

CEM7 Roundtable Topic

Innovative Mechanisms for Energy Efficiency Finance

OVERVIEW

The cleanest and cheapest kilowatt is the one avoided. Enhancing global energy efficiency is critical to addressing our energy and climate challenges and to enhancing economic growth. Investment in efficiency is on the rise – approximately \$209.5 billion were spent globally in 2014, representing 12% growth over 2013.¹ Yet, we are only beginning to tap the massive potential for energy savings. This roundtable will focus on innovative finance mechanisms to scale up investment in and deployment of energy efficiency.

According to some analyses, global energy savings could grow as large as 270 EJ per annum by 2050 – equivalent to half of the world energy use today.² Capturing this potential would lower costs for fuel and new energy infrastructure, improve reliability in meeting energy demand, reduce greenhouse gas emissions, and contribute to economic growth and job creation. However, these benefits will only be achieved with significant increases in financial flows to the sector.

Today, there are a number of barriers and challenges that limit investment in energy efficiency: government funds have not yet effectively leveraged the kind of private investment required to scale energy efficiency deployment; decision-makers sometimes lack relevant and credible data on potential and realized energy and cost savings; and investment processes lack standardization that could lower financing and transaction costs. Additionally, standardization is a pathway to tapping the capital markets and engaging a broader range of investors at potentially lower interest rates than in debt markets. The volume of assets available for securitization is also an important step to accessing the capital markets; energy efficiency has not yet achieved the kind of market size that would attract institutional investors.

A number of innovative and effective mechanisms have emerged to finance energy efficiency and scale up capital flows and investments: green banks provide low-interest, long-term financing loans for efficiency upgrades; green bonds provide access to capital for large energy efficiency improvements; energy savings performance contracts help overcome upfront costs; and energy savings insurance safeguards cash flows for energy efficiency projects where the savings do not meet projected levels.

This roundtable will explore some of the promising finance mechanisms that would benefit from international collaboration and governmental support, and that could be used

¹ Advanced Energy Now: 2015 Market Report, *Advanced Energy Economy Institute*, March 2015, p. 29.

² International Energy Agency, 2015: Energy Technology Perspectives

to effectively leverage private investment. Drawing on existing work—for example through the G20 and IPEEC—the roundtable will seek to develop recommendations for further collaborative work and action by CEM members.

POTENTIAL DISCUSSION QUESTIONS

- How can governments most effectively leverage public money to unleash private capital for energy efficiency? Which governmental policy and finance mechanisms do you see as having an important role?
- How are your governments encouraging energy efficiency right now, using public financing and stimulating private investment?
- Which finance mechanisms have high-impact potential and are deserving of further attention and collaboration among CEM members?
- Do you see a growing role for government-administered green banks as part of the efficiency solutions of the future?
- How can we increase demand for energy efficiency, and send a signal to private investors that efficiency is a worthwhile asset class to consider?
- The “Voluntary Energy Efficiency Investment Principles for G20 Participating Countries” includes systematically considering efficiency alongside supply side investments for new sources of energy. What are the most critical reforms or policies that you recommend relating to decision-making, planning, pricing or regulation?
- How can the Clean Energy Ministerial as a forum advance energy efficiency financing? How can the recently-launched Energy Finance Solutions Center provide support?

POTENTIAL PARTICIPANTS

- Banks and investors, such as the European Bank for Reconstruction and Development, Inter-American Development Bank, Bank of China, Bank of America and other large commercial banks, Hannon Armstrong
- Energy experts from organizations and institutions, such as BNEF, Copenhagen Centre on Energy Efficiency, Stanford, Lawrence Berkeley National Laboratory, Environmental Defense Fund
- CEOs from companies with major energy initiatives, such as Apple, Statoil, Google, Tata Power, Bloomberg, Microsoft
- Foundations involved in energy finance, such as Clinton Climate Initiative/C40 Cities, Tata Trust, Gates Foundation, SE4All, Hewlett Foundation
- Organizations and states/provinces with strategic energy efficiency finance programs, such as UNEP-FI, IPEEC, Renew Financial, Green Building Council LEED international program, California Energy Commission
- Energy efficiency project developers, such as AECOM, Johnson Controls, Rocky Mountain Institute, NAESCO, Schneider Electric



CEM7 Roundtable Topic

Facilitating Corporate Sourcing and Deployment

OVERVIEW

As the renewable energy industry has become increasingly price competitive over the last decade, a growing number of commercial and industrial businesses have made commitments to purchase clean energy to power their operations. Many are adding renewable energy to their existing facilities, while others are buying or investing in offsite renewable power. An estimated sixty percent of the Fortune 100 companies have set climate and/or clean energy targets, and 51 businesses, representing a market cap of \$15 trillion, have signed on to the Corporate Renewable Energy Buyers' Principles.

These companies realize that renewable energy investments have a positive impact on the bottom line because they offer a fixed-priced, long-term power supply that protects against volatile energy costs. These technologies are also zero or low carbon energy sources that mitigate the risks associated with climate change.

Achieving these corporations' sustainability targets will require millions of additional megawatt hours of renewable energy, and represents a tremendous market opportunity for business growth and job creation. However, despite the growing interest in direct corporate procurement of clean power, many legal and transactional barriers are impeding these willing buyers and sellers.

STRUCTURE OF THE ROUNDTABLE

This roundtable will highlight global corporate leaders and innovative utilities that are developing new ways to directly procure clean power, examine barriers preventing greater corporate procurement, and explore potential policy solutions. Building on their early experiences, they will then share lessons learned on how to reduce the regulatory barriers and transactional costs that often prevent companies from being able to purchase renewable power at a competitive rate. The utility executives can highlight new tariff structures that might enable the direct purchase of renewables to scale to meet the challenge of climate change.

The Roundtable can showcase, for example:

- A company that installed rooftop solar panels on many of its stores and warehouses and the difficulty faced in expanding this approach in many jurisdictions;
- A company that had to work around the existing utility to directly purchase electricity from an offsite wind farm to power its data centers.
- A utility that is offering new "green tariffs" to make it easier for businesses to procure renewable power.

- Governments (local, state, national) that implemented or changed policies to enable greater corporate sourcing.

POTENTIAL DISCUSSION QUESTIONS

- Have corporate buyers, particularly multinationals, expressed an interest in powering their operations with renewable energy? Why?
- Is renewable energy economically viable for corporate sourcing in your country? Why or why not?
- What policy or regulatory tools could be employed to improve the economic viability of renewable energy and foster increased usage by companies? What is missing?
- Where are the opportunities for corporate procurement in emerging and developing country markets? What has to be done in the next two years to improve renewable sourcing there?
- What policies are not being leveraged that would increase corporate procurement?
- How can international standards be utilized to increase corporate renewable sourcing?
- How can utilities be best poised to take advantage of these growing company commitments? Where are the challenges?
- How can we make it easier for small and medium- sized companies in your supply chain to join this trend and directly purchase renewable power?
- Do corporate buyers and other large users have the ability to contract for supply from renewable energy sources?
- What types of financial arrangements have been successfully used to expand the use of renewables by the corporate sector?

EXPECTED OUTCOMES

- Alignment between governments and the private sector about the need to eliminate the regulatory barriers preventing businesses from purchasing clean energy.
- A clear understanding of what areas/barriers can be addressed and specific suggestions for how to overcome them.
- Sharing of best practices in policy and market design to enable the direct procurement of renewable energy to scale to address the challenge of climate change both for government and the private sector.

POSSIBLE PARTICIPANTS

- Global corporate leaders, including from companies making public commitments for powering operations with renewables
- Other key industry leaders, including RE project developers and finance
- Utility executives and regulators
- Ministers of Energy

CEM7 Roundtable Topic

Next Generation Wind and Solar – Getting Policies and Markets Right

OVERVIEW

Initial wind and solar power deployment in the 21st century was pioneered by countries using policy instruments such as feed in tariffs. These instruments have been very successful in driving down the cost of wind and solar power. At a time when the cost of wind and solar PV was very expensive, the focus on driving down costs was an effective approach. But thanks to the success of these initial policies, this has now changed. As a growing number of countries is recognizing the opportunity of investing into wind and solar, the focus on generation costs *alone* can be misleading. Today, the value of the electricity that wind and solar produce is quickly becoming equally important. This value is determined by the overall savings wind and solar bring to the system as a whole.

There are many opportunities that policy makers have to increase the value of wind and solar power. These opportunities are not widely known and as a result, existing policies often fail to deliver - a lost opportunity with potentially significant economic consequences. In fact the marginal cost of the balancing options that can be supplied with a system friendly solar and wind deployment are significantly lower than other balancing options on the current technology stage, such as e.g. demand response, storage interconnectors etc.

As part of its Grid Integration of Variable Renewables (GIVAR) project, the International Energy Agency (IEA) has been developing strategy recommendations on how to craft policies that maximize the value of wind and solar power. These were developed under the umbrella of the CEM's Multilateral Solar and Wind Working Group (MSWWG). These strategies include deploying a well-balanced mix of resources and introducing a trade-off between tapping into best resources or locating wind and solar power plants closer to demand. Finally, the design of wind and solar power plants can also increase their value for the entire power system - but only if policy and market frameworks are adjusted to deliver.

STRUCTURE OF THE ROUNDTABLE

The roundtable is expected to be chaired by IEA Executive Director Fatih Birol and feature an input presentation from the IEA that sets the scene on the different opportunities policy makers have to maximize benefits and minimize costs of wind and solar deployment.

This will be followed by a discussion where concrete, best practice examples will be showcased by both government and highest level industry representation. Government interventions could include emerging economies that have implemented best practice approaches (e.g. Mexico) or that are considering market reforms for enhanced RE uptake (e.g. China). These interventions could be echoed by developed country examples, including from Denmark and Germany. Private sector interventions could reflect on the industries' contribution for improving the quality of the electricity that can be obtained from wind and solar power from equipment manufacturers, utilities and innovative market actors.

POTENTIAL DISCUSSION QUESTIONS

The core of the roundtable discussion would be centered on identifying the economic, technological and regulatory barriers that are preventing energy systems from achieving the maximum value of solar and wind deployment. Questions for discussion may include:

- How have recent cost reductions in wind and solar power opened new opportunities for their deployment?
- What are the most appropriate strategies to ensure the secure and cost-effective integration of wind and solar power?
- What are examples of how wind and solar power contribute to their own integration?
- What positive changes are currently underway to facilitate the uptake of distributed renewable energy resources?
- What key elements of market design are needed to maintain investments in wind and solar power?
- What are the best market and policy frameworks to enhance system flexibility?

EXPECTED OUTCOMES

- Endorsement from governments and the private sector that there is a need for a paradigm shift in renewable energy deployment policies and market design: shifting from a focus on costs to one of value
- A clear understanding of what areas/barriers can be addressed and what the industry can offer to achieve significant savings in deploying wind and solar power
- Sharing of best practices in policy and market design to achieve the maximum system value to the power system with solar and wind deployment.

POTENTIAL PARTICIPANTS

Through its well-established contacts to industry stakeholders, the IEA will support securing high level participation at the event via its Energy Business Council and the Renewable Industry Advisory board. The Executive Director of the IEA, Fatih Birol, is expected to chair this roundtable. Furthermore, the Danish, Spanish and German Minister's will make high-level outreach to other CEM Ministers for the roundtable.

CEM7 Roundtable Topic

Government Procurement and Demonstration of Clean Technology

OVERVIEW

Building and energy infrastructure interact to create a complex but vital system, providing the foundation for economic activity, safety, and livability. The complexity of this system creates challenges for government officials who must consider the potential system-wide effects of implementing new technologies. Yet, it also creates opportunity, providing a variety of places for governments to embrace new offerings from the private sector that will make energy systems more efficient, safer and lower carbon. While R&D and innovation may be most associated with government's role in advancing clean energy, the large-scale procurement and of implementation of emerging and/or existing technologies as well as products and services can be equally important in helping to catalyze markets, demonstrate feasibility, and make the 'business case' for those technologies. It can also spur domestic industries and stimulate economies.

Government procurement accounts for 10-15 per cent of the GDP of an economy on average.¹ In the United States, the federal government owns or leases more than 430,000 buildings and 650,000 vehicles and is the world's largest consumer of energy and vehicles. Extrapolate those figures globally and the impacts that government procurement can have on the clean energy industry is demonstrated. At the local, regional and national level, the purchasing power of governments can be transformative. For example, in an effort to spur the sales of electric vehicles (EVs), in 2009 the French government coordinated the purchase of 50,000 EVs and more recently passed a law to prioritize EVs in government procurement². A green public procurement program in China incentivizes businesses to invest and innovate in clean products and services. The U.S. Department of Energy is partnering with utilities on projects to demonstrate the integration of solar technologies with energy storage.³

Through the procurement of emerging or commercial clean energy technologies, governments can help to reduce the risk associated with launching new products and companies, while enabling them to meet their national carbon emission reduction targets.

Since both local and national governments have different levels of control as well as varying levels of comfort with deploying new technologies, this workshop will explore

¹ According to the World Trade Organization,

https://www.wto.org/english/tratop_e/gproc_e/gproc_e.htm

² https://www.iea.org/publications/globalevoutlook_2013.pdf

³ <http://energy.gov/articles/energy-department-announces-18-million-develop-solar-energy-storage-solutions-boost-grid-0>

ways in which governments can take an active role in testing the most promising technologies for their own needs as well as the role they can play in accelerating clean energy markets.

STRUCTURE OF THE ROUNDTABLE

This roundtable will explore how governments can act as “test-beds” for emerging clean-energy and energy efficient technologies and policies - both for demonstrating the efficacy of new technologies as well as scaling ones that need market penetration. The discussion will focus on how governments can partner with industry and leverage public procurement to accelerate the up-take and demonstration of innovative energy technologies (i.e. expanding public fleets of electric vehicles, retrofitting government buildings with LED light-bulbs, supporting ICT and data tools for digital energy services) and policies (energy management systems).

During the discussion, the roundtable could showcase specific examples including:

- A company that has used its own facility or campus as a test bed for building and energy technologies and how that can serve as an example for government.
- A government that has created policies or programs for streamlining procurement processes to enable the deployment of clean technologies.
- A start-up company that, in partnership with the government, brought proven technology to scale.
- A large firm that has successfully operated an internal procurement initiative related to clean energy and energy efficiency

POTENTIAL DISCUSSION QUESTIONS

The discussion will focus on clarifying the best role for government and the potential impact of successful procurement. Best practices and case studies as well as recommendations for overcoming barriers will be highlighted as well. Specific questions could include:

- What is the role that government can and should play in scaling-up, prototyping, testing, and validating clean energy innovations?
- Should governments work to have an impact on the technological “valley of death”, the commercialization “valley of death” or both?
- What policies and programs can be adopted at the national and international levels to support the use of new technologies locally and regionally?
- What are some examples of how cities and regions are launching “test-beds” and what has worked?
- Which countries have offered national level funding to support fund government run technology test-beds?

- What are the technologies that have been most successfully deployed on government property and what opportunities still exist?
- What are the current clean energy technologies that are proven but do not yet have a market?
- What are the existing barriers (political, financial, and systematic) for supporting innovation lab type activities and solutions to those barriers?
- What are some of the existing barriers (attitudinal, legal and logistical) that have prevented governments from experimenting more with testing and scaling new technologies?
- What are existing processes by which governments have deployed and tested new technologies? How have they lowered or changed existing barriers in the traditional procurement process?

EXPECTED OUTCOMES

- Identify the key technologies or technology areas for government procurement
- Alignment between governments and the private sector about the needs and opportunities for clean energy procurement opportunities.
- A clear understanding of what barriers can be addressed and specific suggestions for how to overcome those barriers.
- Sharing of best practices in policy and market design to enable more government procurement of clean energy technologies.

POTENTIAL PARTICIPANTS

- Ministers, especially from countries identified as having robust procurement and demonstration programs.
- Representatives from industry that have partnered with governments.
- Innovation and entrepreneurship spokespersons.