



CLEAN ENERGY MINISTERIAL



World Business Council for
Sustainable Development



U.S. DEPARTMENT OF
ENERGY



WORLD
ECONOMIC
FORUM

COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

POLICIES IN SUPPORT OF THE GLOBAL SCALE-UP OF RENEWABLE ENERGY

8:30am-10:15am

6 April 2011

Abu Dhabi

OVERVIEW

Renewable energy capacity has nearly doubled over the past five years from 160 GW in 2004 to 305 GW in 2009 (excluding large hydropower)¹, due in large part to supportive policies. As of 2010, more than 100 countries had targets and/or incentives for renewable energy (up from 55 in 2005)². But despite this momentum, the business case for renewable energy remains challenging as upfront capital costs at both utility and residential scales can be prohibitive without strong policy support. And where renewable energy is deploying successfully, integrating intermittent renewables into power grids will become increasingly challenging as their market share grows.

DISCUSSION TOPICS

This roundtable will focus on three interconnected topics: (a) learning from leading renewables policy success stories; (b) technology developments and future prospects to place renewables at the heart of national energy strategies; and, (c) how international collaboration through the Clean Energy Ministerial (CEM) platform can best accelerate ambitious national renewables development. Key questions to consider in addressing these three topics include:

- How can CEM Ministers support the continued scale-up of renewables when many governments are facing increasingly sharp fiscal constraints?
- What share of electricity can intermittent renewables deliver given current technologies? What is the role of policy in supporting rapid deployment in the near-term? What is the role of R&D to enable high-penetration scenarios in the longer-term?
- Given limits on the private sector's willingness to invest in long-term transformative technologies, how do current public R&D investments by CEM governments match up against the areas of greatest need?
- What is the role for renewable energy in emerging economies given high current costs relative to other grid-connected alternatives? Can renewable energy truly scale in off-grid energy access applications where they are already often cost-competitive?

¹ "Renewables Global Status Report 2010", Renewable Energy Policy Network for the 21st Century (REN21), September 2010. Available at: http://www.ren21.net/Portals/97/documents/GSR/REN21_GSR_2010_full_revised%20Sept2010.pdf.

² Ibid.

- How can CEM Ministers cooperate with each other and the private sector to advance renewables? For example, would better information on national and sub-national deployment policies help global manufacturers plan for scale-up?

MODERATOR AND CO-CHAIRS

Moderator

- **Simon Zadek**, Senior Fellow, Global Green Growth Institute; Non-Resident Senior Fellow, J. F. Kennedy School for Government, Harvard University

Co-Chairs

- **Anders Eldrup**, CEO, DONG Energy
- **Lykke Friis**, Minister, Ministry of Climate and Energy, Denmark
- **Fabricio Hernández**, Secretary of State for Energy, Ministry of Industry, Tourism, and Commerce, Spain
- **Dipuo Peters**, Minister, Department of Energy, South Africa
- **Tulsi Tanti**, Chairman and Managing Director, Suzlon

FORMAT

The session aims to bring a specific subject area into focus in an interactive setting. There are no speeches but rather a moderated conversation in which all participants are encouraged to share their views. This will be a private discussion held under the Chatham House Rule.

OBJECTIVE

The objective for the discussion is to identify a small number of specific recommendations for action, which will be communicated to the Ministers, as to how their governments can support the global scale-up of renewable energy, particularly through cooperation in the CEM context.

GUIDELINES FOR ALL PARTICIPANTS

- Follow the direction of the moderator in terms of session format, speaking order, and time management
- Approach the topic informally and conversationally (no prepared presentations)
- **Keep comments concise (maximum of 1-2 minutes per intervention)**

SESSION STRUCTURE AND FLOW

08:30 - 08:35 Opening remarks from Moderator
Moderator welcomes Co-Chairs

08:35 - 09:00 **Emerging Economies and Renewable Energy**
Open discussion with lead-off comments by:

- Dipuo Peters, Minister, Department of Energy, South Africa
- Tulsi Tanti, Chairman and Managing Director, Suzlon

09:00 - 09:25 **Key Lessons from Success Stories**
Open discussion with lead-off comments by:

- Fabricio Hernández, Secretary of State for Energy, Ministry of Industry, Tourism, and Commerce, Spain
- Lykke Friis, Minister, Ministry of Climate and Energy, Denmark

09:25 - 09:50 Prospects for the Massive Scale-Up of Renewable Energy

Open discussion with lead-off comments by:

- Anders Eldrup, CEO, DONG Energy
- Paolo Frankl, Head of Renewable Energy Division, International Energy Agency (IEA)

09:50 - 10:10 Opportunities for Cooperation among CEM Governments and with the Private Sector

Open discussion with lead-off comments by:

- Adnan Amin, Interim Director General, International Renewable Energy Agency (IRENA)

10:10 - 10:15 Moderator summarizes main messages and thanks participants to close session



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- **Dipuo Peters**, Minister, Department of Energy, South Africa
- **Tulsi Tanti**, Chairman and Managing Director, Suzlon

PARTICIPANTS

- **Eli Aamot**, Vice President R&D NEW Energy and HSE, Statoil
- **Adnan Amin**, Interim Director General, International Renewable Energy Agency (IRENA)
- **Miguel Arrarás**, Managing Director Solar PV Development, Acciona
- **Henri Backman**, Ministerial Advisor, Ministry of Employment and the Economy, Finland
- **German Bejarano**, Director of International Institutional Relations & Assistant to the CEO, Abengoa
- **Alex Bettencourt**, Managing Director, SmartGrid Canada
- **Christopher Burghardt**, Vice President Public Affairs EMEA, First Solar
- **Willie Donaghy**, Executive Director, SmartGridIreland
- **Paolo Frankl**, Head of Renewable Energy Division, International Energy Agency (IEA)
- **Esa Harmala**, Director General, Energy Department, Ministry of Employment and the Economy, Finland

- **Per Rune Henriksen**, State Secretary, Ministry of Petroleum and Energy, Norway
- **Martin Hoffman**, Deputy Secretary, Department of Resources, Energy, and Tourism, Australia
- **Lars Josefsson**, President, EURELECTRIC; Former CEO, Vattenfall
- **Daniel Kammen**, Chief Technical Specialist for Renewable Energy and Energy Efficiency, The World Bank
- **Namhoon Kang**, Director General for Energy Policy, Ministry of Knowledge Economy, Korea
- **Alex Katon**, Head of Strategy – International Power, GDF Suez Energy Middle East & North Africa
- **Helen Mountford**, Deputy Director of the Environment Directorate, Organisation for Economic Co-operation and Development (OECD)
- **Mary O’Kane**, Chair, Australian Centre for Renewable Energy
- **Jeremy Oppenheim**, Director, McKinsey
- **Gene Rodrigues**, Director, Customer Energy Efficiency and Solar, Southern California Edison; Chair, Consortium for Energy Efficiency
- **Iñigo Sabater**, Vice President for Government Relations South Europe, Middle East, and Africa, Vestas Mediterranean
- **Gus Schellekens**, Director, Sustainability and Climate Change Team, PricewaterhouseCoopers
- **Ashok Sethi**, Vice President, The Tata Power Company Ltd.
- **Song Dengyuan**, Chief Technology Officer, Yingli Group
- **Marc Spitzer**, Commissioner, Federal Energy Regulatory Commission
- **Sun Haiyan**, Vice President, ChangZhou Trina Solar Energy Co.
- **Graeme Sweeney**, Executive Vice President, CO₂, Shell CO₂, Shell International Petroleum Company Limited
- **Wan Gang**, Minister, Ministry of Science and Technology, China
- **Frank Wouters**, Director, Masdar Power
- **Zhang Zhihong**, Deputy Director General, Department of High and New Technology Development and Industrialization, Ministry of Science and Technology, China



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INNOVATIVE TECHNOLOGIES AND BUSINESS MODELS FOR ENERGY EFFICIENCY

8:30am-10:15pm

6 April 2011

Abu Dhabi

OVERVIEW

Technological change, innovative business models, and government policy are all critical elements of the push for progress towards greater energy efficiency. This session focuses on understanding linkages between activities in these areas and opportunities for synergistic action to accelerate progress.

Rapid advances in electronics and information technology, including smart grid technologies, are enabling a variety of new energy savings opportunities. As new possibilities arise, companies are working to identify creative business models to tap this potential. Governments are also working to promote efficiency through policies ranging from appliance standards to procurement programs and R&D programs. In this context, there are a number of opportunities for public-private cooperation and government policy that enable private-sector driven progress on efficiency.

DISCUSSION TOPICS

- What innovative approaches can the Clean Energy Ministerial (CEM) dialogue foster to advance efficiency (e.g., cooperative work on minimum appliance and equipment standards)?
- What are the most promising business models to move end-users towards devices and systems that beat minimum standards and/or to encourage energy-saving behavioral change? What can CEM governments do to enable private-sector innovation in this sector?
- What are the priorities for R&D on advanced efficiency technologies to propel the next wave of efficiency businesses?

MODERATOR AND CO-CHAIRS

Moderator

- **Bernice Lee**, Research Director – Energy, Environment, and Resource Governance, Chatham House

Co-Chairs

- **Guido Bartels**, General Manager, Global Energy & Utilities Industry, IBM; Chairman, Global Smart Grid Federation

- **Steven Chu**, Secretary, Department of Energy, United States
- **Joan MacNaughton**, Senior Vice President, Power and Environmental Policies, Alstom Power
- **Daniel Yates**, CEO and Founder, OPOWER

FORMAT

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OBJECTIVE

The objective for the discussion is to identify a small number of specific recommendations for action, which will be communicated to the Ministers, as to how their governments can support policy and public-private cooperation that enable rapid energy efficiency gains, particularly through cooperation in the CEM context.

GUIDELINES FOR ALL PARTICIPANTS

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- **Keep comments concise (maximum of 1-2 minutes per intervention)**

SESSION STRUCTURE AND FLOW

08:30 - 08:35 Opening remarks from Moderator
Moderator welcomes Co-Chairs

08:35 - 08:10 **Opportunities for the CEM Dialogue to Foster Innovative Approaches to Efficiency**

Open discussion with lead-off comments by:

- Steven Chu, Secretary, Department of Energy, United States
- Ajay Mathur, Director General, Bureau of Energy Efficiency, Ministry of Power, India

09:10 - 09:40 **Innovative Business Models for Energy Efficiency**

Open discussion with lead-off comments by:

- Guido Bartels, General Manager, Global Energy & Utilities Industry, IBM; Chairman, Global Smart Grid Federation
- Daniel Yates, CEO and Founder, OPOWER

09:40 - 10:10 **R&D Priorities on Advanced Technologies for Energy Efficiency**

Open discussion with lead-off comments by:

- Joan MacNaughton, Senior Vice President, Power and Environmental Policies, Alstom Power
- Steven Chu, Secretary, Department of Energy, United States

10:10 - 10:15 Moderator summarizes main messages and thanks participants to close session



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- **Daniel Yates**, CEO and Founder, OPOWER

PARTICIPANTS

- **Edward Abbo**, CEO, C3
- **Kateri Callahan**, President, Alliance to Save Energy
- **Sheryl Carter**, Co-Director, Energy Program, Natural Resources Defense Council (NRDC)
- **Paul Chambers**, Head, International Low Carbon Technology, International Energy and Climate Change Directorate, Department of Energy and Climate Change, United Kingdom
- **Amit Chatterjee**, Founder and CEO, Hara
- **Bo Diczfalusy**, Director, Directorate of Sustainable Energy Policy and Technology, International Energy Agency (IEA)
- **José María Figueres**, Managing Partner, IJ Partners; President of Costa Rica (1994-1998)
- **Livio Gallo**, Networks and Infrastructures Director, Enel
- **Enrique Gomez-Junco**, President, Optima Energía

- **Mayur Karmarkar**, Director, Sustainable Energy – Asia, International Copper Association Ltd.
- **Ja-Kyun Koo**, CEO and President, LS Industrial Systems; Chairman, Korea Smart Grid Association
- **Ajay Mathur**, Director General, Bureau of Energy Efficiency, Ministry of Power, India
- **Pedro Miranda**, Corporate Vice President, Siemens
- **Roland Risser**, Program Manager, Building Technologies Program, Energy Efficiency & Renewable Energy, Department of Energy, United States
- **David Sandalow**, Assistant Secretary, Office of Policy & International Affairs, Department of Energy, United States
- **David Scott**, Executive Director of Economic and Energy Affairs, Executive Affairs Authority
- **Rahul Tongia**, Senior Systems Scientist, Carnegie Mellon University; Principal Research Scientist, Center for Study of Science, Technology, and Policy (CSTEP)
- **Gerard Wolf**, Senior Executive Vice President, International Development, EDF
- **Tracy Wolstencroft**, Advisory Director, Goldman Sachs
- **Xie Ji**, Deputy Director General, Department of Resource Conservation and Environmental Protection, National Development and Reform Commission, China
- **Nejib Zaafrani**, Secretary General and CEO, Dubai Supreme Council of Energy



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CITIES AS DRIVERS OF CLEAN ENERGY DEPLOYMENT AND SUSTAINABLE ECONOMIC GROWTH

10:30am-12:15pm

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OVERVIEW

Over 50% of the world's population lives in cities, accounting for 70-80% of global GDP and a corresponding share of carbon emissions and energy consumption. Moreover, rapid urbanization in emerging markets promises to increase these footprints.

The CEM has a number of initiatives that are highly relevant to cities – including smart grids, building codes, efficient appliances, and electric vehicles – but with this roundtable we hope to take a comprehensive view of how CEM governments can approach urban energy management.

The roundtable should generate 2 to 4 specific recommendations on urban sustainability policy for CEM Ministers to incorporate into their work programmes.

DISCUSSION TOPICS

- How can governments support the creation of urban planning functions that integrate – and have authority over – a range of cross-sector sustainability issues (e.g., building codes, smart grids, land-use, water, transportation, etc.)?
- What are the best models for the involvement of the private sector in these urban planning bodies? What is the role for the CEM governments to encourage city-level/private-sector cooperation?
- How can the CEM dialogue encourage new approaches to ensure the most efficient delivery of products and services for cities to reduce energy consumption, such as mandating a lifecycle approach to contracting, introducing performance standards, or labeling?

MODERATOR AND CO-CHAIRS

Moderator

- **José María Figueres**, Managing Partner, IJ Partners; President of Costa Rica (1994-1998)

Co-Chairs

- **Sultan Al Jaber**, Special Envoy for Energy and Climate Change, Ministry of Foreign Affairs, United Arab Emirates; CEO, Masdar
- **Anders Lindblad**, President, Ericsson Middle East

- **Pedro Miranda**, Corporate Vice President, Siemens
- **Maud Olofsson**, Minister, Ministry of Energy, Enterprise, and Communications, Sweden

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SESSION STRUCTURE AND FLOW

10:30 - 10:35 Opening remarks from Moderator
Moderator welcomes Co-Chairs

10:35 - 11:00 **Regulatory Approaches and Government Intervention**
Open discussion with lead-off comments by:

- Sultan Al Jaber, Special Envoy for Energy and Climate Change, Ministry of Foreign Affairs, United Arab Emirates; CEO, Masdar
- Anders Lindblad, President, Ericsson Middle East

11:00 - 11:30 **Models for Engaging the Private Sector in Government Urban Planning**
Open discussion with lead-off comments by:

- Maud Olofsson, Minister, Ministry of Energy, Enterprise, and Communications, Sweden
- Pedro Miranda, Corporate Vice President, Siemens

11:30 - 12:05 Open Discussion: Which are the 2 to 4 most important, near-term ways in which CEM Ministers can intervene (through laws, regulations, and advocacy) to improve urban sustainability?

12:05 - 12:10 Closing remarks by Ministers and private-sector co-chairs

12:10 - 12:15 Moderator summarizes main messages and thanks participants to close session



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PARTICIPANTS

- **Edward Abbo**, CEO, C3
- **Falah Al Ahbabi**, General Manager, Abu Dhabi Urban Planning Council
- **Svante Bengtsson**, CEO, REHACT AB
- **Alessandro Filippi**, CEO of the companies AQUASER, KYKLOS, and SOLEMME, Acea SpA
- **Lykke Friis**, Minister, Ministry of Climate and Energy, Denmark
- **Alan Frost**, Director, Masdar City
- **Enrique Gomez-Junco**, President, Optima Energía
- **Pedro Haberbosch**, Partner, Foster and Partners
- **Charlotta Lundell**, Senior Vice President Operations, Swedish Trade Council
- **Tim Makower**, Partner, Allies and Morrison
- **Ajay Mathur**, Director General, Bureau of Energy Efficiency, Ministry of Power, India
- **Janey Mehks**, Director Environmental Affairs, Stockholm Business Region / City of Stockholm

- **Helen Mountford**, Deputy Director of the Environment Directorate, Organisation for Economic Co-operation and Development (OECD)
- **Mary O’Kane**, Chair, Australian Centre for Renewable Energy
- **Luciano Piacenti**, Head of the Environment Department, Acea SpA
- **James Pringle**, Acting CEO & Executive Director, Development, Tourism Development & Investment Company (TDIC)
- **Peter Rathje**, CEO, ProjectZero
- **Joel Riciputi**, Vice President of Marketing, Hara
- **Graham Russell**, CEO, United Arab Emirates and GCC States, Cemex
- **Iñigo Sabater**, Vice President for Government Relations South Europe, Middle East, and Africa, Vestas Mediterranean
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- **Graeme Sweeney**, Executive Vice President, CO₂, Shell CO₂, Shell International Petroleum Company Limited
- **Jonas Törnblom**, Director Corporate Marketing & Information, Envac AB
- **Wan Gang**, Minister, Ministry of Science and Technology, China
- **Wu Ling**, General Secretary, China Solid State Lighting Alliance
- **Simon Zadek**, Senior Fellow, Global Green Growth Institute; Non-Resident Senior Fellow, J. F. Kennedy School for Government, Harvard University
- **Zhang Zhihong**, Deputy Director General, Department of High and New Technology Development and Industrialization, Ministry of Science and Technology, China



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REGULATORY STRATEGIES TO ACCELERATE UTILITY-SCALE ENERGY EFFICIENCY

10:30am-12:15pm

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OVERVIEW

Given their access to capital, existing relationships with end-users, familiar brand names, and widespread service networks, regulated utilities are well-positioned to drive energy efficiency progress. But under conventional regulatory systems, utilities have incentives to sell more power not less.

While regulatory approaches vary considerably across geographies, there are nevertheless common challenges in all cases and regulators can learn useful lessons by comparing experiences with each other as they work to implement regulatory approaches that provide appropriate incentives for utilities to promote energy efficiency. Governments can also facilitate cooperation among utilities on designing effective utility-delivered energy efficiency programs.

DISCUSSION TOPICS

- What are some examples of successful regulatory frameworks that remove disincentives for utilities to promote energy efficiency?
- How can CEM governments best cooperate with each other on regulatory design to encourage utility delivery of efficiency given wide variations in current regulatory approaches?
- How can CEM governments encourage international cooperation on the design of effective utility efficiency programs?
- How can the CEM maximize the value of relevant initiatives under the International Partnership for Energy Efficiency Cooperation (IPEEC) to advance to objectives above? For example, how can it leverage the activities of the forthcoming Global Cooperation on Utility Delivery of Energy Efficiency (GCUDEE) initiative or the appliance incentive program in the Super-Efficient Equipment and Appliance Deployment (SEAD) initiative?

MODERATOR AND CO-CHAIRS

Moderator

- **Kateri Callahan**, President, Alliance to Save Energy

Co-Chairs

- **B. K. Chaturvedi**, Member (Energy), Planning Commission, India [in the rank of Minister of State]
- **Steven Chu**, Secretary, Department of Energy, United States
- **Chris Huhne**, Secretary of State, Department of Energy and Climate Change, United Kingdom
- **Lars Josefsson**, President, EURELECTRIC; Former CEO, Vattenfall
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SESSION STRUCTURE AND FLOW

10:30 - 10:35 Opening remarks from Moderator
Moderator welcomes Co-Chairs

10:35 - 11:05 **Success Stories of Regulatory Frameworks that Remove Disincentives for Utilities to Promote Energy Efficiency**

Open discussion with lead-off comments by:

- Chris Huhne, Secretary of State, Department of Energy and Climate Change, United Kingdom
- Marc Spitzer, Commissioner, Federal Energy Regulatory Commission

11:05 - 11:35 **Opportunities for Collaboration among CEM Governments and with Regulators on Regulatory Design**

Open discussion with lead-off comments by:

- B. K. Chaturvedi, Member (Energy), Planning Commission, India [in the rank of Minister of State]

- Lars Josefsson, President, EURELECTRIC; Former CEO, Vattenfall

11:35 - 12:10 Opportunities for Collaboration among CEM Governments and with Utilities on Demand-Side Management Program Design

Open discussion with lead-off comments by:

- Gene Rodrigues, Director, Customer Energy Efficiency and Solar, Southern California Edison; Chair, Consortium for Energy Efficiency
- Steven Chu, Secretary, Department of Energy, United States
- Gerard Wolf, Senior Executive Vice President, International Development, EDF

12:10 - 12:15 Moderator summarizes main messages and thanks participants to close session



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- **Marc Spitzer**, Commissioner, Federal Energy Regulatory Commission
- **Gerard Wolf**, Senior Executive Vice President, International Development, EDF

PARTICIPANTS

- **Hammda Ali Al Thani Al Falasi**, Director of National Energy & Water Research Center, Abu Dhabi Water & Electricity Authority (ADWEA)
- **Guido Bartels**, General Manager, Global Energy & Utilities Industry, IBM; Chairman, Global Smart Grid Foundation
- **Alex Bettencourt**, Managing Director, SmartGrid Canada
- **Nick Carter**, Director General, Regulation and Supervision Bureau (RSB)
- **Sheryl Carter**, Co-Director, Energy Program, Natural Resources Defense Council (NRDC)
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- **Joan MacNaughton**, Senior Vice-President, Power and Environmental Policies, Alstom Power
- **Jeremy Oppenheim**, Director, McKinsey
- **Marianne Osterkorn**, Director General, Renewable Energy and Energy Efficiency Partnership (REEEP)
- **Roland Risser**, Program Manager, Building Technologies Program, Energy Efficiency & Renewable Energy, Department of Energy, United States
- **David Sandalow**, Assistant Secretary, Office of Policy & International Affairs, Department of Energy, United States
- **Ashok Sethi**, Vice President, The Tata Power Company Ltd.
- **David Struhs**, Vice President of Sustainability Strategy, C3
- **Tulsi Tanti**, Chairman and Managing Director, Suzlon
- **Rahul Tongia**, Senior Systems Scientist, Carnegie Mellon University; Principal Research Scientist, Center for Study of Science, Technology, and Policy (CSTEP)
- **Tracy Wolstencroft**, Advisory Director, Goldman Sachs
- **Xie Ji**, Deputy Director General, Department of Resource Conservation and Environmental Protection, National Development and Reform Commission, China
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