two-year production data report of a wind-powered rural school in South Patagonia
<i>T. de Souza</i>	Evaluation of the Permanent Magnets Generator for Power Supply Moved by Wind Mill of 18 Blades
<i>E. Spinadel</i>	Cost analysis of a hydrogen storage system for a stand-alone wind energy system
<i>E. Sweelem</i>	A Self-Tuning Fuzzy PI Controller for PV-Wind-Diesel-Battery Hybrid Energy Systems
<i>L. Akeson</i>	New Wind-Diesel System from PitchWind®
<i>A. Costa</i>	African case studies of hybrid Power Systems Potential Assessment by means of Time-Space Analysis

## CAPACITY BUILDING

<i>A. Widing</i>	Education for Wind Power Development in non-industrialised countries
<i>M. Ram Mohan</i>	Building capacities through legal measures in the urban areas of India: The Key to the Wind Energy Future

## ECONOMIC, SOCIAL & ENVIRONMENTAL ISSUES

<i>N. da Silva</i>	Land Usage and Value in the Composition of the Costs of the Wind Power Projects in Brazil
<i>N. Gerona</i>	Pioneering Initiative in Environmental Monitoring: Northern Luzon Wind Power Project, Philippines

## GENERIC RESEARCH AND DEVELOPMENT

<i>O. Fleig</i>	Aeroacoustics Simulation of wind turbine tip noise using Large Eddy simulation
<i>T. Denton</i>	Aerodynamic Design, Analysis and Testing of a Wind Turbine for South African Wind Conditions
<i>M. Khan</i>	Performance comparison of a Small PM Wind Generator Operated at Maximum Power and Maximum Torque Capture
<i>T. de Souza</i>	Software for Design of Wind Power Systems of Electric Generation of Energy For Small Powers
<i>T. Uyar</i>	Main barriers for wind power development in Turkey

**SESSION 1**

09:00 — 10:30

**PLENARY — OPENING SESSION****Opening Address***Dr Preben Maegaard, President, WWEA, Denmark***Opening Address***Prof. Galal Osman, President AfriWEA, Egypt***Official Opening of the Conference***South African Minister for Minerals and Energy, Phumzile Mlambo-Ngcuka (to be confirmed)***Welcome Addresses***Per Stig Moeller, Danish Foreign Minister (to be confirmed)  
Rainer Hinrichs-Rahlwes, Director General, The Federal Ministry for Environment, Nature Conservation and Nuclear Safety, Germany  
Member of the European Parliament, Strasbourg***Welcome by the organiser***Peter Aspinall, SBS Conferences***Towards an Earth Charter for Renewable Energy***Dr Hermann Scheer, Member of the German Parliament, Alternative Nobel Prize winner, General Chairman of the World Council for Renewable Energy***BREAK 10:30 — 11:00****SESSION 2**

11:00 — 13:00

**PLENARY — KEYNOTES****Wind for Africa***Hermann Oelsner, Darling IPP, South Africa***Renewable energy's contribution to clean development***Prof. Klaus Toepfer, UNEP (to be confirmed)***The World Bank's activities in sustainable development***Peter Woicke, Executive Vice President and MD, Private Sector Operations, World Bank***Report from City Energy Strategies Conference***Sarah Ward, Sustainable Energy Africa, South Africa***Capacity Building: creating a basis for wind energy utilisation***Klaus Knecht, InWent, Germany***Wind energy technology: status and future perspectives***Prof. James Manwell, University of Massachusetts, USA***The way to a sustainable hydrogen economy***Prof. Erico Spinadel, President, Argentine Wind Energy Association, Argentina***Wind energy — a sustainable business opportunity***Heinz Dahl, Renewable Energy Generators Australia (REGA)***LUNCH 13:00 — 14:00****SESSION 3**

14:00 — 15:30

**GLOBAL MARKETS: AFRICA***Chairs: Galal Osman, African Wind Energy Association & Elvis Zekeri, Nigerian Wind Energy Association***Wind energy in South Africa: time to implement?***Jason Schäffler, IIEC Africa, South Africa***Policies for the future: spreading awareness of wind opportunities (North Africa)***Khalid Benhamou, MD Sahara Wind, Morocco***Wind energy in Libya***Mohamed Muntasser, International Energy Foundation, Libya***Wind energy applications in Eritrea***Enrique Rodríguez-Flores, Lahmeyer International GmbH, Germany***ESKOM's first wind energy experiences at Klipheuwel***Riaan Smit, Distribution, Eskom, South Africa***DISCUSSION****SESSION 4**

14:00 — 15:30

**TECHNICAL ISSUES:****WIND ASSESSMENT AND PREDICTION***Chairs: Yukimaru Shimizu, Mie University & Frede Blaabjerg, Aalborg University***UNEP's Solar and Wind Energy Resource Assessment Programme***Tom Hamlin, UNEP, France (to be confirmed)***Wind energy mapping using a mesoscale atmospheric model and a global meteorological database***Matthias Mohr, St. Albans, United Kingdom***Wind data bank for the Southeastern Region of Brazil***Gustavo Bodstein, Universidade Federal do Rio de Janeiro, Brazil***Higher-order closure mesoscale modelling for wind climates***Hans Bergstrom, Uppsala University, Sweden***Optimization of Weibull Parameters using genetic algorithm elements and knowledge of the Brazilian regional characteristics***Vanessa Gonçalves Guedes, Electric Power Research Centre (CEPEL), Brazil***DISCUSSION****BREAK 15:30 — 16:00****SESSION 5**

16:00 — 18:30

**GLOBAL MARKETS: EUROPE***Chairs: Wolfgang Palz, WCRE & Tanay Sıdkı Uyar, Marmara University***Pre-conditions for successful implementation of a wind energy industry in Europe***Heinrich Bartelt, MD German Wind Energy Association BWE, Germany***Development of wind power in Sweden and the Swedish Wind Energy Association's promotion of its extension***Gunnar Grusell, Vice President, Swedish Wind Energy Association (SVIF), Sweden***Role of renewable energies in a sustainable energy system — case study: Germany***Manfred Fishedick, Wuppertal Institute for Climate, Environment, Energy GmbH, Germany***Current situation & barriers to the promotion of wind power***Victor Elistratov, Saint Petersburg State Polytechnical University, Russia***DISCUSSION****SESSION 6**

16:00 — 18:30

**TECHNICAL ISSUES:****WIND ASSESSMENT AND PREDICTION***Chairs: Federal University of Rio de Janeiro & Grigori Dmitriev, Russian Academy of Sciences***Wind assessment and prediction***Gustavo Bodstein, Federal University of Rio de Janeiro & Grigori Dmitriev, Russian Academy of Sciences***Assessment of wind resources in South Africa***Soren Gjerding, MD Tripod Wind Energy, Denmark***Using mesoscale-microscale modelling to assess Africa's wind resources***Michael Brower, TrueWind Solutions, LLC, USA***Online monitoring and prediction of wind power for transmission system operation centres***Kurt Rohrig, ISET, Germany***Mapping wind energy — current status in Chile***Miguel Mansilla, Universidad de Magallanes, Chile***Exploratory wind data analysis as a governing factor for local wind site design in Brazil***Maria Pereira de Araújo, Iberdrola Group, Brazil***DISCUSSION****19:00 PLENARY PANEL DISCUSSION:  
TIME TO IMPLEMENT RENEWABLE ENERGIES IN AFRICA — BUT HOW?**

**SESSION 7**

09:00 — 10:30

**POLICY ISSUES: PLENARY — GLOBAL POLICY FRAMEWORKS***Chairs: Everaldo Feitosa, Brazil Wind Energy Association & Hermann Scheer, World Council for Renewable Energies***The Johannesburg Renewable Energy Coalition***Thomas Verheye, European Commission, Belgium (to be confirmed)***The International Conference for Renewable Energies in Bonn 2004***Norbert Gorißen, Federal Ministry for Environment, Nature Conservation and Nuclear Safety, Germany***New Partnership for Africa's development: NEPAD's impact on energy policy***Smunda Mokoena, CEO of NEPAD, South Africa (to be confirmed)***Renewable Energy and Energy Efficiency Programme (REEEP)***Amal-Lee Amin, British High Commission***A complete renewable energy supply of an OECD country: simulation and political requirements***Harry Lehmann, Greenpeace International, Germany***The world-wide proliferation of renewable energies: an agenda to overcome the barriers in the international frameworks***Stefan Gsänger, WWEA, Germany***BREAK** 10:30 — 11:00**SESSION 8** 11:00 — 12:30**GLOBAL MARKETS:  
AMERICA & AUSTRALIA***Chairs: Erico Spinadel, Argentine Wind Energy Association & Heinz Dahl, Renewable Energy Generators Australia***Canada's wind energy at present and in the future***Gilbert Parent, Ambassador for the Environment, Canada***Status of renewable energies in Cuba with special emphasis on wind energy***Conrado Moreno, CETER, Cuba***Brazilian Wind Energy Programme — recent developments and future prospects***Everaldo Feitosa, Universidade Federal de Pernambuco, Brazil***Mandatory renewable energy target legislation***Peter Rae, AO, Hydro Tasmania, Renewable Energy Generators of Australia (to be confirmed)***The US wind markets: status and perspectives***Paul Gipe, USA***DISCUSSION****SESSION 9** 11:00 — 12:30**TECHNOLOGY DEVELOPMENT:  
TECHNOLOGY ADAPTATION TO  
REGIONAL REQUIREMENTS***Chairs: Jens Soerensen, Technical University of Denmark, & Choong-Yul Son, Inha University***Optimum water pumping from wind energy***Michel Malengret, University of Cape Town, South Africa***Development and utilisation of small wind turbines in China***He Dexin, Chinese Wind Energy Association, China***Wind turbines and earthquakes***Uwe Ritschel, Windrad Engineering GmbH, Germany***Perspectives in re-using wind energy converters in developing countries***Carsten Ropeter, Technical University of Clausthal, Germany***Presentation of a German offshore wind energy project***Hans-Joachim Buehring, Amrumbank West GmbH, Germany***DISCUSSION****SESSION 10** 11:00 — 12:30**FINANCING***Chairs: Michael Eckhart, American Council for Renewable Energies & Heinrich Bartelt, German Wind Energy Association***Wind energy funds in Germany — specific requirements***Ulla Meixner, Reconcept, Germany***Trends for financing of wind energy projects***Edwin Feo, Milbank, Tweed, Hadley & McCloy LLP, USA***Decommissioning costs and liability reserve***Christof Schwarz, Consultant, Germany***Financing wind energy in third world countries***Dana Younger, IFC (to be confirmed)***DISCUSSION****LUNCH** 13:00 — 14:00

**SESSION 11** 14:00 — 15:30**GLOBAL MARKETS: ASIA**

*Chairs: Sarvesh Kumar, Vestas RRB India, & Izumi Ushiyama, Ashikaga Institute of Technology*

**Policy and institutional issues for accepting wind energy on a large scale**  
*Anil Kane, Chairman, Indian Wind Energy Association*

**Growing wind power development in Japan**  
*Yukimaru Shimizu, Mie University, Japan*

**Wind energy programme of Korea for reducing greenhouse gases under the Renewable Energy Act**  
*Choong-Yul Son, Inha University, Korea*

**Mongolian Wind Energy Programme**  
*Baataryn Chadaar, Mongolian Renewable Energy corporation, Mongolia*

**DISCUSSION****SESSION 12** 14:00 — 15:30**TECHNICAL ISSUES: TECHNOLOGY DEVELOPMENT**

*Chairs: Jürgen Schmid, ISET & Takao Maeda, Mie University*

**Condition monitoring of induction generators for wind energy conversion systems**  
*Paul Barendse, University of Cape Town, South Africa*

**The development of a 5kW off-grid wind generator set**  
*Chen Li, Aerodynamics Research & Development Center, China*

**Reactive power limit of variable-speed constant-frequency wind turbine**  
*Hong Shen, China Electric Power Research Institute, China*

**Centralised lubrication systems in wind turbines reduce costs and increase key component lifetime**  
*Patrick Saendker, Lincoln Lubrication, South Africa*

**Windside — a Finnish vertical-axis wind turbine**  
*Timo Vekara, University of Vaasa, Finland*

**DISCUSSION****SESSION 13** 14:00 — 15:30**FINANCING**

*Chairs: Frede Hvelplund, Aalborg University & Dana Younger, IFC (to be confirmed)*

**GEF's approach to finance wind energy projects in developing countries**  
*Alan Miller, GEF, USA (to be confirmed)*

**Carbon trading and wind energy in India: overview, constraints and opportunities**  
*Chintan Shah, Suzlon Energy Limited, India*

**Legal aspects of the Clean Development Mechanism in developing countries**  
*Johan van den Berg, South Africa*

**The role of carbon finance in wind project development**  
*Philip Doyle, Econergy International Corporation, USA*

**Emissions credits and wind energy development in Brazil**  
*Andre de sa Leal, Ecoinvest Assessoria Ltda, Brazil*

**DISCUSSION****BREAK** 15:30 — 16:00**SESSION 14** 16:00 — 18:00**POLICY ISSUES: PROMOTION INSTRUMENTS & FRAMEWORKS**

*Chairs: Dieter Holm, SESSA / ISES & Rainer Hinrichs-Rahlwes, Federal Ministry for Environment, Nature Conservation and Nuclear Safety, Germany*

**Policy options for wind energy in South Africa**  
*Harald Winkler, University of Cape Town, South Africa*

**A comparison of feed in and certificate models**  
*Frede Hvelplund, Aalborg University, Denmark*

**Reference revenue model in Germany's feed in law**  
*Johannes Lackmann, German Renewable Energy Association, BEE*

**Evolving environmental regulations for wind power projects in the Philippines**  
*Esperanza Castro-Lee, PNOG Energy Development Corporation, Philippines*

**DISCUSSION****SESSION 15** 16:00 — 18:00**TECHNICAL ISSUES: TECHNOLOGY DEVELOPMENT — AERODYNAMICS**

*Chairs: Jens Larsen, KMEK & He Dexin, China Aerodynamics R & D Centre*

**Full-scale aerodynamic effects of solidity and blade number on small horizontal axis wind turbines**  
*Kenneth Visser, Clarkson University, USA*

**The effect of local inflow angle, cross & parallel on the section performance of a rotor blade**  
*Takao Maeda, Mie University, Japan*

**Load reductions on HAWTs using smart flaps**  
*Benjamin Marrant, Delft University of Technology, Holland*

**Design and manufacturing of a low wind speed 1kW turbine blade**  
*Johannes Bosman, Potchefstroom University, South Africa*

**DISCUSSION****SESSION 16** 16:00 — 18:00**TECHNICAL ISSUES: GRID INTEGRATION**

*Chairs: Nico Beute, Cape Technikon & Martin Hoppe-Kilpper, ISET-Kassel*

**Impact of wind generation resources on power grid supplemental energy and regulation reserves**  
*Yuri Makarov, California Independent System Operator, USA*

**Implementation of wind turbines in weak grids**  
*Åke Larsson, ÅF-industri & System AB, Sweden*

**Variable wind speed generator models for power system stability**  
*Markus Pöller, DIGSILENT GmbH, Germany*

**Plugging wind into the grid — California Independent System Operators (ISOs)**  
*Randall Abernathy, Vice President Market Services, California ISO, USA*

**A new approach to micro-grid implementation**  
*Frank Spencer, University of Cape Town, South Africa*

**DISCUSSION****POSTER SESSION** 18:00 — 19:00**GALA DINNER** 19:30 for 20:00

programme is subject to possible changes pending confirmation from certain speakers

**SESSION 17**

09:00 — 10:30

**POLICY ISSUES:  
LOCAL/REGIONAL BENEFITS AND ACCEPTANCE***Chairs: Johannes Lackmann, BEE & Sarah Ward, Sustainable Energy Africa***Harvesting the wind — community case study in rural Alberta**  
*Susan Aris, Canadian Wind Energy Association, Canada***Use of wind power in area destined for land reform**  
*Ana Castro Lacorte, Energias Renováveis do Brasil Ltda, Brazil***Shewula community wind project — a project with direct and long lasting community benefits***Jonathan Curren, Sustainable Energy Solutions, Swaziland***The SA policy context for renewable energy development and civil society contributions to the policy debate***Richard Worthington, Sustainable Energy and Climate Change Partnership, South Africa***Improving rural livelihoods through renewable energy provision**  
*Dorothy Manuel, ZERO Regional Environment Organisation, Zimbabwe***DISCUSSION****SESSION 18**

09:00 — 10:30

**SPECIALISED APPLICATIONS:  
HYDROGEN/WATER PRODUCTION***Chairs: Ibrahim Togola, Mali-Folkecenter & Mathieu Koumoin, UNDP***A zero-emission autarchic energy supply for communities in rural areas***Frank Menzl, FH Stralsund, Germany***Wind-produced hydrogen exported from Patagonia**  
*Erico Spinadel, Argentinean Wind Energy Association, Argentina***Proposal of an isolated wind-hydrogen system for the Martín García Island***Florencio Gamallo, University of Buenos Aires, Argentina***Production of potable water by a wind-driven seawater desalination plant***Ulrich Plantikow, GWM mbH, Germany***Swedish desalination system based on wind energy**  
*Åke Larsson, AF-industri & System AB, Sweden***DISCUSSION****BREAK 10:30 — 11:00****SESSION 19**

11:00 — 12:45

**PRIVATE SECTOR: SUCCESS STRATEGIES  
FOR WIND ENERGY ENTERPRISES***Chairs: Ian Lloyd-Besson, Australian Wind Energy Association & Tulsi Tanti, Suzlon, India***Ways to become a renewable energy Independent Power Producer in South Africa***Hermann Oelsner, Darling IPP, South Africa***The first private independent energy producer in Russia**  
*Grigori Dmitriev, Vetro Energy, Russia***Local manufacturing of components for wind energy converters**  
*Reimund Ruethlein, a&f Stahl- und Maschinenbau GmbH, Germany***Wind power market and policy in energy sector of Russia**  
*Sergey Kulagin, JSC Energy Group, Russia***From fossil to wind: significant opportunities for clean & competitive energy production in Mongolia***Ts Boldbaatar, Mongolia Links Co. Ltd., Tokyo***DISCUSSION****SESSION 20**

11:00 — 12:45

**SPECIALISED APPLICATIONS:  
HYBRID TECHNOLOGY***Chairs: Frank Menzl, FH Stralsund & Thomas Harms, University of Stellenbosch***Wind-Solar hybrid system for water pumping — a perspective for countries in the Sahel, West Africa***Ibrahim Togola, Mali-Folkecenter, Mali***Small wind-photovoltaic hybrid systems for isolated areas**  
*Jose Ramón Zugadi García, Fundación Fatronik, Spain***Commercialisation of Swedish wind hybrid technology**  
*Åke Larsson, AF-industri & System AB, Sweden***Wind power for offgrid-applications in Africa**  
*Krishna Raghavan, International Energy Consultant, India***DISCUSSION****LUNCH 12:45 — 14:00****SESSION 21**

14:00 — 16:30

**CAPACITY BUILDING: DISSEMINATION OF  
INFORMATION AND TECHNOLOGIES***Chairs: Stefan Cramer, Heinrich Boell Stiftung & Dai Huizhu, Electric Power Research Institute, China***German-Argentinean joined experience in capacity building**  
*Erico Spinadel, President Argentinean Wind Energy Association***Renewable Energy Centres network to raise public awareness**  
*Jane Kruse, Folkecenter for Renewable Energies, Denmark***GTZ's TERNA Programme to promote the utilisation of wind energy**  
*Jens Drillisch, GTZ, Germany***Renewable energy & its compatibility with Native American values**  
*Ken Bradley, JustEnergy, USA***DANIDA's activities to promote renewable energies in Africa**  
*Danida, South Africa***InWent's formation and training activities: opening tracks for wind energy in developing countries***Dario Schultz, Brazil***German activities to disseminate renewable energy technologies**  
*Markus Kurdziel, Dena, Germany***DISCUSSION****SESSION 22**

14:00 — 16:30

**SPECIALISED APPLICATIONS:  
OFFGRID AND STAND-ALONE SYSTEMS***Chairs: Arturo Kunstman, Universidad de Magallanes & Theo von Backström, University of Stellenbosch***System design and implementation of a remote wind power system***Ahmad Hourri, Lebanese American University, Lebanon***High speed PM Halbach motor, using odd numbers of discrete magnets for kinetic energy storage***David Johnson, University of Cape Town, South Africa***Improving the operation and maintenance of a pilot 150 kW wind turbine generator on Layang-Layang Island, Sabah, Malaysia***Zamani Bin Hamzah, TNB Research Sdn. Bhd., Malaysia***Resources of stand-alone energy-supply stations in decentralized areas: a pilot plant***Andreas Lietzmann, BTF GmbH, Germany***DISCUSSION****CLOSING CEREMONY / CONFERENCE SUMMARY / AWARDS 16:30 — 18:00****END 18:00**

# CONFERENCE COMMITTEES

## CONFERENCE CHAIRPERSONS

Dr Hermann Scheer: General Chairman, WCRE  
Dr Preben Maegaard: President, WWEA  
Prof. Galal Osman: President, AfriWEA

## CONFERENCE COMMITTEE MEMBERS

### *Executive Committee*

Dr Hermann Scheer: General Chairman, WCRE  
Dr Preben Maegaard: President, WWEA  
Prof. Galal Osman: President, AfriWEA  
Heinz Dahl: Australia  
Grigori Dmitriev: Russia  
Prof. Everaldo Feitosa: Brazil  
Sarvesh Kumar: India  
Hermann Oelsner: South Africa  
Prof. Yukimaru Shimizu: Japan  
Prof. Erico Spinadel: Argentina

### *Programme Committee*

Prof. Nico Beute: Cape Technikon — *Programme Chairperson*  
Prof. He Dexin — *Programme Chairperson*  
Prof. James Manwell — *Programme Chairperson*  
Prof. Jurgen Schmid: ISET Kassel — *Programme Chairperson*  
Prof. Thomas Ackermann: Royal Institute of Technology: Stockholm  
Prof. Gustavo Bodstein: Federal University of Rio de Janeiro  
Prof. José Cataldo: Universidad de Uruguay  
Paul Gipe: USA  
Dr Thomas Harms: University of Stellenbosch  
Prof. Dieter Holm: President of SESSA  
Dr Anil Shreedar Kane: InWEA  
Klaus Knecht: Inwent  
Dr Wolfgang Palz: WCRE  
Prof. Jens N. Soerensen: Technical University of Denmark  
Prof. Choong-Yul Son: Inha University  
Prof. Izumi Ushiyama: Ashikaga Institute of Technology  
Prof. Tanay Sidki Uyar: Marmara University  
Prof. Theo von Backström: University of Stellenbosch

### *African Organising Committee*

Hermann Oelsner: AfriWEA — *Organising Committee Chairperson*  
Arthur Shipalana: Chair SAWEA  
Lisa Nomakosazana: SA Department of Minerals and Energy  
Dr Mohamed Muntasser: International Energy Foundation  
Elvis Zekeri: Nigeria WEA  
Nick Daba: Botswana Technology Centre  
Robert Schultz: Renewable Energy and Energy Efficiency Bureau

### *Event Co-ordination*

Stefan Gsänger: WWEA

### *Event Organisation*

Peter Aspinall: SBS Conferences  
Erika Schutze: AfriWEA / SBS Conferences

## WWEA MEMBERS

### *Ordinary and Scientific Members as at 20 July 2003*

African Wind Energy Association (AfriWEA), Africa  
Centre de Développement des Energies Renouvelables, Algeria  
Société Algérienne de l'Energie Solaire, Algeria  
Asociación Argentina de Energía Eólica (AAEE), Argentina  
Universidad Tecnológica Nacional, Argentina  
Australian Wind Energy Association (AusWEA), Australia  
Institute for Environment and Development Studies (IEDS) — FoE Bangladesh  
Economic Institute of Belarus National Sciences Academy, Belarus  
Centro Brasileiro de Energia Eólica, Brazil  
Centro Federal de Educacao Tecnológica do Paraná, Brazil  
CEPEL Electric Power Research Center, Brazil  
Federal University of Rio de Janeiro, Centro de Tecnologia, Brazil  
Ministerio de Minas e Energia, Brazil  
Universidade Federal do Ceará, Brazil  
Interuniversity European Center, EUC "Energy-Nature-Balkan", Bulgaria  
Memorial University of Newfoundland, Faculty of Engineering, Canada  
Centro de Estudio de los Recursos Energéticos, Universidad de Magallanes, Chile  
Chinese Wind Energy Association (CWEA), China  
CETER, Cuba  
Eurosolar Denmark, Denmark  
Egyptian Wind Energy Association, Egypt  
Bundesverband WindEnergie e.V., Germany  
InWent GmbH, Germany  
Indian Renewable Energy Development Agency Ltd., India  
Indian Wind Energy Association (InWEA), India  
Indian Wind Turbine Manufacturer Association, India  
Wind Energy Development Secretariat — Winrock International India  
Japan Wind Energy Association, Japan  
Korea Center for Energy Alternatives (KCEA), Korea  
Korean Wind Energy Research Group, Korea  
Center for Environmental Education and Protection of Liberia (CEEP)  
International Energy Foundation (IEF), Libya  
Lithuanian Energy Institute (LEI), Lithuania  
Lithuanian Wind Energy Association, Lithuania  
TNB Research Sdn Bhd, Malaysia  
Mongolian University of Science and Technology, Environ. Eng. Dept  
Nigeria Wind Energy Association, Nigeria  
Norwegian Wind Energy Association Norsk Vindkraft Forum, Norway  
Polish Wind Energy Association (PTEW), Poland  
Mali Renewable Energy and Environmental Protection Association, Mali  
Romanian Wind Energy Association, Romania  
Wind Energy Research Centre "Politehnica" Univ. of Timisoara, Romania  
Kola Science Center, Russian Academy of Sciences, Russia  
South African Wind Energy Association (SAWEA), South Africa  
Swedish Windpower Association, Sweden  
suisse-eole, Switzerland  
Marmara University, Energy Section, Turkey  
Massachusetts Technology Collaborative, USA  
Institute for Env. and Resources, National Univ. Ho Chi Minh City, Vietnam



# TOURS & EVENTS

South Africa is known as a world in one country with Cape Town considered by many to be one of the most beautiful cities in the world. Nestled under majestic Table Mountain, Cape Town is blessed with beautiful beaches and much natural beauty, resulting in six of the top tourist attractions in South Africa all being within less than an hour's drive from the city centre.

*These include:*

Table Mountain, V&A Waterfront, Cape Point, Winelands, Botanical Gardens and Robben Island.

## PRE & POST CONFERENCE TOURS

Various packages are available for touring Southern Africa to discover the splendid beauty of this region. These include:

### Kruger National Park Fly-in Safari

(3 days / 2 nights)

R6208 single      R4820 sharing

### Zambian Safari — Victoria Falls

(3 days / 2 nights)

US\$ 436 single      US\$ 293 sharing

### Victoria Falls: Zimbabwe

(3 days / 2 nights)

US\$ 704 single      US\$ 490 sharing

### Garden Route Tour

(4 days / 3 nights)

R10663 single      R7380 sharing

**For full details:** [www.sbs.co.za/wwec2003](http://www.sbs.co.za/wwec2003)

**Bookings:** [specialt@iafrica.com](mailto:specialt@iafrica.com)

*NB: above prices are an indication only — please confirm prices when making your reservation*

## ACCOMPANYING PARTNERS

*The accompanying partners programme includes:*

### **Sunday 23 November**

Welcome cocktail party and Festival of Wind Instruments

### **Monday 24 November**

Full Day Tour: Cape Point/Cape of Good Hope/Seal Colony/Kirstenbosch Botanical Gardens.

### **Tuesday 25 November**

Half Day Tour: Morning City & Table Mountain, Atlantic Seaboard, boat tour of the Waterfront.

Evening Gala Dinner, 19h00 for 20h00

### **Wednesday 26 November**

Half Day Township Tour: See the real Africa/different cultures.  
OR Half Day Winelands Tour: Stellenbosch/wine tasting/local estate.

*NB: Pre-booking is essential — contact Erika Schutze at SBS*

**email:** [erika@sbs.co.za](mailto:erika@sbs.co.za)

## REGISTRATION AT CTICC

Registration will take place in the conference venue at the WVEC Registration Desk where delegates and speakers will collect their name badges and conference bags.

**Sunday, 23 November** 11:00 — 18:00

**24 — 26 November** each morning from 7:30am

## GALA DINNER

An evening to relax, enjoy some of the cuisine of the Cape and network with friends and colleagues.

*\* included in the full delegate fee and the accompanying partners fee*

**Date:** Tuesday 25 November

**Time:** 20:00 to 22:30

**Dress:** Traditional / Smart Casual

## WELCOME COCKTAIL PARTY AND FESTIVAL OF WIND INSTRUMENTS

An exciting, relaxing and entertaining evening starting with a welcome cocktail party followed by a concert programme featuring wind instruments.

*\* included in the full delegate fee and the accompanying partners fee*

**Date:** Sunday 23 November

**Venue:** Cape Town International Convention Centre

**Times:** Cocktail Party 18:00 to 19:30

Concert 19:30 for 20:00 to 22:30

**Dress:** Traditional / Smart Casual

## STAKEHOLDER'S WORKSHOP

### **STRATEGIES TO IMPLEMENT WIND ENERGY UTILISATION IN AFRICA**

Details to be announced later.



Cape winelands



Table Mountain cableway



African wildlife

# ACCOMMODATION & TRAVEL

Special rates have been secured at the following hotels, ranging from 50m to 3km from the congress venue.

Locations of hotels are indicated on the map below.

Bookings and payments for accommodation must be made directly with the hotels, quoting the reference numbers indicated, as soon as possible to avoid disappointment.

prpn per room per night  
pppn per person per night  
b&b bed and breakfast

## FLIGHTS

Most airlines offer discounted rates for reservations made in advance. Please note that November is the beginning of the peak tourist season in Cape Town — it is advisable to secure your flight tickets as soon as possible.

## MAP OF CENTRAL CAPE TOWN



### 1 The Cullinan ★★★★★

50m to conference venue

In 22 November / Out 27 November

Single: R745/night b&b Double: R1050 prpn b&b  
R845 (superior) R1150 (superior)

Contact: Zaida Rhodes  
Quote: #4792  
Email: zaidaR@southernsun.com  
Tel: +27 21 418 6920  
Fax: +27 21 425 8686

### 2 City Lodge V & A

500m to conference venue

In 23 November / Out 26 November

Single: R605/night Double: R830 prpn Mon — Thurs  
R605 prpn Fri — Sun

Contact: Roseline Davids  
Quote: #1993  
Email: clva.resv@citylodge.co.za  
Tel: +27 21 419 9450  
Fax: +27 21 419 0460

### 3 Holiday Inn Cape Town, Waterfront ★★★★★

250m to conference venue

In 22 November / Out 27 November

Single: R820/night Double: R1050 prpn

Contact: Sandra Weber  
Quote: 889.45  
Email: sandraw@southernsun.com  
Tel: +27 21 409 4000  
Fax: +27 21 409 4777

### 4 Arabella Sheraton Grand Hotel ★★★★★

adjoining the conference venue

In 22 November / Out 26 November

Single: R1450/night b&b Double: R1670 prpn b&b

Contact: Shameela Potgieter  
Quote: World Wind  
Email: potgieters@asgh.co.za  
Tel: +27 21 412 9999

## HOTELS OPERATED BY PROTEA HOTELS:

Rooms have been secured at the Protea Hotels listed below for the nights of 23 — 26 November 2003

Quote: WWEC  
Email: reservations@proteahotels.com  
Tel: +27 21 430 5000  
Fax: +27 21 430 5310

### 5 The Breakwater Lodge

1.5km to conference venue

Single share shower: R290 prpn  
Double share shower: R350 prpn  
Business Suites: R610 prpn

### 6 Protea Hotel Pier Place, Cape Town ★★★★★

500m to conference venue

Single: R505/night b&b Double: R357.50 pppn b&b

### 7 Protea Hotel Cape Castle, Green Point ★★★★★

1km to conference venue

Single: R506/night b&b Double: R347 pppn b&b

### 8 Protea Hotel Sea Point ★★★★★

3km to conference venue

Single: R325/night b&b



Robben Island



The Waterfront



Kirstenbosch Gardens

