

Overview[Agenda](#)[Documents](#)[Ministers](#)[Roundtables](#)[Large-scale
Efficiency](#)[Electric Vehicles](#)[Renewables
Integration](#)[Finance for
Renewable Energy](#)[Super-efficient
Appliances](#)[Carbon Capture](#)[Solar
Photovoltaics](#)[Finance for Energy
Efficiency](#)[Media Coverage](#)

Clean Energy Ministerial 3 (CEM3)

25–26 April 2012, London, UK**Variable Renewables Integration****2:15 pm–3:45 pm****25 April 2012**

Overview

Renewable energy penetration continues to increase steadily, accounting for nearly half of the estimated 194 gigawatts of new electric capacity installed in 2010—an investment exceeding \$200 billion. Variable renewable energy is defined as renewable energy that cannot be stored prior to electricity generation (e.g., wind and solar photovoltaic, but not biomass and hydroelectric). Variable renewables, in particular, have achieved significant penetration in many countries; for example, wind comprises increasingly higher shares of electricity supply in Denmark (22%), Spain (16%), and Ireland (11%). Yet questions persist about how to effectively integrate large amounts of variable renewable electricity generation. The depth of experience throughout these and other countries—situated in diverse geographic and market contexts—provides insight for decision makers interested in increasing the penetration of variable renewable energy into the power sector.

Discussion Topics

Participants considered the following key questions in addressing this topic:

- What are effective policy and regulatory approaches (e.g., policies, regulations, and market design) to enable significant quantities of variable renewable power to be integrated into electricity grids?
- What are effective strategies (e.g., capacity building, jurisdictional coordination, stakeholder outreach) for implementing these approaches?
- How can governments and industry work together on an ongoing basis to strengthen policy, market, and technical conditions for high penetration of variable renewable energy generation?

Objective

The objective for the discussion was to identify effective approaches, including national policies and programs as well as international cooperation, to ensure that electricity markets and regulatory systems effectively coevolve with increasing penetrations of variable renewable energy.

Format

The session aimed to bring a specific subject area into focus in an interactive setting. There were no speeches, but rather a moderated conversation in which all of the approximately 20 participants from the public and private sectors were encouraged to share their views. This was a private discussion held under the Chatham House Rule.

Session Structure

2:15–2:20: Moderator's Opening Remarks and Scene Setter

The moderator described the scope of the discussion, set expectations on the time limits for individual comments, provided an overview of the three segments for open discussion, and articulated the goals for the roundtable.

An overview of key findings was presented by a member of the Preparatory Expert Team:

- Douglas Arent, Executive Director, Joint Institute for Strategic Energy Analysis, National Renewable Energy Laboratory

2:20–2:45: Discussion on Effective Policy and Regulatory Approaches

The following relevant topic was discussed:

- What are effective approaches (e.g., policies, regulations, and market design) to enable significant quantities of variable renewable power to be integrated into electricity grids?

2:45–3:10: Discussion on Effective Strategies for Implementation

The following relevant topic was discussed:

- What are effective strategies (e.g., capacity building, jurisdictional coordination, and stakeholder outreach) for implementing these approaches?

3:10–3:40: Discussion on Public-Private Partnership Opportunities

The moderator directed the discussion toward potential follow-on actions, which followed pathways that opened up during the discussion, involved ideas developed by participants in advance, and included discussion of the newly launched CEM initiative, the 21st Century Power Partnership.

3:40–3:45: Moderator's Closing Remarks

The moderator summarized salient points, emerging consensus areas, and follow-on actions.

Moderator

John Podesta, Chair, Center for American Progress

Government Representatives

Australia: Martin Hoffman, Deputy Secretary, Department of Resources, Energy and Tourism

Denmark: Martin Lidegaard, Minister, Ministry of Climate, Energy, and Building

European Commission: Fabrizio Barbaso, Deputy Director General, Directorate-General for Energy

Germany: Jürgen Becker, State Secretary, Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety

Italy: Corrado Clini, Minister, Ministry of Environment, Land, and Sea

Spain: Fernando Marti, Secretary of State for Energy, Ministry of Industry, Energy and Tourism

Other Participants

Peder Østermark Andreassen, President and Chief Executive Officer, Energinet.dk

Dan Arvizu, Director and Chief Executive, National Renewable Energy Laboratory

Guido Bartels, Chairman, Global Smart Grid Federation/General Manager, Energy and Utilities Industry, IBM

Jeremy Eaton, Vice President and General Manager, Smart Grid Solutions, Honeywell

Mark Kingsley, Chief Commercial Officer, Trina Solar

Steve Lennon, Group Executive, Sustainability, Eskom Holdings Limited

Joan MacNaughton, Global Adviser on Sustainable Policies, Alstom

George Maltabarow, Managing Director, Ausgrid

Maria McCaffery, Chief Executive, RenewableUK

Diarmaid Mulholland, President and Regional Chief Executive Officer, Western Europe, GE Energy

James E. Rogers, Chairman, President, and Chief Executive Officer, Duke Energy Corporation

Gauri Singh, Director, Knowledge Management and Technology Cooperation, International Renewable Energy Agency

Tulsi Tanti, Chairman and Managing Director, Suzlon

Maria van der Hoeven, Executive Director, International Energy Agency

Maja C. Wessels, Executive Vice President, Global Public Affairs, First Solar

[Home](#)

[News](#)

[Blog](#)

[Our Work](#)

[Awards](#)

[Events](#)

[Resource Center](#)

[About](#)

Stay Connected

Enter your email address here to be added to the CEM mailing list for occasional updates.

Join The Discussion