



WWEC 2003

Presented by
The World Wind Energy Association
The African Wind Energy Association

In association with
SBS Conferences

Supported by
South African Minister for Minerals and Energy

Sponsored by
Danish International Development Assistance
The German Federal Ministry for Environment and InWEnt



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

The World Wind Energy Conference and Renewable Energy Exhibition

www.sbs.co.za/wwec2003

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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 Minister for Minerals and Energy
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 9m², 18m², 27m², 36m² and 54m² (and larger on request) at R1500 per square meter plus Vat. Space only stands are available in modules of 36m², 54m² 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

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
or email Erika Schutze at SBS Conferences: 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 Drillisch
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 WASPs
<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. Rozenkrans</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 WASPs

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

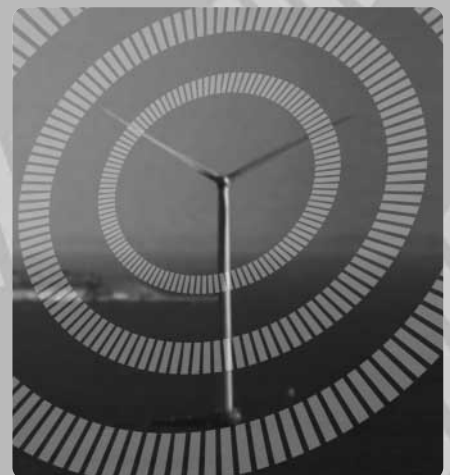
TECHNICAL ISSUES:**WIND ASSESSMENT AND PREDICTION***Chairs: Federal University of Rio de Janeiro & Grigori Dmitriev, Russian Academy of Sciences***Wind assessment and prediction***Gustavo Bodstein, Federal University of Rio de Janeiro & Grigori Dmitriev, Russian Academy of Sciences***Assessment of wind 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***Åhmad 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

Bookings: 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

REGISTRATION AT CTICC

Registration will take place in the conference venue at the WWEC 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.

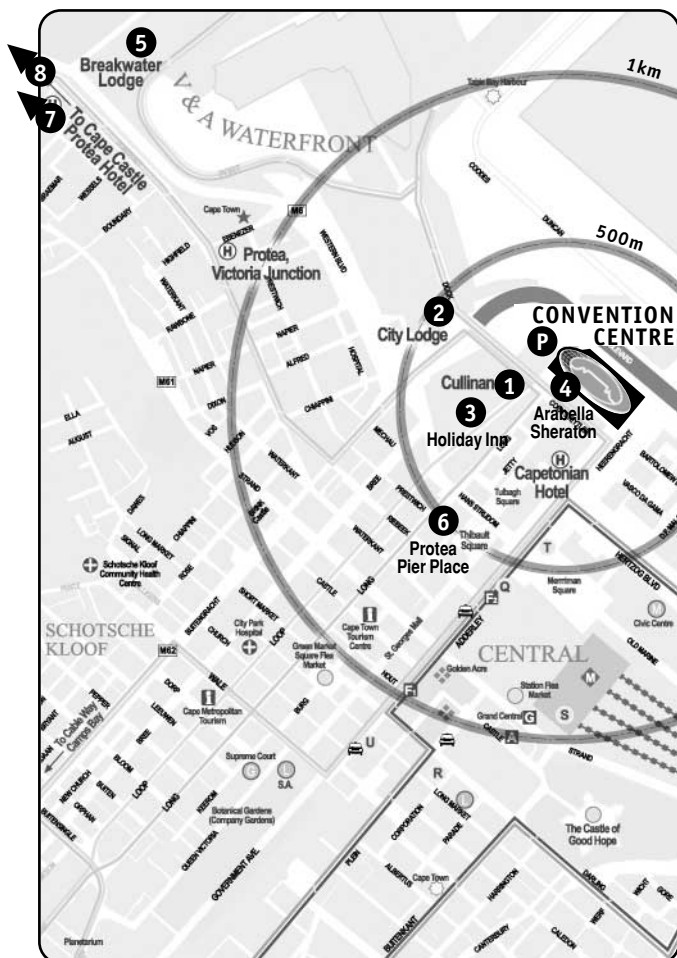
Bookings and payments for accommodation must be made directly with the hotels, quoting the reference numbers indicated, as soon as possible to avoid disappointment.

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@southern.sun.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@southern.sun.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

