ROADMAP
OVERVIEW AND
ROLE OF NUCLEAR
IN IEA SCENARIOS

Technology
Roadmap

Nuclear Energy

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Key technologies for reducing global CO$_2$ emissions

- **6°C Scenario** - emissions 58 Gt
- **2°C Scenario** - emissions 16 Gt

Source: Energy Technology Perspectives 2012

- 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

Low-carbon energy technology roadmaps
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”.
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
In 2013, ten construction starts (up from 7 in 2012), representing ~ 11 GWe capacity. Current grid connection rate (3.9 GWe connected in 2013 << ~ 12 GWe/year needed).

Source: Energy Technology Perspectives 2014 (forthcoming)
Nuclear power capacity and generation in ETP 2°C scenario (2DS) (preliminary)

Source: Energy Technology Perspectives 2014 (forthcoming)
Electricity generation in ETP 2⁰C scenario

Source: Energy Technology Perspectives 2014 (forthcoming)
Nuclear power in Asia and Middle East in ETP 2°C scenario (2DS) (preliminary)
Assumptions for nuclear new build:

• **Overnight costs (‘Nth’ of a kind Gen III/III+)**
  - OECD Asia (Japan, Korea): 4000 USD/kWe
  - OECD Europe: 5500 USD/kWe
  - OECD America: 5000 USD/kWe
  - Russia: 4000 USD/kWe
  - China/India: 3500 USD/kWe

  cost convergence in the long run, learning rate, cost of technology improvements and increasing safety requirements…
Nuclear Roadmap 2014 Update - Approach

• Based on ETP 2014 2°C Scenario
• 1st workshop in Paris 23 - 24 Jan 2014
• 2nd Asia workshop in Hong Kong 25 Feb 2014
• 3rd workshop in Paris 1 April 2014
• Roadmap release Dec 2014
Any questions

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