CLEAN ENERGY MINISTERIAL

Cool Roofs and Pavements Working Group

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U.S. Department of Energy

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BACKGROUND

- The Clean Energy Ministerial (CEM) is a high-level global forum focused on accelerating the transition to clean energy technologies.
- Created by Leaders at the Major Economies Forum (MEF) meeting in August 2009.
- Focused on three goals:
  - Improve energy efficiency
  - Enhance clean energy supply
  - Expand clean energy access

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Accelerating the Transition to Clean Energy Technologies

OVERVIEW

Participating governments account for **90% of global clean energy investment** and **80% of global greenhouse gas emissions**.

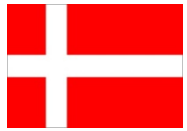

Australia


European Commission


Brazil


Canada


China


Denmark


Finland


France


Germany


India

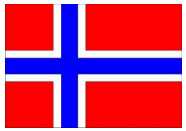

Indonesia


Italy


Japan

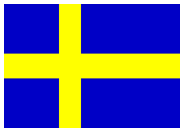

Korea


Mexico


Norway

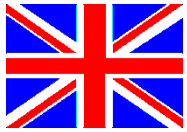

Russia


South Africa


Sweden


Spain


United Arab Emirates


United Kingdom


United States

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STRATEGY

1. High-Level Policy Dialogue
2. Technical Cooperation
3. Engagement with the Private-Sector and Other Stakeholders

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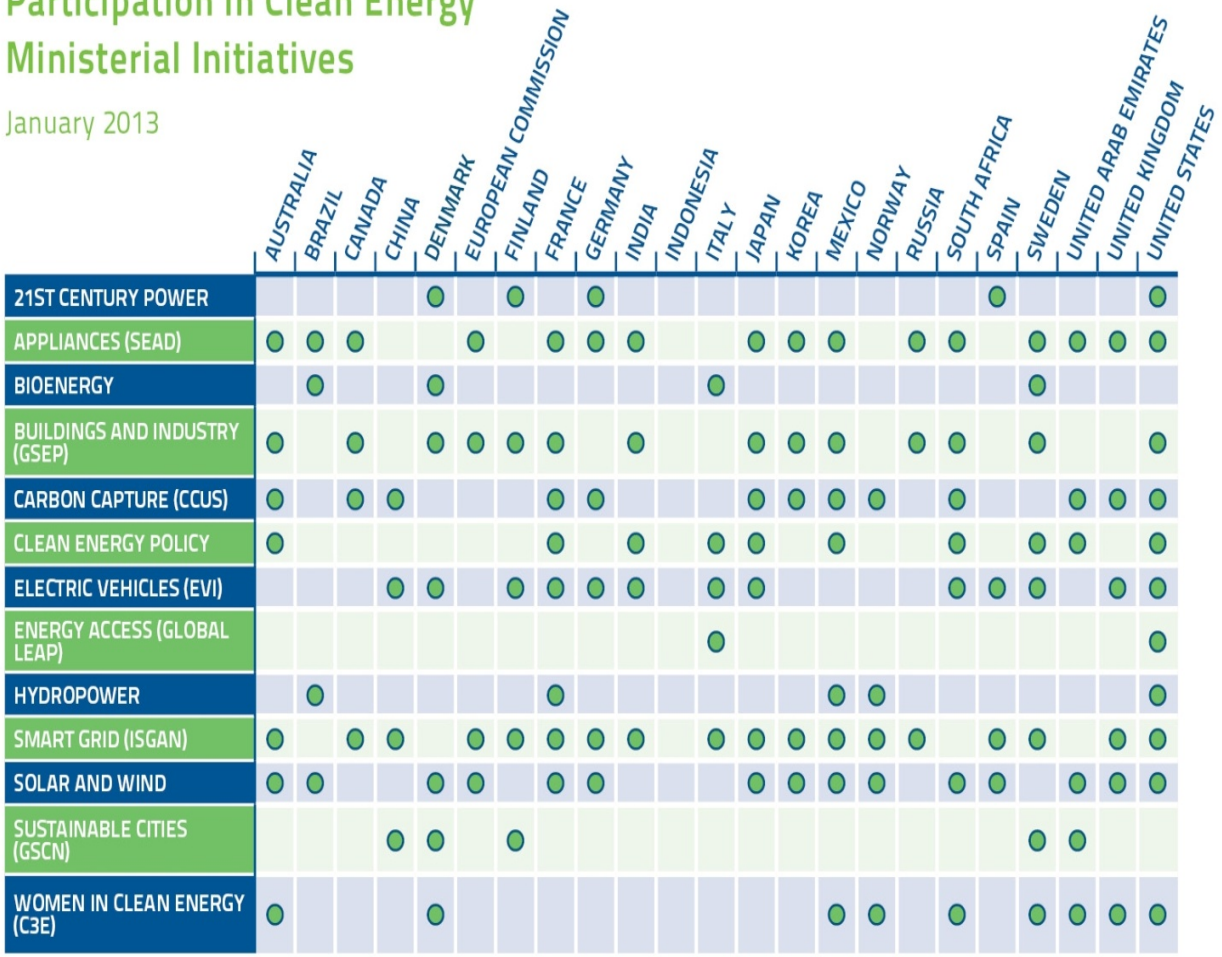
INITIATIVES UNDERWAY

Participation in Clean Energy Ministerial Initiatives

January 2013



Non-CEM governments, nongovernmental organizations, and private businesses also participate in selected initiatives.

I. Energy Efficiency

- Appliances
- Buildings and Industry
- Electric Vehicles

II. Clean Energy Supply

- Solar and Wind
- Hydropower
- Bioenergy
- Carbon Capture, Use & Storage

III. Energy Access

- Off-Grid Appliances

IV. Cross-Cutting

- Smart Grid
- Power Partnership
- Sustainable Cities

V. Human Capacity

- Clean Energy Solutions Center
- Women in Clean Energy

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MEETINGS

Meetings are opportunities to **assess progress, engage the private sector and the public, and guide work** under the initiatives.

Ministerials

CEM1 – Washington DC, July 2010
CEM2 – Abu Dhabi, April 2011
CEM3 – London, April 2012
CEM4 – Delhi, April 2013
CEM5 – Seoul, 2014

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CEM4: April 17-18, New Delhi, India

- Government-to-government discussions on key CEM accomplishments and opportunities for further progress.
- Energy efficiency finance selected as an priority area for further work.
- "Innovation Showcase Pavilion" highlights private sector innovation, technologies and business models
- Korea will host CEM5. Mexico announces that they will host CEM6.

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CEM4 High-Level Roundtables

Six roundtables with public and private sector leaders, each organized by an expert operating agent:

- Solar PV: Reducing Soft Costs (IRENA)
- Clean Vehicle Adoption (Electrification Coalition and Center for American Progress)
- Power Markets in Emerging Economies (NREL)
- Renewables Policies and Finance (BNEF)
- Energy Management Systems (Institute for Industrial Productivity)
- Minigrid Development (NREL)

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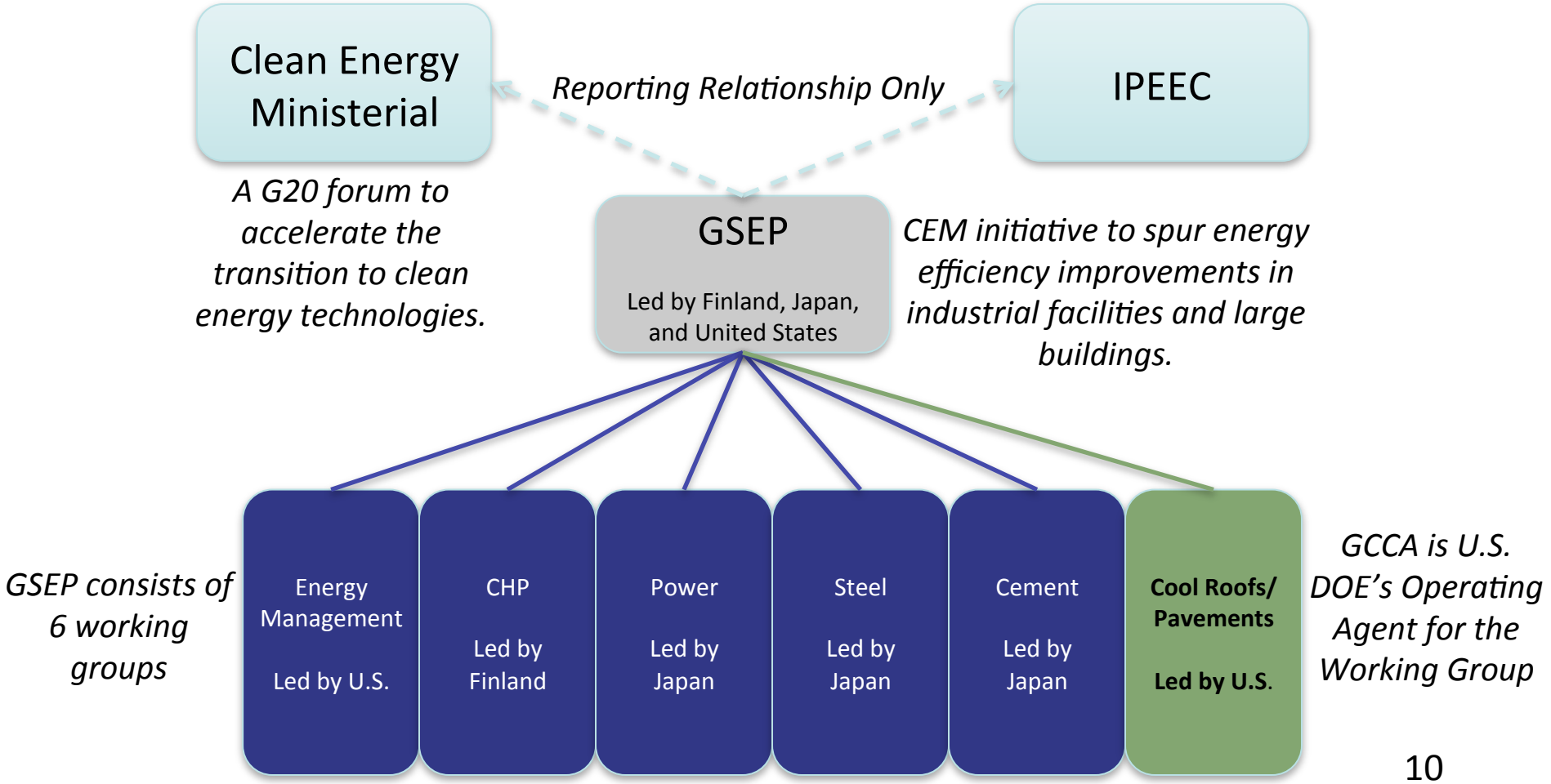
CEM4: Example Initiative Highlights

- Super Efficient Appliance Deployment's Global Efficiency Medal competition for motors.
- Clean Energy Solution Center helps India launch IREEED database of national and state clean energy policies and incentives.
- Global LEAP, developed a global quality standards and test method for solar LED lanterns
- Solar and Wind group published the largest ever assessment of global renewable energy potentials.
- Electric Vehicles initiative published a casebook and web portal featuring case studies on EV deployment from 16 cities and regions
- **GSEP Cool Roof Action plans being implemented in India and Mexico.**

Global Superior Energy Performance Partnership



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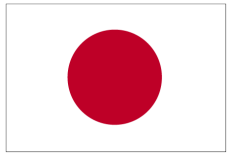
Cool Roofs and Pavements Working Group

Aims to accelerate the development and deployment of cool roofs, pavements and other cool surfaces to improve building efficiency and comfort, reduce urban heat, and reduce global warming

- First met in September, 2011.
- Working Group governments represent 8 of the 20 largest cities.
- Robust participation from industry, NGOs, and technical experts


India


Mexico


Japan


South Africa


Korea


United States

Just a Few of the Participants

- AGC Chemicals America
- American Council for an Energy Efficient Economy
- Arkema, Inc
- Asahi Glass Co.
- Brazilian Association for Standardization (ABNT)
- Bureau of Energy Efficiency, India
- CEMEX
- Center for Environmental Innovation in Roofing
- Concordia University, Canada
- Council of North American Insulation Manufacturers Association
- The Dow Chemical Company
- Glazing Society of India
- Global Cool Cities Alliance
- International Institute for Information Technology – Hyderabad
- Japan Paint Manufacturers Association
- La Asociación de Empresas para el Ahorro de Energía en la Edificación, Mexico
- Lawrence Berkeley National Labs
- Ministry of Economy, Trade and Industry (METI), Japan
- National Center for Research and Technological Development (CENIDET), Mexico
- The National Commission for Energy Efficiency, Mexico
- National Energy Efficiency Agency - South Africa
- New Energy and Industrial Technology Development Organization, Japan
- Oak Ridge National Lab
- Panache/Aesthetic Solutions, India
- Polyisocyanuarate Insulation Manufacturers Association
- Reflective Roof Coatings Institute
- U.S. Department of Energy
- University of Santa Catarina, Brazil
- WinBuild
- World Business Council for Sustainable Development

Sharing International Best Practices

- Descriptions of the science, the benefits, and the costs of cool surfaces.
- Simple steps to implement programs and policies drawn from global best practices.
- Links to sample materials and relevant organizations.
- A comprehensive “knowledge base” of research, best practices, code/ordinance language, sample program materials.
- Over 6,000 unique visitors and 500 resources

www.CoolRoofToolkit.org

Country Action Plan: India

- *Sustainable Urban Climate Change and Energy Efficiency Development*: A non-profit launched by Minister of Power Veerappa Moilly in early October 2012

- Top building scientists and Indian manufacturers and contractors organized to promote cool surfaces and energy efficient building technologies

- Strategic Plan:
  - Develop a certification lab (lab space and most equipment secured)
  - Training program (partners identified, curriculum in dev.)
  - Cool surface advocacy (website launched, articles being gathered)

Country Action Plan: Mexico

- Developed Action Plan with CONUEE.
  - Undertake a comprehensive cool surface impact study (done)
    - Cooling energy savings: Commercial 5 – 21%, Residential 15 – 53%
  - Develop a voluntary standard and promote in marketplace (in process)
  - Launch certification lab (in process)
  - Incorporate cool roofs into mandatory codes (launching 2014)

- Create working group to manage progress
  - Industry -- ANAFAPyT (coatings), AEAEE (insulation)
  - Building Science Experts – CENIDET, CIMAV, LBNL
  - Government – CONUEE, DOE

Four Emerging Working Group Themes

Low-Income Housing

- Improve the thermal comfort of new and rehabbed low-income housing to improve quality of life and forestall the need for air conditioning.
- Major area of construction growth. Often built to a common set of specifications.

Cool Surfaces in Building/Energy Codes

- Catalyst for rapid market growth (given average roof life / pace of new construction in Working Group countries)

Product Testing, Rating, and Labeling – i.e., "market infrastructure"

- Market confidence in product quality and performance is key to effective codes and markets.

Workforce Development

- Increased workforce capacity to apply cool roof technologies crucial to success.
- Opportunities to create economic opportunities and create jobs.