



Energy Research Centre (ERC)  
University of Cape Town



Energy Modeling Forum  
(EMF), Stanford University



International Energy Agency  
(IEA)



International Institute for  
Applied Systems Analysis  
(IIASA)

---

## INTERNATIONAL ENERGY WORKSHOP 2006

27 – 29 June 2006, Arabella Sheraton Grand Hotel, Cape Town, South Africa

### Program

---

#### Tuesday Morning – 27 June 2006

*Opening and Welcome Address:*

**Leo Schrattenholzer, Joseph Aldy, Mark Howells, Peter Taylor, Marian Nieuowudt**

---

#### PLENARY SESSION I: Energy Supply Options



CHAIRPERSON: Leo Schrattenholzer

---

**Alfred Voss**, Stephan Kempe,  
Markus Blesl, Uwe Remme

Sustainable Energy Provision – What are the Key Energy Technologies? Energy Technology Impact on Sustainable Energy Development



**Ferenc L. Toth**, Hans-Holger  
Rogner

Prospects for Nuclear Energy in the 21st Century



**Uwe Remme**, Maryse Labriet,  
Richard Loulou, Markus Blesl

Global Energy Supply: Model-based Scenario Analysis of Resource Use and Energy Trade



**Kee-Yung Nam**, Gerhard  
Totschnig

Economic Assessment on the Role of World Hydrogen Economy and its Supply Options



---

Parallel Sessions (see next page)

*Gala Dinner -*

Welcome Address: **Brian Watkyns**

---

## Tuesday Afternoon – 27 June 2006 - 14:00-17:30

<b>PARALLEL SESSION 1</b> Ballroom East Conference Room <b>AFRICA</b> 	<b>PARALLEL SESSION 2</b> Vasco Da Gama Conference Room <b>MARKETS, FINANCING AND REGULATION, AND REGIONAL STUDIES</b> 	<b>PARALLEL SESSION 3</b> Bartholomew Diaz Conference Room <b>METHODOLOGY (1 of 2)</b> 
<b>CHAIRPERSONS:</b> <i>David Victor</i> <i>Ashish Rana</i>	<b>CHAIRPERSONS:</b> <i>Kee-Yung Nam</i> <i>Bertrand Magne</i>	<b>CHAIRPERSONS:</b> <i>Yaroslav Minullin</i>
Policies Options and Indicators for Sustainable Development in South Africa   Harald Winkler, Tom Alfstad, Mark Howells, <b>Alison Hughes</b>	Is it Welfare Improving to Extend the European CO <sub>2</sub> Trading System to all Sectors?    <b>Denise van Regemorter</b>	Macroeconomic Effects of Power Sector Modernization in the EU-25 Countries – An Analysis using a Technology Oriented CGE-Model   <b>Marcel Zürn</b> , Robert Küster, Ingo Ellersdorfer, Ulrich Fahl
Integrated Energy Centre (IeC's) as a vehicle to deliver affordable energy sources and information to rural communities in South Africa   <b>Robert Maake</b>	Caps and Safety Valves for Emissions Markets under Uncertainty   <b>Akira Maeda</b> , Tetsuo Tezuka	Endogenous Optimization of R&D for Sustainable Energy Development   <b>Gerhard Totschnig</b>
The Energy Audit of Selected Gauteng Provincial Government Buildings   <b>Nontsikelelo Letsosa</b>	Optimal Spot and Forward Transactions of Dominant Generators in Deregulated Imperfect Electricity Markets   <b>Ingo Ellersdorfer</b>	Representing Technology in CGE Models: A Comparison of SGM and AMIGA for Electricity Sector CO <sub>2</sub> Mitigation    Michael Shelby, <b>Allen A. Fawcett</b> , Eric Smith, Donald A. Hanson, Ronald D. Sands
Now if you have a plan, please tell us': Infrastructure and Energy Options in Rural KwaZulu-Natal   <b>Wendy Anneke</b> , Nthabiseng Mohlakoana	Sustainable Development Impacts of Clean Development Mechanism Projects   <b>Karen Holm Olsen</b> , Jørgen Fenhann	Local Air Pollution and Global Climate Change: A Combined Cost-Benefit Analysis   <b>Johannes Bollen</b> , Corjan Brink, Hans Eerens, Bob van der Zwaan
Financing the Electrification of Mozambique   <b>Peter Mulder</b> , Anders Cajus Pedersen, Jonas Tembe	Investment Strategies in the European Electricity and Gas Market   <b>Markus Blesl</b>	Impact of Oil Price on GDP Growth: Using a CGE Model with Increasing Returns to Scale and Imperfect Competition   <b>Chung-Huang Huang</b> , Goo-Fan Chang Chien-Ming Lee
Rural Electrification in Mozambique. Is it Worth the Investment   <b>Jonas Tembe</b> , Peter Mulder	Modeling Supply and Demand Side of Urban Energy Systems based on the Experiences from Vienna Energy Concept   <b>Stefan Winkelmueller</b> , Thomas Hamacher, Albrecht Reuter, Manfred Strubegger	Assessment of the Environmental and Health Impacts Caused by Energy Conversion in Europe Using the 'ExternE' Methodology   <b>Rainer Friedrich</b> , Bert Droste-Franke, Alfred Voss
Determinants of Electricity Demand for Newly Electrified Low Income African Households   <b>Kate Louw</b> , Marcus Dekenah, Gisela Prasad, Bill Cowan Bruno Merven, Mark Howells	Integration of Comprehensive Analysis with Sub-system and Component Modelling Tools for Local Energy Planning    Rocco De Miglio, Maurizio Gargiulo, <b>Evasio Lavagno</b>	Interaction Between Abatement Policy and Technology Development for Climate Change   <b>Geoffrey J. Blanford</b>
Investigation of Scale Economies for African Biogas Installations   <b>Bamikole Amigun</b> , Harro von Blottnitz		A Complex Systems Approach to Energy Network Design and Analysis: A South African Bio-energy Case Study  <b>Brett Cohen</b> , Ruud Kempener, Lauren Basson, Jim Petrie
Energy Sector Reform and Energy Transitions in Africa   <b>Gisela Prasad</b>		

---

**Wednesday Morning - 28 June 2006**

---

**PLENARY SESSION II: E3 Analyses in Developing Countries**



CHAIRPERSON: Joseph Aldy

---

**Cheryl de la Rey**

Opening Statement

**Mark Howells**, S. Jonsson, E. Käck, P. Lloyd, B. Conradie, K. Bennett

Calabashes for kilowatt hours? – Market Failure and Biomass Use in Low Income Areas



Mark Howells, Thomas Alfstad, **Kevin Bennett**, Charlie Heaps

Energy Modelling in SADC: Capacity Building and Some Initial Model Results



**Fridtjof Unander**

Energy Technology Perspectives 2006



**David G. Victor**, Thomas C. Heller

The Political Economy of Power Sector Reform: Experiences of Five Major Developing Countries



## Wednesday Afternoon - 28 June 2006

<b>PARALLEL SESSION 4</b> Bartholomew Diaz Conference Room <b>SUPPLY OPTIONS</b>	<b>PARALLEL SESSION 5</b> Vasco Da Gama Conference Room <b>E3 IN COUNTRIES AND REGIONS</b>	<b>PARALLEL SESSION 6</b> Ballroom East Conference Room <b>CLIMATE CHANGE</b>
<b>CHAIRPERSONS:</b> <i>Peter Mulder</i> <i>Mark Howells</i>	<b>CHAIRPERSONS:</b> <i>Gary Goldstein</i> <i>Akira Maeda</i>	<b>CHAIRPERSONS:</b> <i>Ferenc Toth</i> <i>Evasio Lavagno</i>
Assessing Wood-based Synthetic Natural Gas Technologies using the SWISS-MARKAL Model   <b>Thorsten F. Schulz</b> , Leonardo Barreto, Socrates Kypreos, Samuel Stucki	Energy Supply Scenarios for India and Implication for Energy Security   Vivek Karandikar, <b>Ashish Rana</b> , Prasanna Dani	Reducing Greenhouse Gas Emissions by a Factor of 4 by 2050: A Bottom-up Analysis of post-Kyoto Emissions Targets for France   <b>Edi Assoumou</b> , Marc Bordier, Gilles Guerassimoff, Nadia Maïzi
Important Roles of Fischer-Tropsch Synfuels in the Future Global Energy System  <b>Takayuki Takeshita</b> , Kenji Yamaji	Global Long-term Energy-Economy-Environment (E3) scenarios with an emphasis on Russia   <b>Yaroslav Minullin</b>	Reducing Norwegian Greenhouse Gas Emissions with 75% by 2050  <b>Kari Aamodt Espegren</b> , Audun Fidje, Eva Rosenberg
Wind Energy: A Challenge for Energy Models   <b>Thomas Hamacher</b> , Nina Heitmann, Joachim Herrmann, Stephan Braun	Divergence in State-Level Per Capita Carbon Dioxide Emissions    <b>Joseph E. Aldy</b>	Evaluations of Technological Options in Steel and Cement Sectors for Mitigating Climate Change with DNE21+ Model   <b>Junichiro Oda</b> , Keigo Akimoto, Fuminori Sano, Takashi Homma, Toshimasa Tomoda
Using Small, Inherently Safe Nuclear Reactors to Provide Electricity for African Countries   <b>Andrew Kenny</b>	The Italian Electricity Sector: A Regional and Multi Grid TIMES Model    <b>Maurizio Gargiulo</b> , Evasio Lavagno, Cristina Cavicchioli, Santi Vitale	Sustainable Energy Options, Striking a Balance between Competitiveness, Energy Security and the Environment   A.J.G. Manders, <b>J. Bollen</b>
Prospects for Nuclear Energy in Europe   <b>Bob van der Zwaan</b>	A World Induced Technical Change Hybrid Model    Valentina Bosetti, Carlo Carraro, Marzio Galeotti, Emanuele Massetti, <b>Massimo Tavoni</b>	Optimal Portfolio Deployment of Climate Policies: Does Climate Sensitivity, Land and Ocean Carbon Feedbacks Matter?   Vincent Gitz, <b>Bertrand Magne</b> , Philippe Ambrosi, Philippe Ciais
Future Prospects for Nuclear Power Development   <b>Kee-Yung Nam</b>		Sustainable Growth with Improving Energy and Environmental Security   <b>Paul Friley</b> , Vatsal Bhatt, Phillip Tseng
A European Model for Projection of Municipal Waste and its Potential as an Energy Source   <b>Alejandro Villanueva</b> , Mette Skovgaard, Marko Vrgoc, Frits Møller Andersen, Helge V. Larsen, Stephane Isoard		

---

Thursday Morning - 29 June 2006

---

**PLENARY SESSION III: In Honor of Alan S. Manne:  
The MERGE Model in Global Research** 

CHAIRPERSON: Leen Hordijk

---

**Joseph Aldy**

Policy Implications



**Leo Schrattenholzer**

Applications of the MERGE Model at IIASA



**Socrates Kypreos**

Stabilizing Global Temperature Change below Thresholds;  
Monte Carlo Analyses with MERGE



**Allen A. Fawcett**, Christa Clapp,  
Francisco de la Chesnaye, Michael  
Gallaher, Jeffrey E. Petrusa

Global Mitigation of Non-CO<sub>2</sub> Greenhouse Gases






































Maryse Labriet, **Richard Loulou**,  
Amit Kanudia, Kathleen  
Vaillancourt

Is a 2 degrees Celsius Warming Achievable under High  
Uncertainty? Analysis with the TIMES Integrated Assessment  
Model



## Thursday Afternoon – 29 June 2006

<b>PARALLEL SESSION 7</b> Bartholomew Diaz Conference Room <b>DEVELOPING COUNTRIES</b>	<b>PARALLEL SESSION 8</b> Vasco Da Gama Conference Room <b>TECHNOLOGIES</b>	<b>PARALLEL SESSION 9</b> Ballroom East Conference Room <b>METHODOLOGY (2 of 2)</b>
<b>CHAIRPERSONS:</b> <i>Thomas Hamacher</i> <i>Gerhard Totschnig</i>	<b>CHAIRPERSONS:</b> <i>Bob van der Zwaan</i> <i>Richard Loulou</i>	<b>CHAIRPERSONS:</b> <i>GianCarlo Tosato</i> <i>Alfred Voss</i>
Regional Electricity Markets in Africa: Risks and Benefits   <b>A. Ndour</b> , I. M. Diaw, Pr M. Finger	Development of Supply Curves for Abatement of Air-Pollutants from Utility Boilers   <b>Samudra Vijay</b> , Joseph DeCarolis, Ravi Srivastava	Towards Comprehensive E <sup>3</sup> Modeling – MARKAL/TIMES and REMI Integration   <b>Gary Goldstein</b> , George Treyz, Richard Loulou, Pat Delaquil
Can Developing Countries Simply Grow out of the Climate Change Problem? An Economic Analysis   <b>Franck Lecocq</b> , Zmarak Shalizi	Fuel Prices vs. Automobile Fuel Economy Standards in a CO <sub>2</sub> -Constrained Transport Sector   <b>Theodoros Zachariadis</b> , Sofronis Clerides, Karl Storchmann	Connection of TIMES models with GIS   <b>Markus Biberacher</b>
Investments Strategies for the Electricity System in South America   Markus Blesl, <b>Annemarien Gehrke-Castagna</b>	The Beginnings of a Framework for Environmentally Safe Technology Receptivity    <b>Steve Thorne</b>	Endogenised Technological Progress in TIMES Models   <b>Martin Baumann</b>
Environmental Policy Analysis in Iran: Application of Energy Input-Output Table  <b>Davoud Manzoor</b>	The Impact of Foreign Investments and Technological Spillovers on Climate Policies   <b>Marian Leimbach</b>	Modelling in MARKAL the Transportation Sector of Sweden   <b>Erik N. Ahlgren</b>
Energetic Planning with Biomass for Isolated Amazonian Communities  <b>Arthur C. Almeida</b> , Brigida R. P. Rocha		Optimum Portfolio Investment in the Electricity Sector and Climate Change Policy in the UK   Adriaan van Zon, <b>Sabine Fuss</b>
Impact of Externality Cost Internalization on Renewable Electricity Development in the APEC Region   <b>Sergey P. Popov</b>		Modelling Multiple Objectives under Uncertainty in the South African Electricity Supply Industry   <b>G. Heinrich</b> , M. Howells, L. Basson, J. Petrie
WISIONS - Sustainable Energy Projects – Success Stories and Options for Promotion   <b>Carmen Dienst</b> , Manfred Fishedick, Maike Bunse, Holger Wallbaum		Disaggregating Household Energy Use in a South African Energy Model   <b>Harald Winkler</b>

We would like to thank the following Sponsors for their support  
 Eskom - [www.eskom.com](http://www.eskom.com)  
 City of Cape Town - <http://www.capetown.gov.za/>  
 United Nations Development Programme (UNDP) - [www.undp.org](http://www.undp.org)  
 EPRI - [www.epri.org](http://www.epri.org)  
 Energy Technology Systems Analysis Programme (ETSAP) - <http://www.etsap.org/>