Low-carbon energy technology roadmaps

Technology Roadmaps:
Cecilia Tam
3 February 2014
Key technologies for reducing global CO$_2$ emissions

$6°C$ Scenario emissions  58 Gt  

$2°C$ Scenario emissions  16 Gt  

- $6°C$ Scenario – business-as-usual; no adoption of new energy and climate policies
- $2°C$ Scenario - energy-related CO$_2$-emissions halved by 2050 through CO$_2$-price and strong policies

Source: Energy Technology Perspectives 2012
IEA Roadmap Definition

“A technology roadmap is a dynamic set of technical, policy, legal, financial, market & organizational requirements identified by all stakeholders involved in its development. The effort shall lead to improved and enhanced sharing and collaboration of all related technology-specific RDD&D information among participants.

The goal is to accelerate the overall RDD&D process in order to deliver an earlier uptake of the specific energy technology into the marketplace”.

Low-carbon energy technology roadmaps
Overview of IEA roadmap process

- Engage cross-section of stakeholders
- Identify a baseline:
  - Where is technology today?
- Establish a vision:
  - What is the deployment path needed to achieve 2050 goals?
- Identify technical, regulatory, policy, financial, public acceptance barriers
  - What are the near term action items?
- Develop implementation action items for stakeholders
Roadmap logic

- Goal to achieve
- Milestones to be met
- Gaps to be filled
- Actions to overcome gaps and barriers
- What and when things need to be achieved
Roadmap Tasks

- Scoping phase, review progress against roadmap milestones and identify issues for update
- One or more workshops with experts from industry, government, academia...
- Develop draft roadmap
- Circulate draft of roadmap to wider stakeholder group
- Carry out missing analysis and refine roadmap
- Publish roadmap
Technology roadmaps status

- 2009
- 2010
- 2011
- 2012
- 2013

2014
- Energy Storage
- Hydrogen

Low-carbon energy technology roadmaps
Roadmap targets for Solar PV

Roadmap targets to 2020

<table>
<thead>
<tr>
<th>Phase</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility system generation</td>
<td>19¢</td>
<td>8¢</td>
</tr>
<tr>
<td>costs in USD cents per kWh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitiveness levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual market volume</td>
<td>17 GW/year</td>
<td>40 GW/year</td>
</tr>
<tr>
<td>Source: ETP 2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Low-carbon energy technology roadmaps
THANK YOU