Energy Technology Perspectives: The Role of Energy Technology Innovation in Accelerating Low-Carbon Transitions

“Innovation as a catalyst for energy markets”

Brussels, 22 June 2016

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Context

- COP21 provided a historic push for clean energy
  - Start of a new era of collaboration: Country-based approaches preferred to top-down regulation
  - New goals put forward – going beyond what everyone already considered challenging when our first ETP was released in 2006

- Growing recognition that greater innovation is essential to meet ambitious climate goals
  - *Mission Innovation*: 20 countries will seek to double its governmental and/or state-directed clean energy R&D, focused on transformational clean energy technology.
  - 28 private sector investors have joined the *Breakthrough Energy Coalition* to invest patient capital in early-stage technology development.
Energy innovation is crucial in making a 2 Degree Scenario possible.

Energy innovation has already yielded solutions, but needs support and guidance to deliver on its promises.

Contribution of technology area to global cumulative CO2 reductions

<table>
<thead>
<tr>
<th>Technologies</th>
<th>2013</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewables 32%</td>
<td>0</td>
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<td>CCS 12%</td>
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<td>Power generation efficiency and fuel switching 1%</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>End-use fuel switching 10%</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>End-use efficiency 38%</td>
<td>0</td>
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<tr>
<td>Nuclear 7%</td>
<td>0</td>
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Energy RD&D spending should reflect the importance of energy technology in meeting climate objectives

IEA government energy RD&D expenditure

- Energy efficiency
- Fossil Fuels
- Renewable energy
- Nuclear
- Other cross-cutting
- Other

Source: ETP 2015

Energy RD&D spending should reflect the importance of energy technology in meeting climate objectives
Supporting Energy Innovation: The right policy at the right time

The right support depends on the maturity of the technology and the degree of market uptake.
The “cost gap” needs to be closed, not just reduced

During scale up, competitiveness rises due to cost reductions and increased costs of not using CCS.
Innovation is essential for sustainable growth in the industrial sector

The deployment of innovative technologies is crucial to making a 2DS scenario possible.
Role of public private partnerships in catalysing innovation in industry

Partnerships can accelerate innovation while increasing the chances that a technology will be adopted.
Cooperation between industrial and emerging economies could be a win-win solution
China can make the 2Ds possible with strong policies encouraging energy technology innovation

Solutions exist to China’s daunting energy challenge
China’s global export share by value of solar and LEDs has grown significantly to roughly 40%, with its share of patents doubling between 2005 and 2010.
Better understanding innovation can increase confidence in its outcomes.

In order to accelerate technological progress in low-carbon technologies, innovation policies should be systemic.
Cities as clean energy innovation hubs

Urban energy systems are “innovation-mines”
Thank you