Energy & Climate Change

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Ellina Levina
Environment & Climate Change Unit
Sustainable Energy Policy and Technology, IEA
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The International Energy Agency

29 Member Countries:
Australia, Japan, Korea, New Zealand, United States, Canada, Austria, Belgium, Czech Rep, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey and United Kingdom, Estonia.
Chile is in the process of accession.

Energy Security
- Promote diversity, efficiency and flexibility within the energy sectors of the IEA member countries. Remain prepared collectively to respond to energy emergencies. Expand international cooperation with all global players in the energy markets.

Environmental Protection
- Develop more environmentally acceptable energy options. Promote greenhouse gas emission abatement, through energy efficiency and the use of low-carbon and cleaner fossil fuels. Assess best options to address climate change.

Economic Growth
- Work to ensure the stable and affordable supply of energy and promote free markets in order to foster economic growth. Promote access to modern energy services globally.
Energy & climate change today

- Energy production & use accounts for two-thirds of global greenhouse-gas emissions
- Energy sector must cut emissions, while powering economic growth, boosting energy security & increasing energy access
- A major milestone in efforts to combat climate change is fast approaching – COP21 in Paris in December 2015
- Momentum is building:
  - Historic US-China joint announcement; EU 2030 targets agreed
  - Developed & developing countries are putting forward new pledges to reduce emissions
  - Many energy companies & investors are starting to engage
Energy emissions stall but economic engine keeps running

For the first time, energy-related CO₂ emissions stalled despite the global economy expanding by 3%
As China slows, then India, Southeast Asia, the Middle East and parts of Africa & Latin America take over as the engines of global energy demand growth.
A flat demand in OECD disguise a fast changing energy mix, while developing countries thirst for all energy sources keeps increasing.
1. Seize the benefits of immediate action to bend the global emissions curve

Source: Energy Technology Perspectives, 2014
1. Peak in emissions: IEA strategy to raise climate ambition

Global energy-related GHG emissions

Savings by measure, 2030

Five measures – shown in a “Bridge Scenario” – achieve a peak in emissions around 2020, using only proven technologies & without harming economic growth

WEO Special Report on Energy and Climate Change, 2015
2. Focus on electricity decarbonisation

To 2030, electricity sector decarbonisation has the largest impact.

Source: Energy Technology Perspectives, 2014
A portfolio of low-carbon technologies is needed to reach the 2DS; some solutions will be broadly applicable, while others will need to target specific sectors.

Source: Energy Technology Perspectives, 2015
3. Reshape investment and accelerate innovation now in low-carbon technologies

The innovation challenge

- Nuclear (7%)
- Power gen. efficiency & fuel switching (2%)
- Renewables (30%)
- End-use fuel switching (9%)
- CCS (14%)
- End-use fuel & electricity efficiency (38%)

Source: Energy Technology Perspectives, 2014
There is no “one-size fits all” solution that can meet all local requirements.

National circumstances and resources will drive different technology portfolios and pathways.

Source: Energy Technology Perspectives, 2015
Retirements add to the investment challenge in the power sector

Power capacity by source, 2013-2040

Despite limited demand growth, OECD countries account for one-third of capacity additions – to compensate for retirements & to decarbonise
4. Mobilise non-climate goals to promote energy sector emission reductions

**GHG emission reductions are co-benefits of other policy objectives.**
5. Strengthen energy sector resilience to climate change

*Past energy demand patterns cannot serve to plan future energy systems.*

Increases in energy demand for space cooling after accounting for climate change

Source: *World Energy Outlook Special Report: Redrawing the Energy-Climate Map, 2013*
Nuclear power can play a role in CO₂ abatement & energy security

**CO₂ emissions avoided annually by nuclear power 1971-2040**

**Share of energy demand met by domestic sources and nuclear power in 2040**

- **China**
- **United States**
- **European Union**
- **Japan**
- **Korea**

- **Nuclear**
- **Indigenous production**
- **Net imports**
Nuclear power: public concerns must be heard and addressed

By 2040, almost 200 reactors are retired & the amount of spent fuel doubles

Retirements of nuclear power capacity

Spent nuclear fuel
1971-2040: 705 thousand tonnes

By 2040, almost 200 reactors are retired & the amount of spent fuel doubles
Concluding thoughts

- Pledges are not yet enough to achieve our climate goal, but are a basis from which to build ambition.

- Companies that do not anticipate stronger energy & climate policies risk being at a competitive disadvantage.

- For COP21, the IEA proposes four key energy sector outcomes:
  1. Target a near-term **peak in emissions**
  2. **Five-year revision**, to test the scope for raising ambition
  3. **Lock in the vision** by setting a long-term emissions goal
  4. **Track the transition** in the energy sector

- Without clear direction from Paris in 2015, the world is set for warming well beyond the 2 °C goal.
Thank you

Ellina Levina
Ellina.LEVINA@iea.org
Environment & Climate Change Unit
Sustainable Technology and Policy Directorate
International Energy Agency