

ROADMAP OVERVIEW AND ROLE OF NUCLEAR IN IEA SCENARIOS

Technology Roadmap

Nuclear Energy

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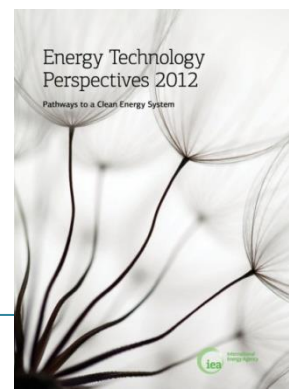
2050

2045

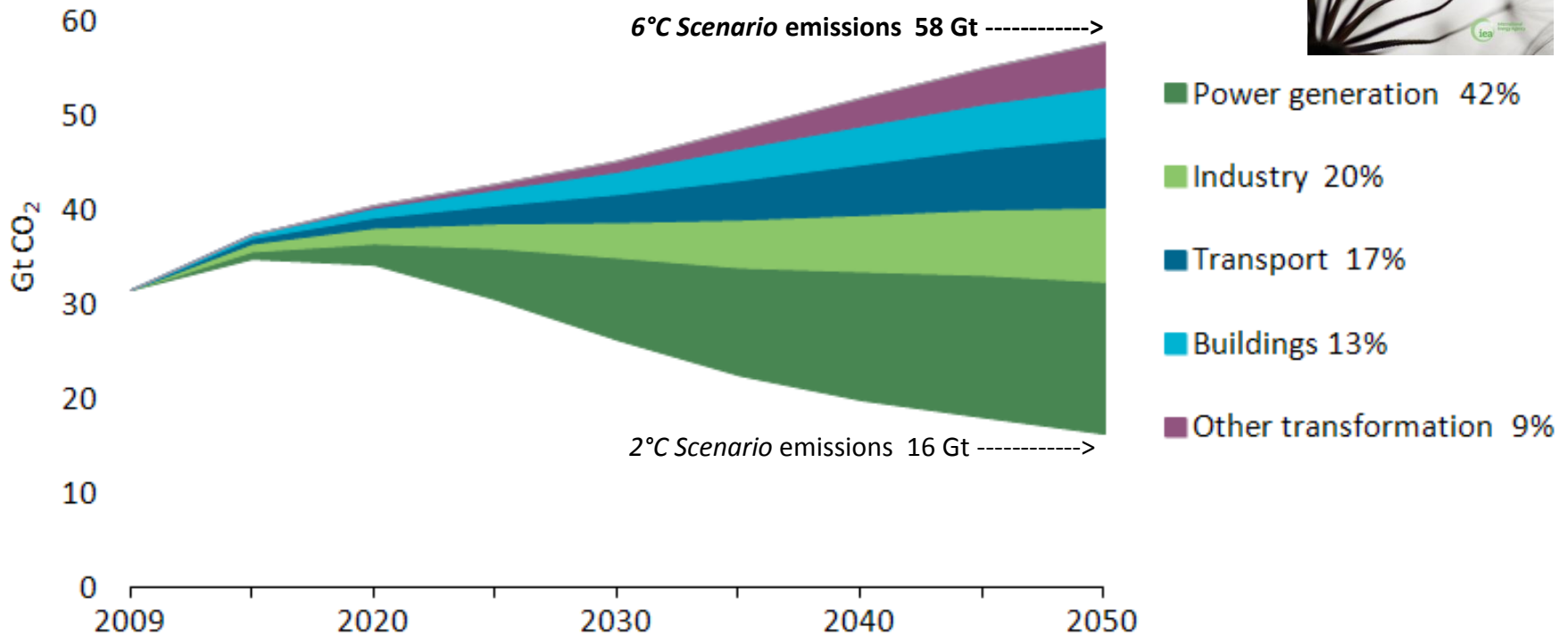
2040

2035



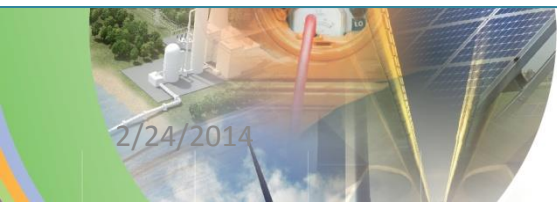


Key technologies for reducing global CO₂ emissions



Source: Energy Technology Perspectives 2012

- 6°C Scenario – business-as-usual; no adoption of new energy and climate policies
- 2°C Scenario - energy-related CO₂-emissions halved by 2050 through CO₂-price and strong policies



Low-carbon energy technology roadmaps



IEA Roadmap Definition

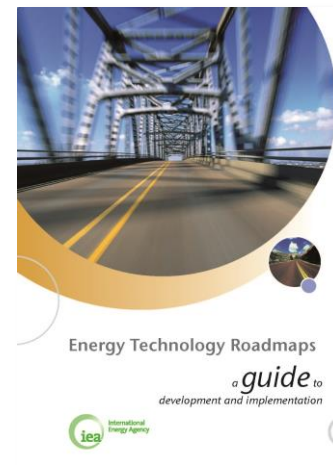
***“A technology roadmap is a dynamic set of technical, policy, legal, financial, market & organizational requirements identified by all stakeholders involved in its development. The effort shall lead to improved and enhanced sharing and collaboration of all related technology-specific RDD&D information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





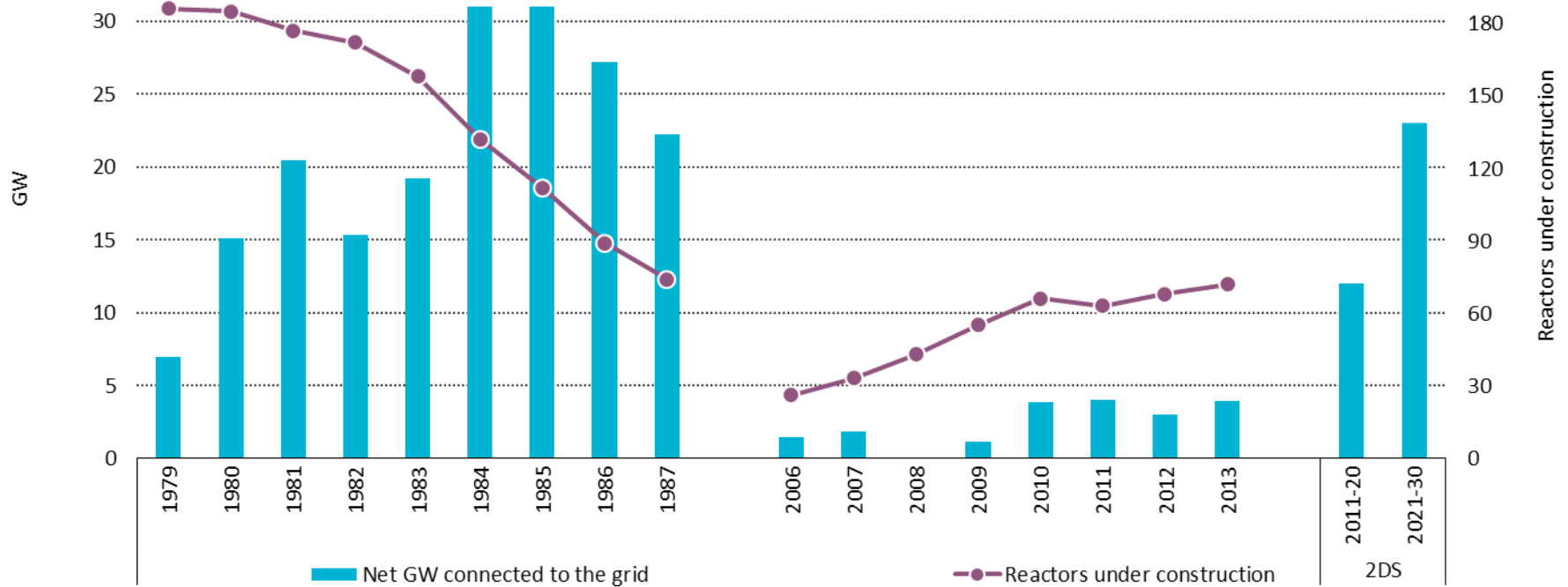
Roadmap logic

- 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





Nuclear capacity additions

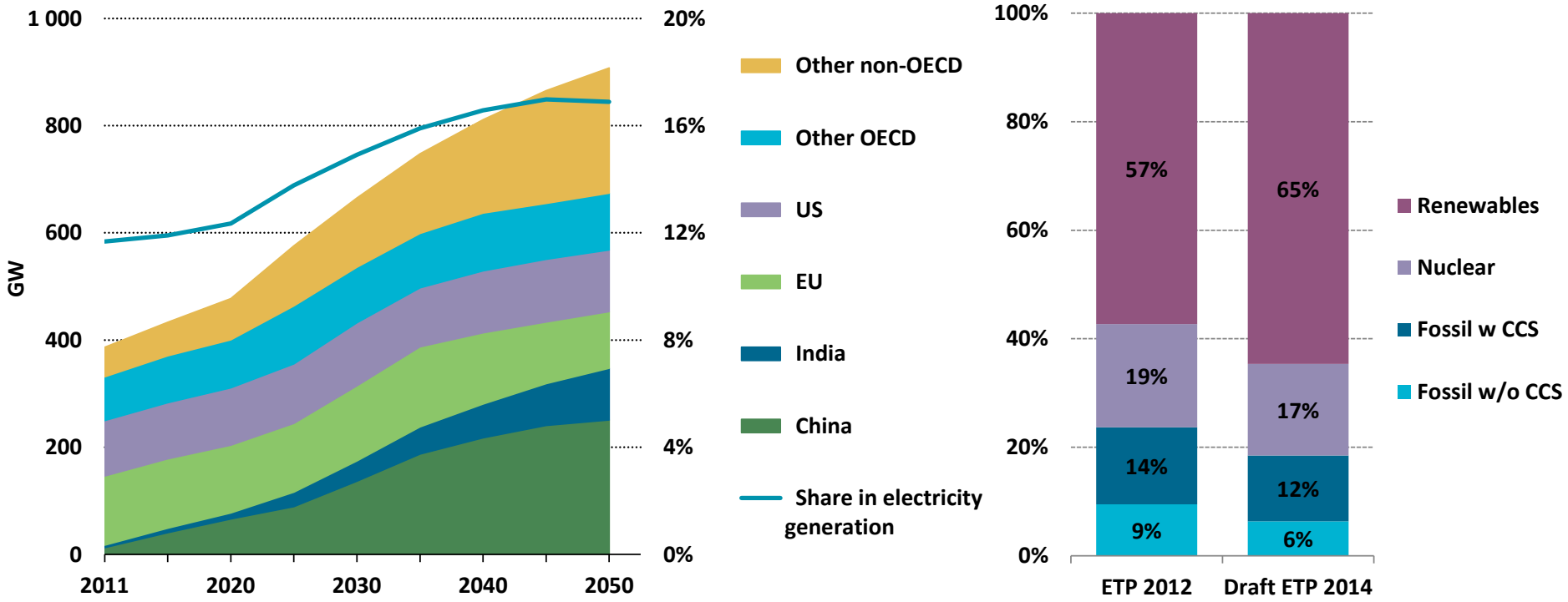


- In 2013, ten construction starts (up from 7 in 2012), representing ~ 11 GWe capacity
- Current grid connection rate (3.9 GWe connected in 2013 << ~ 12 GWe/year needed)

Source: *Energy Technology Perspectives 2014 (forthcoming)*



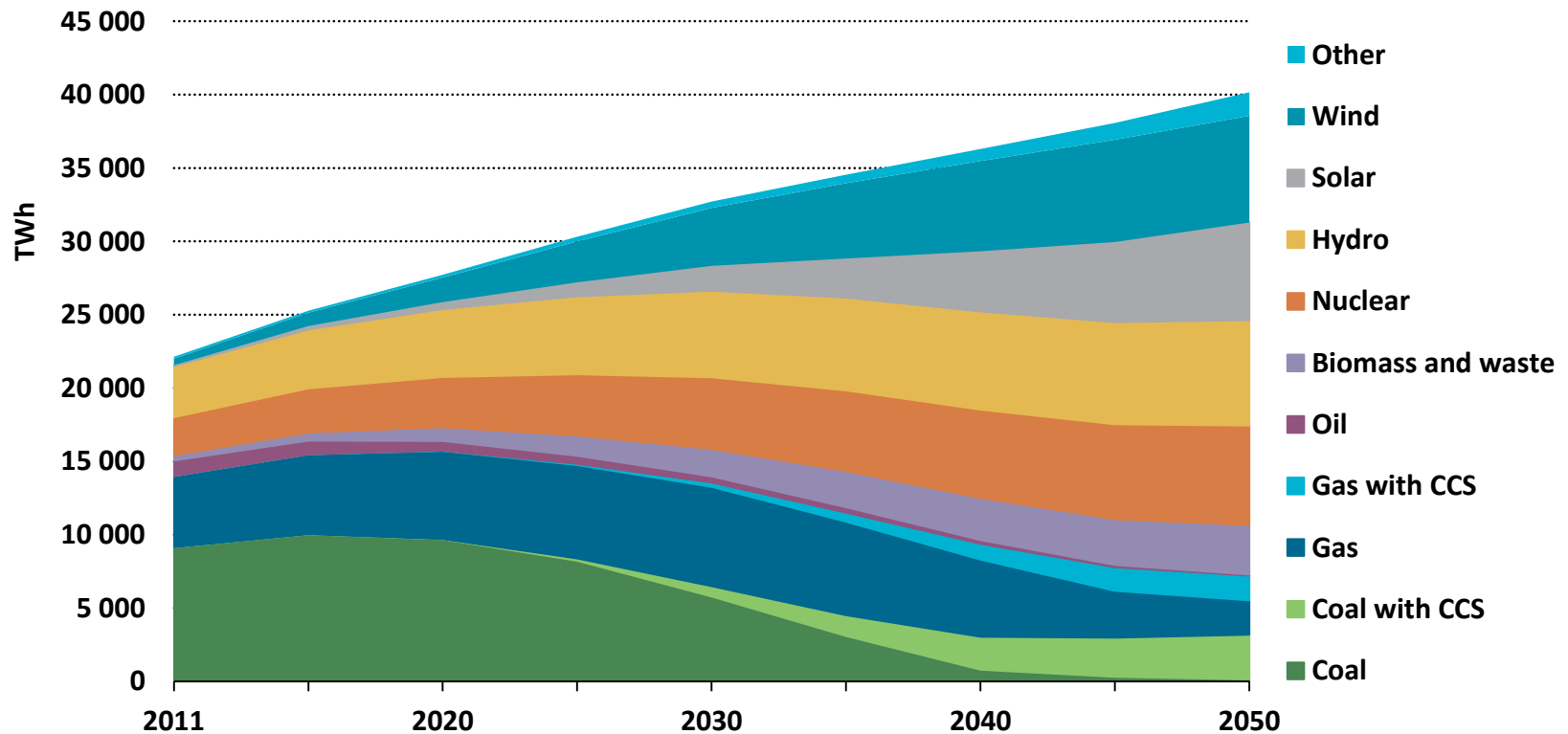
Nuclear power capacity and generation in ETP 2^oC scenario (2DS) (preliminary)



Source: Energy Technology Perspectives 2014 (forthcoming)



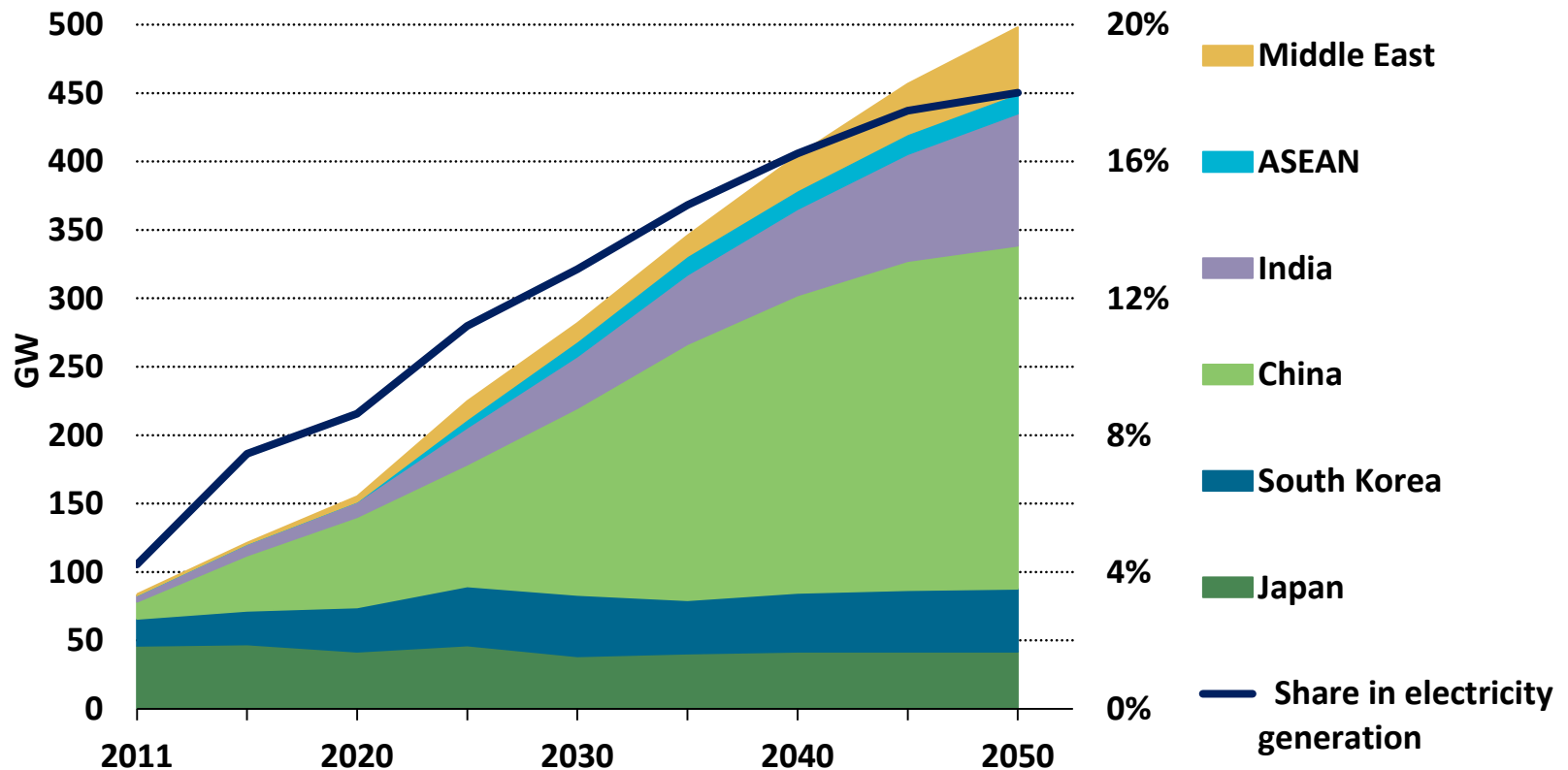
Electricity generation in ETP 2°C scenario



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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