Dear Colleagues,

It is with great pleasure that I welcome you to the 34th International Energy Workshop (IEW), the latest congregation of energy modellers from all corners of the world. The IEW takes place on this occasion in Abu Dhabi, the capital of the United Arab Emirates, and in the Middle East for the first time in its 34-year history.

Energy scenarios and modelling matter, and not just to a highly specialised cadre of professionals, because they inform policy making. To take one example, scenario-based planning, aimed at discovering and designing the most effective technological approach to renewable power integration, was crucial to Denmark obtaining the high renewable energy shares we see today.

Within the current decade, countries in the Middle East and North Africa (MENA) have also emerged as research and development leaders for renewable energy technologies (RETs), with some eyeing rapid deployment of RETs within just a few years. The UAE has brought 100 megawatts (MW) online with Shams 1, one of the largest concentrated solar power (CSP) plants in the world, while plans foresee its capacity growing to 3,000 MW. The world’s record-low price for solar photovoltaic-generated electricity, USD 0.6 per kilowatt-hour, was also achieved through a tender in the UAE.

Bringing the IEW to this dynamic region gives the global energy modelling community the chance to exchange knowledge and foster inter-regional co-operation with MENA-based modellers.

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Other regions have also embarked on important modelling exercises aimed at near-future sustainable energy breakthroughs. In Africa, the System Planning Test (SPLAT) models designed by the International Renewable Energy Agency (IRENA) have helped to highlight the potential for scaling up renewable power generation across the continent’s five power pools, given different policies and scenarios.

For this year’s IEW, the outstanding quality of papers submitted has allowed us to put forth an engaging programme covering a range of topics, including the Gulf energy landscape, the latest research into low-carbon technologies and the status of international climate policy, in the run up to key climate talks in Paris later this year. In parallel sessions, over 90 papers are to be presented over three days. The demanding, as well as rewarding, schedule also offers social events, during which I hope you will take the opportunity to sample the UAE’s rich cultural heritage.

IRENA wishes to extend its gratitude to the sponsors, the Electric Power Research Institute (EPRI) and the Energy Technology Systems Analysis Programme (ET-YSAP), as well as to the IEW organising committee and co-directors for all the support they have provided during the preparations. I would especially like to thank the Government of the UAE for its generous financial contribution, which has helped make this meeting happen.

I wish you a pleasant stay in Abu Dhabi and a successful and rewarding IEW 2015.

Adnan Z. Amin
Director-General
International Renewable Energy Agency
About the International Energy Workshop

The International Energy Workshop (IEW) is one of the leading conferences for the international energy modelling research community. In a world of environmental and economic constraints, energy modelling is an increasingly important tool for addressing the complexity of energy planning and policy making.

The IEW provides a venue for analysts to compare quantitative energy projections, to understand the reasons for diverging views of future energy developments, and to observe new trends in global energy production and consumption.

The annual conference typically includes three plenary sessions and more than 100 presentations in parallel sessions focusing on a wide array of topics, including energy supply and price forecasts, energy savings and efficiency, renewable and innovative energy technologies, environmental and climate policy, and the intersection between energy analysis, economics, and the natural sciences.

The first International Energy Workshop was organised in Palo Alto in 1981 by Stanford University’s Alan S. Manne, one of the founding fathers of energy economics. With the cooperation of Leo Schrattenholzer, a leading energy technology systems specialist at the International Institute of Applied Systems Analysis (IIASA), the workshop became an annual conference, first alternating between IIASA and the United States, and more recently expanding to other locations in Europe, Asia and Africa.

Throughout the history of IEW, a number of organisations have contributed to the success of these annual conferences, including notably the Energy Modeling Forum (EMF), the Electric Power Research Institute (EPRI), USA; Massimo Tavoni, Fondazione Eni Enrico Mattei (FEEM), Italy; and Bob van der Zwaan, Energy Research Centre of the Netherlands (ECN).
IRENA helps countries worldwide address sharply rising energy needs, including the transition to a sustainable energy future, and serves as the only international agency with an exclusive mandate on renewable energy. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity.

IRENA’s work also includes country, regional and global programmes:

- Clean Energy Corridors: Initiatives to develop indigenous renewable power to support regional social and economic growth;
- Renewables Readiness Assessments: Country-led holistic evaluations and recommendations for action to accelerate renewable energy deployment;
- REmap 2030: A roadmap indicating the realistic potential for countries, regions and the world to double the share of renewables in the global energy mix, a key step in mitigating climate change;

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Its backbone consists of individual national teams in nearly 70 countries, and a common, comparable and combinable methodology, mainly based on the MARKAL / TIMES family of models, permitting the compilation of long term energy scenarios and in-depth national, multi-country, and global energy and environmental analyses.

ETSAP promotes and supports the application of technical economic tools at the global, regional, national and local levels.

Since its beginnings in 1972, the Electric Power Research Institute’s membership has grown to represent approximately 90% of the electricity generated in the United States and extends to more than 30 countries internationally.

The Electric Power Research Institute, Inc. (EPRI) conducts research, development, and demonstration (RD&D) relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organisation, EPRI brings together scientists and engineers as well as experts from academia and the industry to help address challenges in electricity, including reliability, efficiency, affordability, health, safety and environment.

EPRI’s work spans nearly every area of electricity generation, delivery and use, management and environmental responsibility, and provides both short- and long-term solutions in these research areas for the electricity industry, its customers and society.

ETSAP holds open workshops twice a year, to discuss methodologies, disseminate results, and provide opportunities for new and established model teams to engage with ETSAP to conduct in-depth national, multi-country, and global energy and environmental analyses.

As part of its outreach activities, ETSAP collaborates with many other research teams throughout the world, participates in various global forums (EMF 22, for example), and makes its Newsletter and Workshop Proceedings available online to the public at large.
2015 PROGRAMME COMMITTEE

Geoffrey Blanford
Electric Power Research Institute (EPRI)

Dr. Geoffrey Blanford is a leading expert in information, assessment and energy economy modeling. His research activities include development of energy models such as the MERGE model and the US-REGEN model with applications including international climate policy, electricity markets and decision-making under uncertainty. He was Program Director of the Energy Policy Division at Lawrence Berkeley National Laboratory, an International Fellow at the World Resources Institute, a Visiting Scholar at the University of Tokyo, and a Fulbright Scholar at the Institute of Energy Economics. He has a Ph.D. and an M.S. in Energy Systems from Stanford University.

Rabia Ferroukhi
International Renewable Energy Agency (IRENA)

Rabia Ferroukhi joined IRENA as Senior Policy Advisor in 2011. She is the Deputy Director of IRENA’s Energy Policy and Finance (KPFC) division and she leads the Assessment and Reporting Programme. Rabia has over 15 years of experience in the fields of energy, development and environment. She worked in both public and private sectors, including with governments, international organisations, research institutions and NGOs. Rabia holds a B.A. in Environmental Studies from the University of California, Santa Barbara and a Ph.D. in Economics from the American University in Washington, DC.

Dolf Gielen
International Renewable Energy Agency (IRENA)

Dolf Gielen is the director of the IRENA Innovation and Technology Centre in Bonn since the beginning of 2011. The International Renewable Energy Agency has a mandate to accelerate global renewable energy deployment. The Centre advises member countries in the fields of Renewables, Energy Efficiency and Electric Mobility. Dolf holds a PhD and an MSc in Engineering from the Technical University of Delft. He graduated with an MA in Environmental Sciences at the University of Utrecht, the Netherlands.

Asami Miketa
International Renewable Energy Agency (IRENA)

Asami Miketa is a Programme Officer with the IRENA’s Energy Policy and Finance (KPFC) division. Her main responsibilities include the development of regional renewable energy policy, provision of training and capacity building programs mainly in Africa and Asia and also contributed to several technical workshops. She has a Ph.D. from Tokyo University in 2002, while working with the Energy Program at International Institute for Applied Systems Analysis (IIASA) in Austria. In 2008, she joined the International Atomic Energy Agency (IAEA) as a Regional Technical Officer and was also appointed as the IAEA Division for Energy Cooperation at the IAEA headquarters.

Massimo Tavoni
Foundation Eni Enrico Mattei (FEEM)

Massimo Tavoni is a 2014-15 fellow at the Center for Advanced Studies of Behavioural Sciences (CASBS) at Stanford University, and associate professor at the Politecnico di Milano, Department of Management. He is also the deputy director of the Climate Change programme at FEEM (Foundation Eni Enrico Mattei). Massimo’s research is about modelling climate change mitigation policies and he was a lead author of the 5th assessment report of the IPCC, co-chair of the International Energy Workshop and deputy editor at Climatic Change. From 2007 to 2013 he was visiting senior research scientist at Columbia University’s Lenfest Center for Sustainable Energy (Earth Institute) in New York.

Sgouris Sgouridis
Masdar Institute (MI)

Sgouris Sgouridis is an Associate Professor at Masdar Institute of Science and Technology (MI). His research interests focus on understanding sustainable energy transitions using socio-technical systems modelling. He has worked on sustainable transportation systems and sustainable energy systems management. Sgouris is involved in the development of the Global Environmental Research Institute and the New Mobility concept, electric vehicle adoption, sustainable aviation and integrated energy systems. He is also interested in the development of the Sustainable Bioenergy Research Consortium and was head of the Centre for Sustainable Systems (2015-2016). Sgouris has also supported governmental and private organisations including the U.S. Department of Transportation, the Port Authority of Thessaloniki and the Helmeo Army. He holds a PhD in Engineering Systems (1997-2007), MSc in Technology and Policy and MSc in Transportation (1995-2001) and a B.S. (Hons.) in Civil & Env. Engineering (1990-1994, Aristotle University).

2015 International Energy Workshop

Bob van der Zwaan
Energy research Centre of the Netherlands (ECN)

Bob van der Zwaan is a senior scientist at the Policy studies department of the Energy research Centre of the Netherlands (ECN). Professor of Sustainable Energy Technology at the Faculty of the Science of the University of Amsterdam, and Adjunct Adjunct Professor of International Relations at Johns Hopkins University’s School of Advanced International Studies (SAIS) in Bologna. He is a co-founder of the International Energy Workshop (IEW), member of the Council of the Pugwash Conferences on Science and World Affairs, and lead author for Working Group II of the Intergovernmental Panel on Climate Change (IPCC). Bob held several visiting professorship and research positions at various higher educational and research institutions and has worked in economics (MPh, University of Cambridge, King’s College, physics (PhD, CERN/NIKHEF, University of Nijmegen, MSc, University of Utrecht) and international relations (GEECE, University of Geneva). His research includes the fields of energy and climate change, environmental economics and technological innovation.

2015 International Energy Workshop

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Laura Diaz Anadon
Laura Diaz Anadon is an Assistant Professor of Public Policy, Associate Director of the Science, Technology, and Public Policy program, Co-Principal Investigator of the Energy Technology Innovation Policy Research Group, and Member of the Board of the Beller Center for Science and International Security at the Harvard Kennedy School of Government (2015). Laura’s research interests are in energy policy and environment oriented technological progress and she teaches on energy innovation and policy analysis. She has advised policy makers internationally, and has worked as a consultant for various international organizations. In addition to her work on energy policy, she has published widely on various topics, both in technical and non-technical fields.

Ibrahim Babelli
Ibrahim Babelli is the Renewable Energy Team Leader and the Chief Strategist of King Abdullah City for Atomic and Renewable Energy (K.A.CARE). Prior to his current engagement, Ibrahim served as the Executive Director of the National Industrial Development Program, and steered the development of the National Industrial Strategy and its Implementation Plans for Saudi Arabia. Ibrahim has two patents in the oil industry. He has published widely on various topics, both in technical and non-technical fields.

Laura Cozzi
Laura Cozzi is the Deputy Head of the Directorate of Global Energy Economics at the International Energy Agency. Laura leads a team of fifteen analysts and is in charge of the quantitative analysis and modelling of the IEA flagship publication World Energy Outlook. Laura has been publishing in the World Energy Outlook, and led the WEO special reports on climate (2013), investment (2014) and Africa (2014). She has also been leading the directorate’s analyses on climate change and efficiency policies. Laura has advised policy makers on several important topics, including clean energy and hydrogen for over a decade. She has published widely on policy mechanisms and modelling tools that cut across a variety of environmental and economical models necessary for introducing atomic and renewables to the energy landscape of Saudi Arabia, as well as leading the implementation of the renewable energy roadmap recommended by K.A.CARE.

Carolyn Fischer
Carolyn Fischer is a Senior Fellow at Resources for the Future and currently a Marie Skłodowska-Curie Fellow at the Center for European Economic Research (Eni Enrico Mattei) (FEEM) in Venice, Italy. She has published widely on policy mechanisms and modelling tools that cut across a variety of environmental and economical models necessary for introducing atomic and renewables to the energy landscape of Saudi Arabia, as well as leading the implementation of the renewable energy roadmap recommended by K.A.CARE.

Carolyn holds a PhD in Economics from the University of Michigan at Ann Arbor. She is also a fellow of the CESifo Research Network and a member of Energy Canada (EC) Economics and Policy Research Network. She currently serves on the editorial boards of the Review of Environmental Economics and Policy and the International Review of Environmental and Resource Economics, as well as the scientific board of Economics and the economics advisory board of Environmental Defense Fund.

Franck Lecocq
Franck Lecocq is the CIRED director and professor of Smart Grids at Ecole Polytechnique Fédérale de Lausanne (EPFL). He is the Chairman of the International Energy Agency’s (IEA) Technical Cooperation Program, Co-Principal Investigator of the EU Horizon 2020 Energy Storage, and a member of the International Energy Agency’s (IEA) Electricity System Integration Advisory Committee. Franck has been a member of numerous international committees, including the Global Energy Storage, participates in working groups and committees within CIGRE, CIRED IET, IEEE and IEA. He has co-authored 4 books and published over 180 technical papers.

Goran Strbac
Goran Strbac is a Professor of Energy Systems at Imperial College with extensive experience in advanced modelling and analysis of operation, planning, security and economics of energy systems. He led the development of novel advanced analysis approaches into methodologies that have been extensively used to inform industry, governments and regulatory bodies about the role and value of emerging new technologies and systems in supporting cost effective evolution to smart lower carbon future. Goran is a member of the Steering Committee of the SmartGrids European Technology Platform, co-chair of EU WG on Sustainable Districts and Systems. Director of the UK Centre for Future Gas, Energy Storage, participates in working groups and committees within CIGRE, CIRED IET, IEEE and IEA. He has co-authored 4 books and published over 180 technical papers.

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The 34th Edition of the International Energy Workshop will take place at the Dusit Thani Abu Dhabi Hotel.

**Address:**
925 Muroor Street, P.O. Box 52799, Abu Dhabi, United Arab Emirates

**Phone:** +971 (2) 698 8888
**Fax:** +971 (2) 698 8899

The Registration and Information Desk will be open at the Skydome Pre-Function Area during these hours:

- **Tuesday, 2 June:** 3:00 p.m. – 7:00 p.m.
- **Wednesday, 3 June:** 8:30 a.m. – 6:00 p.m.
- **Thursday, 4 June:** 8:30 a.m. – 6:00 p.m.
- **Friday, 5 June:** 8:30 a.m. – 4:00 p.m.

If you have any questions, please feel free to visit the Registration and Information Desk, or contact the workshop secretariat:

- **Sina Tabrizi, STabrizi@irena.org, +971504461882 (UAE)**
- **Fungai Sandamu-Gueldemann, FSandamu@irena.org, +4915221530237 (Germany)**

All participants are required to wear the IEW 2015 badge at all times.

**Attendees with the badge will have access to all plenary sessions, parallel sessions, dinner reception on Thursday night, excursion on Friday, as well as the coffee breaks and lunches.**

**Lunches and Coffee Breaks**

Lunch and coffee will be served at the foyer area of the ballroom. For the lunch time seminars, finger food will be available at the seminar room.

**Dinner Reception**

- **4 June 2015, 6:30 p.m. – 8:30 p.m.**

A dinner reception is scheduled at the Urban Kitchen at the Dusit Thani Abu Dhabi Hotel.

**Visit to the Grand Mosque and Safari Excursion**

- **5 June 2015, 5:00 p.m. – 10:30 p.m.**

An excursion to the Sheikh Zayed Mosque followed by an evening buffet dinner at Al Wathba Desert Camp is planned. A direct bus to the airport will be organised from the Camp for those who are taking flights after midnight.

- **5:00 p.m.** – A bus will depart from the Dusit Thani Abu Dhabi Hotel to the Sheikh Zayed Grand Mosque
- **6:30 p.m.** – Departure to Al Wathba Desert Camp
- **9:00 p.m.** – Departure from the camp to the Abu Dhabi International airport
- **10:00 p.m.** – Departure from the camp to Dusit Thani Abu Dhabi Hotel
- **10:30 p.m.** – Arrival at the Dusit Thani Abu Dhabi Hotel

**Transportation**

- Please note that participants will be responsible for organising their own transportation to and from the hotel and airport.
- The distance between the Abu Dhabi International Airport and the city centre is approximately 20 km (30 minutes) and costs AED 70 by taxi.
- From Dubai Airport to Abu Dhabi, it is 180 km (2 hours) at a cost of AED 350.
- Please make sure to change your existing currency to UAE dirhams (AED) upon arrival. The airport has a number of ATMs accepting most major cards.

**Useful Information**

- **Climate:** June in Abu Dhabi is hot and humid with maximum temperatures averaging above 38 °C (100 °F). However, air conditioning can make it relatively chilly indoors, so it is advisable to dress accordingly.
- **Electrical Current:** 220-240 volts- (3 pin plug/UK).
- **Currency:** The local currency in the UAE is the Dirham (AED). USD 1 = AED 3.67, EUR 1 = AED 4.98
- **Time Zone:** GMT+4 - please adjust for summer time.
- **Telephone Use:** We advise you to consult with your telephone operator to verify that your mobile phone device works in Abu Dhabi. Most major cell phone operators have full mobile and data service.
CONFERENCE FORMAT

Background and Structure
The 34th edition of the IEW includes three plenary sessions in the mornings and more than 90 presentations in 32 parallel sessions in the afternoons, focusing on a wide array of topics. In addition, three lunchtime seminars and one evening seminar will be organised during the three days. The ETSAP regular workshop will take place preceding the IEW on 2 June.

Instructions to Chairpersons
Each session has been assigned a chairperson. Every session has two to five papers, and each paper has a total time slot of 25 minutes. This includes a presentation of 20 minutes followed by 5 minutes for questions and discussion. We ask the chairpersons to observe the start and closure time of each session, and to be strict on the time allocation as a way to give equal opportunity to all speakers.

All rooms are equipped with a projector and a laptop computer for PowerPoint presentations. Each room also has a host who will make sure that presentations are loaded and ready to run. We advise the chairperson to arrive a few minutes before the start.

Instructions to Speakers in Parallel Sessions
We have reserved 20 minutes for presentation of your paper followed by 5 minutes of questions and discussion. We kindly ask all speakers to strictly adhere to their time allocation in consideration towards other speakers and participants and ensure smooth running of the sessions.

All conference rooms will be equipped with a projector and computer for PowerPoint presentations. Each room will have a host who can provide some basic support. We recommend that you arrive a few minutes before the session begins and make contact with the host and the chair of the session.

We would like to request that your presentation be loaded to the IEW 2015 website no later than 1 June. This will ensure the timely running of the paper presentations and avoid wasting time loading presentations during the sessions.

PROGRAMME OVERVIEW

Wednesday, 3 June 2015
Registration
8:30 a.m. – 9:00 a.m.
Opening
9:00 a.m. – 9:30 a.m.
Plenary Session 1
9:30 a.m. – 12:00 p.m.
Lunch / Lunchtime Seminar
12:00 p.m. - 1:30 p.m.
Parallel Session 1
1:30 p.m. – 3:15 p.m.
Coffee Break
3:15 p.m. – 3:45 p.m.
Parallel Session 2
3:45 p.m. – 4:35 p.m.
Parallel Session 3
4:45 p.m. – 6:00 p.m.
Evening Seminar
6:15 p.m. – 7:00 p.m.

Thursday, 4 June 2015
Plenary Session 2
9:30 a.m. – 12:00 p.m.
Lunch / Lunchtime Seminar
12:00 p.m. - 1:30 p.m.
Parallel Session 4
1:30 p.m. – 3:15 p.m.
Coffee Break
3:15 p.m. – 3:45 p.m.
Parallel Session 5
3:45 p.m. – 4:35 p.m.
Parallel Session 6
4:45 p.m. – 6:00 p.m.
Dinner Reception
6:30 p.m. – 8:30 p.m.

Friday, 5 June 2015
Plenary Session 3
9:30 a.m. – 12:00 p.m.
Lunch / Lunchtime Seminar
12:00 p.m. - 1:30 p.m.
Parallel Session 7
1:30 p.m. – 2:50 p.m.
Excursion
5:00 p.m. – 10:30 p.m.
Wednesday, 3 June 2015

Opening Session
9:00 a.m. – 9:30 a.m.
Room: Onyx 1 & 2

Moderator: Timothy Hurst, Chief Communications Officer, International Renewable Energy Agency

Opening Remarks: Adnan Z. Amin, Director-General, International Renewable Energy Agency

Introduction to the 34th Edition of International Energy Workshop: Geoffrey Blanford, Electric Power Research Institute

Plenary Session 1: Low-Carbon Technologies and R&D

9:30 a.m. – 10:10 a.m.
Global Energy Transition – Modelling Challenges
Dolf Gielen, Director, International Renewable Energy Agency Innovation and Technology Centre (Bonn, Germany)

Role and Value of Flexible Technologies in Supporting Cost Effective Transition to Lower Carbon Energy Future
Goran Strbac, Professor of Electrical Energy Systems, Imperial College (London, UK)

10:10 a.m. – 10:50 a.m.
Coffee Break

10:50 a.m. – 11:20 a.m.
The Future of Energy Technologies and the Role of Policy
Laura Diaz, Assistant Professor of Public Policy at Harvard Kennedy School, Harvard University (Cambridge, USA)

Lunch Break
12:10 p.m. – 1:10 p.m.
Room: Onyx 3

Lunchtime Seminar
Parallel A
Room: Onyx 3

Modelling Methodologies
Chair: Nadia Maizi

Renewable Energy Prospects
Chair: Steve Griffiths

Abatement Costs
Chair: Nico Bauer

1. Fossil Fuel Withdrawal in a Baseline Projection of CO2 Emissions for South Africa
   Bruno Men vers, Energy Research Centre, University of Cape Town

2. Overlapping International Green R&D Agreements, MOU with UCL, UCL Energy Institute

3. Invention, Innovation and Diffusion in the European Wind Power Sector
   Jonas Graflund, Lulea University of Technology

4. Decision-making under Uncertainty: An Australian Electricity Case Study
   Luke Beaumont, CSIRO

   Elmar Kriegler, Potsdam Institute for Climate Impact Research

Parallel B
Room: Emerald 1

1. Global Mitigation of Non-CO2 Greenhouse Gases: Marginal Abatement Costs Curves and Abatement Potential through 2030
   Shaun Ragnauth, U.S. Environmental Protection Agency

2. Road Transport Energy Demand and CO2 Emissions in APEC Economies through 2040
   Atit Tippichai, Asia Pacific Energy Research Centre

   Steve Pye, University College London

   Michiel Hekkenberg, ECN Energy Research Centre of the Netherlands

5. Welfare and Sustainability of Urban Transport Policies: The Case of Spanish Metropolitan Areas
   Alessandro Danesin, Instituto de Investigacion Tecnologica, Universidad Pontificia Comillas

Parallel C
Room: Emerald 2

1. GHG Emissions
   Chair: Nawfal Saadi

2. Transport Sector
   Chair: Adrian Stone

3. Methane Emissions: What are the Main Drivers Affecting Regional Differences?
   Michele Maurizio Malpede, Fondazione Eni Enrico Mattei

4. Carbon Tax, Spatial Heterogeneity and Distribution: Evidences from the French Energy Consumption
   Kirat Djamel, University of Orleans

5. National Energy Outlook of the Netherlands 2014
   Michiel Hekkenberg, ECN Energy Research Centre of the Netherlands

Parallel D
Room: Sapphire 1

1. A Multi-Model Regional Decomposition of CO2 Emissions: What are the Main Drivers Affecting Regional Differences?
   Michele Maurizio Malpede, Fondazione Eni Enrico Mattei

2. Carbon Tax, Spatial Heterogeneity and Distribution: Evidences from the French Energy Consumption
   Kirat Djamel, University of Orleans

   Steve Pye, University College London

4. The Transportation Sector as a Lever for Reducing Long-term Chinese Mitigation Costs
   Amel Cherif Mercier, Centre International de Recherche en Environnement et Development

5. Welfare and Sustainability of Urban Transport Policies: The Case of Spanish Metropolitan Areas
   Alessandro Danesin, Instituto de Investigacion Tecnologica, Universidad Pontificia Comillas

Parallel E
Room: Sapphire 2

1. Fostering Photovoltaic Technologies in Mediterranean Cities: Consumers Demand and Social Acceptance
   Vania Statzu, Department of Social Sciences and Institutions, University of Cagliari

2. Abatement Performance Evaluation of Climate Policy in China - A Study Based on Regional Integrated Assessment Model
   Ge Zhu, CEEP, Institute of Policy and Management, Chinese Academy of Sciences

3. Overlapping International Green R&D Agreements, MOU with UCL, UCL Energy Institute

4. Decision-making under Uncertainty: An Australian Electricity Case Study
   Luke Beaumont, CSIRO

   Elmar Kriegler, Potsdam Institute for Climate Impact Research
3 June, 2015 — Sessions 2 | 3:45 p.m. — 4:35 p.m.

**Parallel A**

**Room: Onyx 3**

**Smart Energy Systems**

Chair: Brian O’Gallachoir

  - Osako Kiyomasa, The University of Tokyo

**Biо-Energy (1)**

Chair: Maryse Labriet

- The Political Economy of Joining in the Global Value Chain (GVC) of Bioenergy.
  - Nazia Mintz-Habib, University of Cambridge
- Large-scale Integration of Variable Renewables: Higher Temporal Analysis with Optimisation Model. Considering Hydrogen Storage and Rechargeable Battery.
  - Ryoichi Komiyama, The University of Tokyo

**Modeling Energy and Technology Choices in Smart Regional Energy Systems**

Chair: Brian O’Gallachoir

- Modeling Growth Scenarios for Biofuels in South Africa’s Transport Sector.
  - Adrian Stone, Energy Research Centre, University of Cape Town
- Modeling Energy and Technology Choices in Smart Regional Energy Systems.
  - Alain Haurie, ORDECSYS

**Parallel B**

**Room: Emerald 1**

**Parallel C**

**Room: Emerald 2**

**Modeling Intermittency**

Chair: Brian O’Gallachoir

- Bridging the Gaps: Representing the System Integration Challenge of Wind and Solar in Integration Assessment Models.
  - Robert Petzold, Potsdam Institute for Climate Impact Research

**Bio-Energy (2)**

Chair: Maryse Labriet

- The Potential for Improved Cookstoves to Reduce CO2 Emissions.
  - Adrian Whiteman, International Renewable Energy Agency
- The Temporal Dimension in Bottom-Up Energy System Planning Models — Selecting Representative Days.
  - Bertrand Vincent, Laboratoire d’Economie Forestière, Climate Economics Chair

**Macroeconomic Impacts (1)**

Chair: Babonneau Frederic

- The “Second Dividend” and the Demographic Structure.
  - Frederic Gonand, University of Paris-Dauphine
- Including System Integration of Variable Renewable Energies (VRE) in a Constant Elasticity of Substitution Framework: The Case of the WITCH Model.
  - Samuel Garcia, Fondazione Enrico Mattei and Centro Euro-Mediterraneo sui Cambiamenti Climatici

3 June, 2015 — Sessions 3 | 4:45 p.m. — 6:00 p.m.

**Parallel D**

**Room: Sapphire 1**

**Climate Policy (1)**

Chair: Geoffrey Blanford

- Assessing the Risks of the 2°C Target — How Developing Climate Change Mitigation Options and Critical Technologies Boosts Risk Trade-offs.
  - Christoph von Schlesch, Mercator Research Institute on Global Commons and Climate Change

**Bio-Energy (3)**

Chair: Maryse Labriet

  - Adrian Whiteman, International Renewable Energy Agency
- Assessing the Risks of the 2°C Target — How Developing Climate Change Mitigation Options and Critical Technologies Boosts Risk Trade-offs.
  - Christoph von Schlesch, Mercator Research Institute on Global Commons and Climate Change

**Macroeconomic Impacts (2)**

Chair: Babonneau Frederic

- The Inspection of CO2 Emission Targets of Industry Sector in Taiwan.
  - Wei-Chen Liao, Institute of Nuclear Energy Research
- Achieving the 2°c Target Will Not be Facilitated by Relying on a Global Abundance of Natural Gas.
  - Jerôme Hilaire, Potsdam Institute for Climate Impact Research

**Parallel E**

**Room: Sapphire 2**

**Climate Policy (2)**

Chair: Geoffrey Blanford

- Pathways to Deep Decarbonisation for Russia.
  - Vladimir Potashnikov, Russian Presidential Academy of National Economy and Public Administration

**Decarbonisation Pathways (1)**

Chair: Babonneau Frederic

- Achieving the 2°C Target Will Not be Facilitated by Relying on a Global Abundance of Natural Gas.
  - Jerôme Hilaire, Potsdam Institute for Climate Impact Research
- Effect of the Energy and Climate Policies in the Future Mexican Electricity System.
  - Mexa Cabal, CEMAT

**Decarbonisation Pathways (2)**

Chair: Geoffrey Blanford

- The Inspection of CO2 Emission Targets of Industry Sector in Taiwan.
  - Wei-Chen Liao, Institute of Nuclear Energy Research
- Achieving the 2°C Target Will Not be Facilitated by Relying on a Global Abundance of Natural Gas.
  - Jerôme Hilaire, Potsdam Institute for Climate Impact Research

**Economics of Transiting to Renewable Energy in Morocco: A General Equilibrium Analysis**

Chair: Villena Liao, Institute of Nuclear Energy Research
THURSDAY, 4 JUNE 2015

Plenary Session 2: Gulf Energy Landscape in the Context of the Global Economy

Room: Onyx 1&2

Moderator: Rabia Ferroukhi (Head of Policy Unit and Deputy Director, Knowledge, Policy and Finance, International Renewable Energy Agency)

9:30 a.m. – 10:10 a.m.
The Needs and Contribution of Fossil Fuel Exporters in the Context of a Global Sustainable Energy Transition
Sgouris Sgouridis, Associate Professor of Engineering Systems and Management, Masdar Institute (Abu Dhabi, UAE)

10:10 a.m. – 10:50 a.m.
The Gulf Exporter’s Paradox: Should Cheaper Oil Abroad Mean More Expensive Energy at Home?
Glada Lahn, Senior Research Fellow, Chatham House (London, UK)

10:50 a.m. –11:20 a.m.
Coffee Break

11:20 a.m. – 12:00 p.m.
How Close are we to Mitigating Climate Change? A Perspective from the GCC Region.
Ibrahim Babelli, Chief Strategist, King Abdullah City for Atomic and Renewable Energy (Riyadh, Saudi Arabia)

Lunch Break

12:10 p.m. – 1:10 p.m.
IRENA Lunchtime Seminar (1)
Room: Onyx 3
Addressing Variable Renewable Energy in Long-Term Planning (AVRIL)
2015 International Energy Workshop

22

4 June, 2015 — Session 4 | 1:30 p.m. — 3:15 p.m.

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<td>Investment for Sustainable Development</td>
<td>Chair: Hamed Ghoddusi</td>
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<td>Delta learning curve and LCOE Decomposition of Onshore Wind</td>
<td>Who sets Eminence for Electrification and Wind?</td>
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<td>Ruyuo Ana, Institute of Development Studies</td>
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<td>Bending the Learning Curve</td>
<td>New Approach to Analyze the Third Party of Renewable Energy Technologies Via a Bottom-Up Energy System Model: Focus on Solar and Wind Energy</td>
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<td>Small States, Big Effect? Oil Price Shocks and Economic Growth in Small Island Developing States</td>
<td>Oil-Shale Watering and BECCS: Are Carbon Dioxide Removal Technologies Complements or Substitutes?</td>
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<td>Jessica Strefler, Potsdam Institute for Climate Impact Research</td>
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<td>Alrick Campbell, Australian National University</td>
<td>The geographical contribution of US Energy System Decarbonisation Costs and the Implications for Utility Companies, Governments and Communities</td>
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<td>Mario Lebvre, Chaemers University of Technology</td>
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<td>Giacomo Schwarz, ETH Zurich</td>
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<td>Francis Li, UCL Energy Institute</td>
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Parallel A  
Room: Onyx 3

**Economics of VRE**
Chair: Alain Haurie

- **Modelling the Economics of intermittent Energy**
  Daniel Ambach, European University Viadrina
- **Africa Infrastructure Development (1)**
  Liv Lundberg, Chalmers University of Technology
- **African Clean Energy Vision: Regional Integration to Promote Renewable Energy-Fueled Growth**
  Nawaf Saadi, International Renewable Energy Agency
- **Natural Resource Management**
  Claire Gavard, Fondazione Eni Enrico Mattei and EMCC

Parallel B  
Room: Emerald 1

**Africa Infrastructure Development (1)**
Chair: Tom Kober

- **Modelling the Economics of intermittent Energy**
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Parallel C  
Room: Emerald 2

**Climate Policy Europe (1)**
Chair: Socrates Kypreos

- **Impact of Uncertain CCS Deployment on EU Climate Negotiations**
  Babonneau Frederic, ORDECSYS and EPFL
- **Technological Uncertainty in Meeting Europe’s Decarbonisation Goals**
  Johannes Bolen, CRU

Parallel D  
Room: Sapphire 1

**Climate Policy Europe (2)**
Chair: Socrates Kypreos

- **Energy Demand (1)**
  Chair: David Stern
- **Border Carbon Adjustment and Trade Retaliation: What Would be the Cost for the European Union?**
  Stephanie Monjon, Université Paris Dauphine
- **Natural Resource Management**
  Baltasar Manzano, Universidad de Vigo and KAPSARC

Parallel E  
Room: Sapphire 2

**Climate Policy Europe (2)**
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- **Natural Resource Management**
  Baltasar Manzano, Universidad de Vigo and KAPSARC

4 June, 2015 — Sessions 5 | 3:45 p.m. — 4:35 p.m.

**Wind Power Forecasting**
Chair: Nicolas Fichaux

- **Using the latest Method for Space-time Short-term Wind Speed Predictions**
  Daniel Ambach, European University Viadrina
- **The Role of Natural Gas in Battening South Africa’s Energy Trilemma**
  Christoffe Oostenbroek, European University Viadrina
- **Using the Lasso Method for Space-time Short-term Wind Speed Predictions**
  Daniel Ambach, European University Viadrina
- **The Effect of Mirrlees Spatial Variability of Wind on Estimation of Technical and Economic Wind Potential**
  Kenneth Karlsson, Technical University of Denmark
- **Least Cost Energy Supply Model for a Multiple Scenario Analysis of Northern Africa**
  Olivier Broad, KTH Royal Institute of Technology
- **STRATEGIES FOR SPACE-TIME SHORT-TERM WIND POWER FORECASTING**
  Daniel Ambach, European University Viadrina
- **African Clean Energy Vision: Regional Integration to Promote Renewable Energy-Fueled Growth**
  Nawaf Saadi, International Renewable Energy Agency
- **Natural Resource Management**
  Claire Gavard, Fondazione Eni Enrico Mattei and EMCC

4 June, 2015 — Sessions 6 | 4:45 p.m. — 6:00 p.m.

**Wind Power Forecasting**
Chair: Nicolas Fichaux

- **Using the latest Method for Space-time Short-term Wind Speed Predictions**
  Daniel Ambach, European University Viadrina
- **The Role of Natural Gas in Battening South Africa’s Energy Trilemma**
  Christoffe Oostenbroek, European University Viadrina
- **Using the Lasso Method for Space-time Short-term Wind Speed Predictions**
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  Nawaf Saadi, International Renewable Energy Agency
- **Natural Resource Management**
  Claire Gavard, Fondazione Eni Enrico Mattei and EMCC
FRIDAY, 5 JUNE 2015

Plenary Session 3: International Climate Policy – Road to Paris

Room: Onyx 1&2

Moderator: Geoffrey Blanford (Electric Power Research Institute)

9:30 a.m. – 10:10 a.m.  Energy Mitigation Strategies: Insights from the World Energy Model
Laura Cozzi, Deputy Head of Directorate for Global Energy Economics, International Energy Agency (Paris, France)

10:10 a.m. – 10:50 a.m.  Carbon Pricing and Links to Sustainable Development
Franck Lecocq, Director, Centre International de Recherche sur l’Environnement et le Développement (Nogent-sur-Marne, France)

10:50 a.m. – 11:20 a.m.  Coffee Break

11:20 a.m. – 12:00 p.m.  The Road After Paris: the Role of Technology Policies in Supporting Future Commitments
Carolyn Fischer, Senior Fellow, Resources for the Future (Washington, DC, USA), and Marie Skłodowska–Curie Fellow of the European Commission at the Fondazione Eni Enrico Mattei (Venice, Italy)

Lunch Break

12:10 p.m. – 1:10 p.m.  IRENA Lunchtime Seminar (2)
Room: Onyx 3
Gateway to Knowledge on Renewable Energy – Global Atlas and the True Cost of Renewables
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<td>Green Paradox</td>
<td>Green Paradox or Green Unorthodoxy?</td>
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<td>Milton Dyes, Center of Economic Research, ETH Zurich</td>
<td>Helen (Xiangyang) Xu, China University of Mining and Technology</td>
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<td>The Effect of Financial Constraints on Energy Climate Scenarios</td>
<td>Long-Run Estimates of Intertemporal and Intersectoral Elasticities</td>
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<td>The Role of Resource and Market Access on Household Fuel Switching Behaviour in Rural and Non-Urban Kenya</td>
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This book brings together, for the first time in one volume, a range of recent advancements in OSeMOSYS, applications, interfaces and forthcoming milestones.

Recent advancements will include code to model various ancillary services, changes in operating characteristics of power plants as a function of load, energy security indexes and smart grids, and a simple excel interface for simplified country level modelling.

The meeting will report on applications, including modelling efforts for the IEA-ETSAP multilateral technology studies of good modelling practice on a national and international scale from countries for the AfDB, as well as energy security in the Baltics. The meeting will report on applications, including modelling efforts for the IEA-ETSAP multilateral technology studies of good modelling practice on a national and international scale from countries for the AfDB, as well as energy security in the Baltics.

Forthcoming milestones include the development of official support for national governments, including key applications that rely on LEAP as the primary interface.

Members of the community and all others are most welcome to attend.

This book presents methodologies and case studies to demonstrate how energy systems models are used to support energy and climate mitigation policy decision-making at the national, multi-country and global level.

It provides a critical analysis of the rich and varied applications of energy systems software. It is an ideal teaching tool and excellent entry into the world of optimisation tools.