



# Prospects for Nuclear

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# EDF Energy – A UK Energy Leader

- The UK's largest electricity generator, generating ~1/5 of Great Britain's electricity
- Operates 8 of the UK's 10 nuclear plants and plans to construct 4 new nuclear reactors, together with 20% co-investor Centrica
- Other generation including coal, gas and renewables
- Largest electricity supplier to business customers
- Major residential supplier with >5mn customer accounts



# Contents

- **UK Policy & Market Environment**
- A reasonable scenario range to 2050
- A word on Europe
- EDF Energy is leading the way, and Government is progressively removing the obstacles



# Public policy in UK has undergone a “Nuclear Renaissance”

2003

- Energy White Paper: **new nuclear is “an un-attractive option”** due to current economics

2006

- Stern Review on the Economics of Climate Change
- Government’s Energy Policy Review: new nuclear **could make a significant contribution** towards policy goals

2008

- Climate Change Act: 80% cut in GHGs vs. 1990 by 2050
- White Paper on Nuclear Power gives **support for new nuclear**
- Committee for Climate Change set up
- Office for Nuclear Development set up

2009

- Draft Nuclear National Policy Statement (NPS) identifies **sites suitable for new nuclear** by 2025 (8 sites)

2010

- **Coalition Agreement recognises role of new nuclear**
- Consultations on carbon price support and wider electricity market reform (EMR)

2011

- Carbon price support introduced, to apply Apr 2013-
- White Paper on EMR: contracts for difference for new low-carbon generation
- Measured reaction to Fukushima incident
- Designation of energy NPSs: suggest **large potential role for new nuclear**



# Broad political support for new nuclear in the UK continued in the immediate aftermath Fukushima



"I do think that nuclear power should be part of the mix in future as it is part of the mix right now"

*- Prime Minister David Cameron, 16/03/11*



"[We] should avoid a rush to judgment given that we have a good safety record in this country. It is important not to lose sight of that"

*- Labour Leader Ed Miliband, 14/03/11*



"We envisage a role for new nuclear and want to see new nuclear come on, but ... we have to put an emphasis on safety "

*- Secretary of State for Energy and Climate Change  
Chris Huhne, 24/03/11*

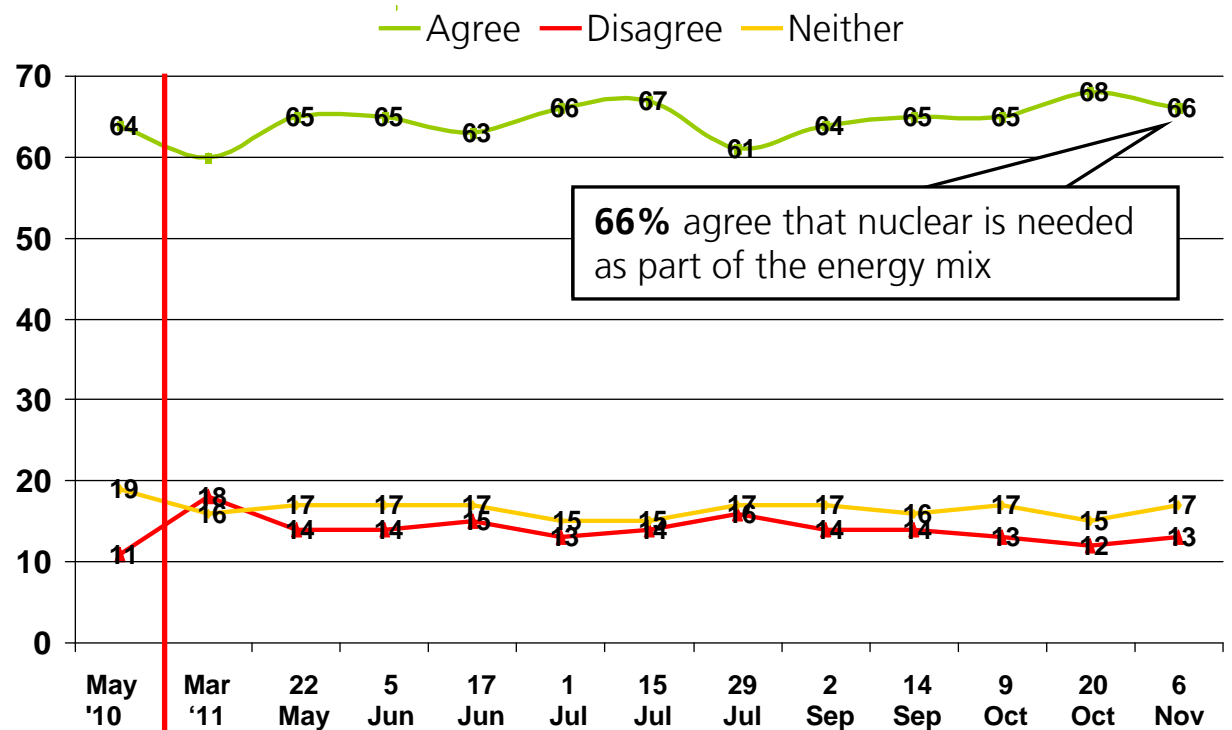


# UK public opinion has remained supportive of nuclear

## Fukushima – key impacts on EDF Energy:

- Reminder of the overriding importance of nuclear safety
- Nuclear Generation response coordinated in close cooperation with EDF Group
- Dr. Weightman's final report concluded no reason to curtail operations of UK nuclear power plants or revisit siting strategies proposed for new nuclear
- EU stress test submitted; enhancements to facilities and processes being considered

*Nuclear energy has its disadvantages but the country needs it as part of the energy balance, with coal, gas and wind power.*



Fukushima incident

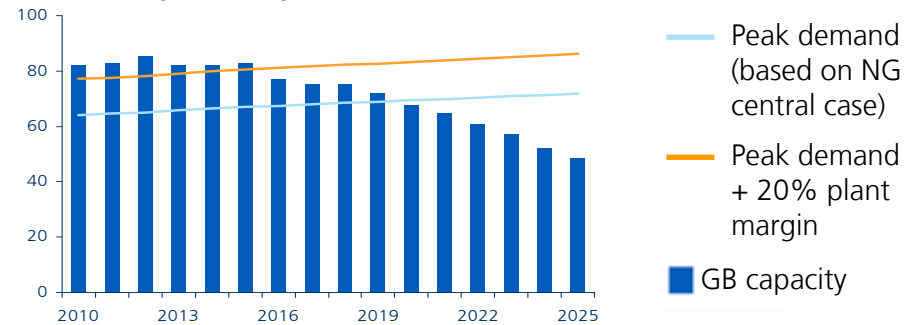


# The UK has a compelling need for nuclear energy

## 1. To ensure security of supply...

- 40% of installed capacity due to retire within 15 years, and increased reliance on gas imports

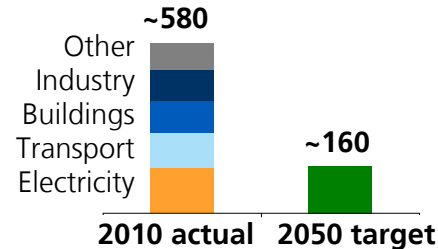
GB electricity capacity and peak demand, GW



## 2. To deliver a low-carbon economy...

- The UK has a legally binding emissions reduction target of 80% by 2050 vs. 1990

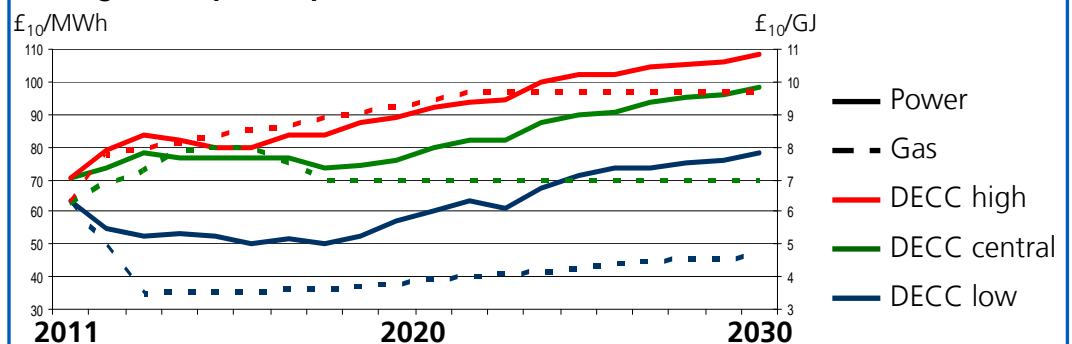
UK greenhouse gas emissions and decarbonisation target, MtCO<sub>2</sub>e



## 3. ... at least cost to consumers

- High dependence on volatile international gas prices

DECC gas and power price forecasts

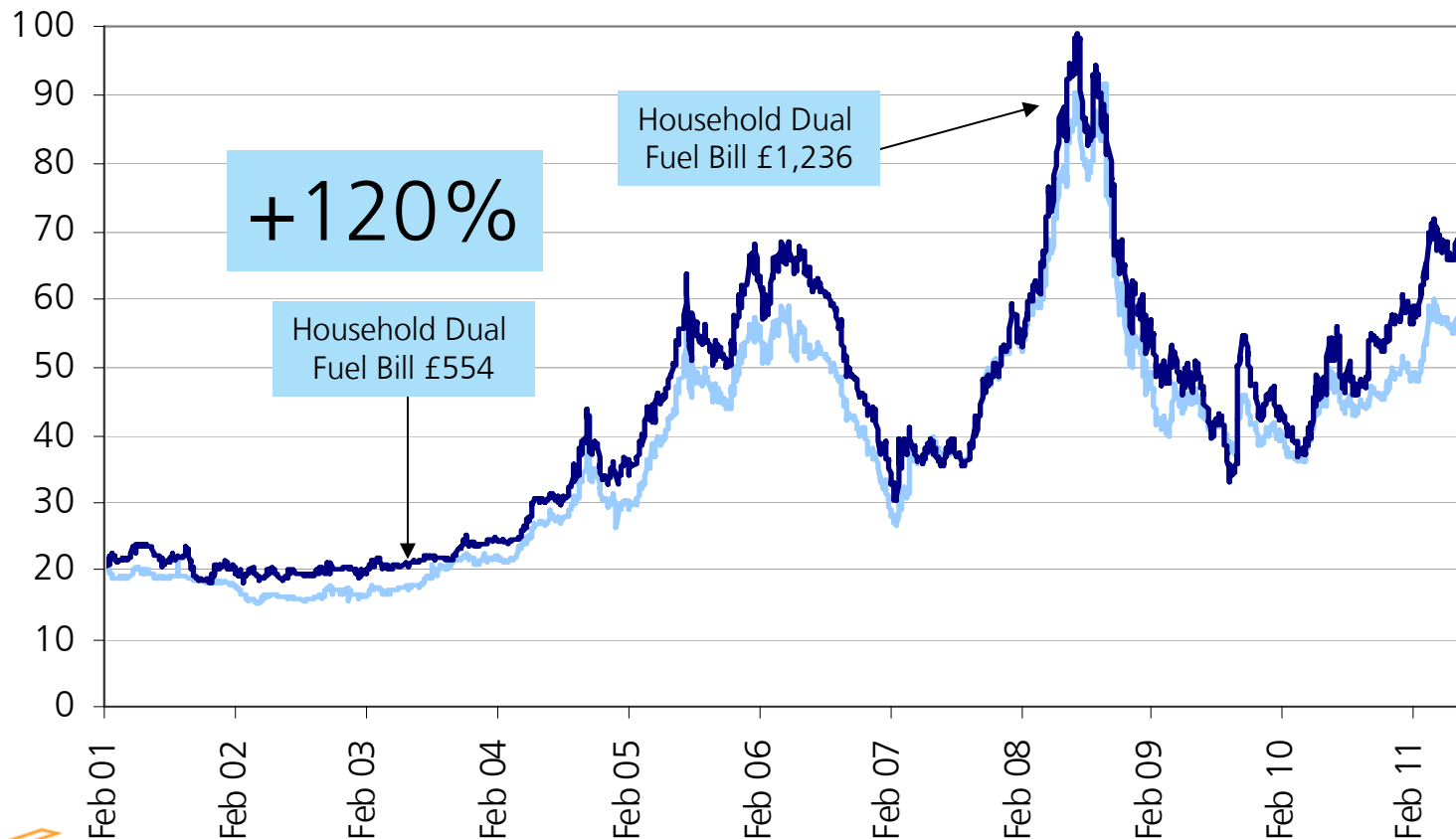


# With North Sea gas running out, UK is increasingly vulnerable to world commodity prices

## UK power and gas prices

p/therm, £/MWh

— Front-year gas — Year-ahead power





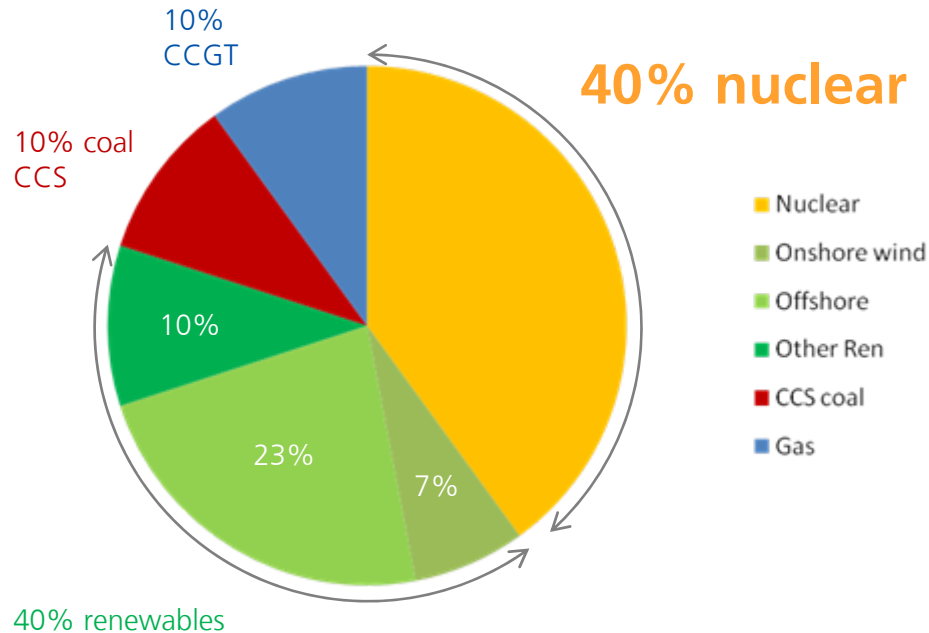
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# The Committee on Climate Change illustrative 2030 low carbon generation mix suggests up to 40% from Nuclear

The Committee on Climate Change Illustrative  
'40-40-10' Low Carbon Mix

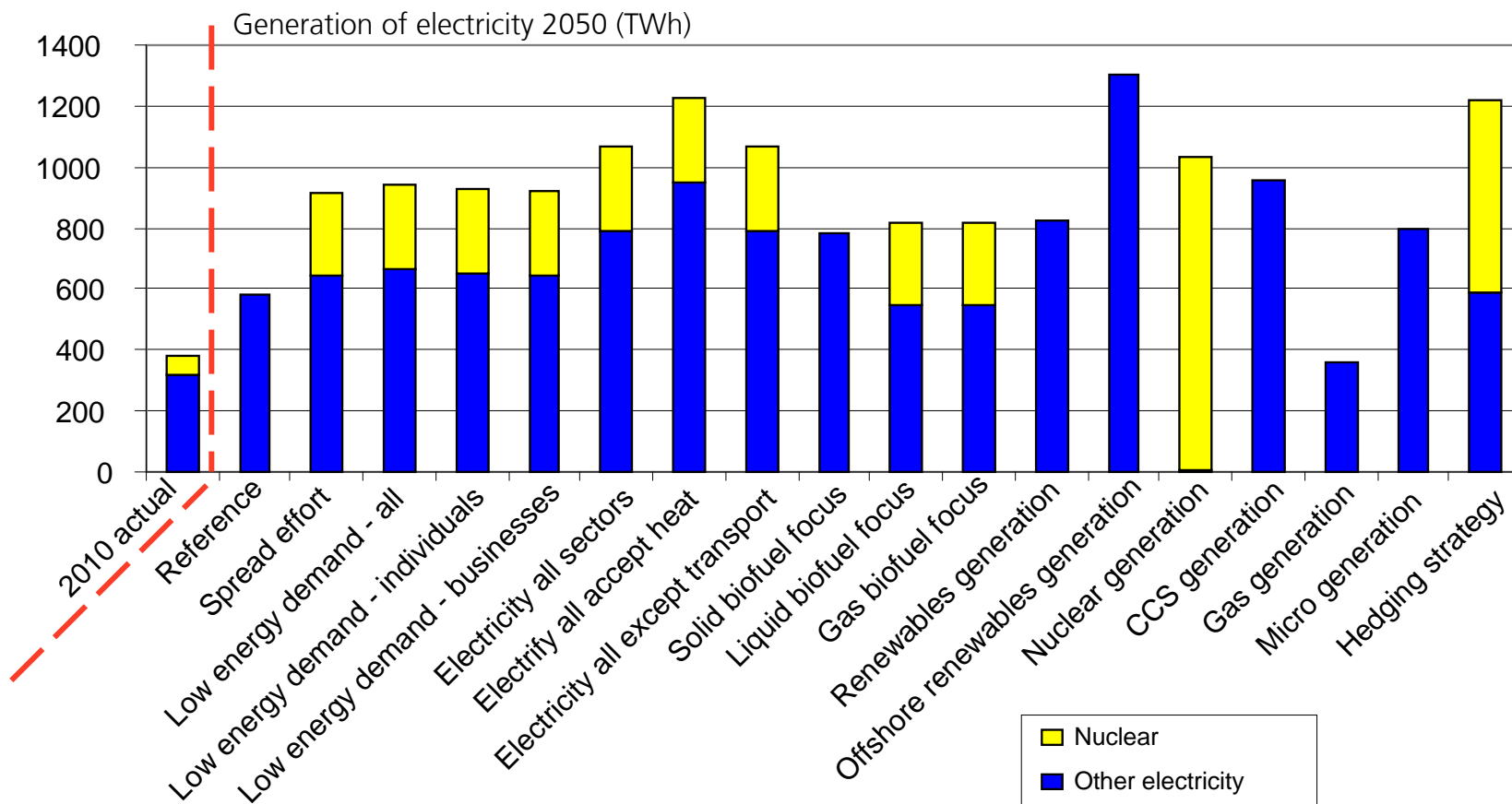


- The Committee on Climate Change has advised that in order to meet the UK's ambitious 2050 CO2 emissions reduction target, the UK electricity mix should be almost entirely decarbonised by 2030
- In its recent Renewable Energy Review, the CCC proposed an illustrative low carbon mix which would meet this objective
- 40% of electricity implies 20 – 25GW of nuclear capacity by 2030

Source: Committee on Climate Change Renewable Energy Review, May 2011



# Nuclear energy contributes significantly c40GW in most of the “balanced” UK Government (DECC) 2050 Pathways



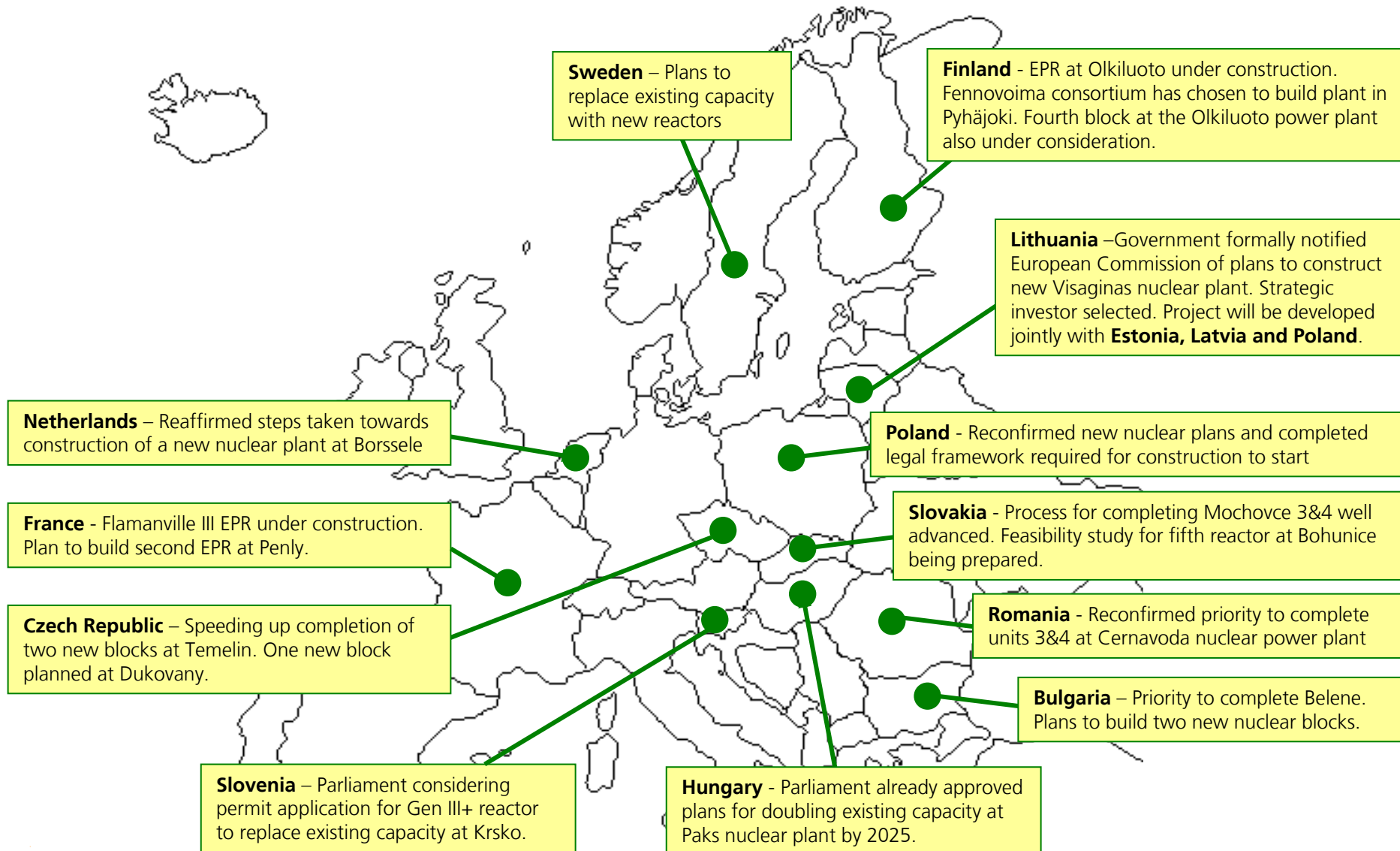
- The new pathway published 1 December 2011 anticipates c250 TWh nuclear, c120 TWh renewables and c190 TWh of CCS

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# 12 other EU Member States consider nuclear power to be a key component of their national energy mix in 2050



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# We plan four new nuclear plants in the UK

- Planned locations: **Hinkley Point** and **Sizewell** (twin at each)
- Builds on EDF Group fleet experience: **Flamanville 3, Taishan 1&2**
- **Centrica up to 20% stake**
- Recent progress and key next steps:
  - 14 Jul – ONR & Environment Agency complete initial assessment of **Generic Design** with confidence completion can be achieved
  - 29 Jul – West Somerset Council approves **site preparation works** at Hinkley Point
  - Almost **6,500 consultees**, 34 public exhibitions and 67 meetings with local authorities and other stakeholder groups, and 109,000 visitors to project website
  - 24 Nov – Infrastructure Planning Commission accepts **Development Consent Order** to build and operate Hinkley Point C
  - End 2012 – **Final investment decision**



Picture: Areva



# UK Government is working with Industry to Remove the Barriers

- **A National Need**

18 July 2011 – **National Policy Statements** approved:  
267 MPs in favour vs. 14 against

- **Available Sites**

18 July 2011- 8 sites approved as available before 2025  
as part of Nuclear NPS – room for c22GW

- **Operators with Experience**



- **Waste & Decommissioning**

18 Oct 2011 – Energy Act establishes **Funded Decommissioning Programme** arrangements.  
Plan for Geological Disposal Facility by 2040

- **Nuclear Regulation**

11 Oct 2011 – Final Weightman report published on implications of Fukushima. No reason to revise siting strategies for new nuclear power stations.

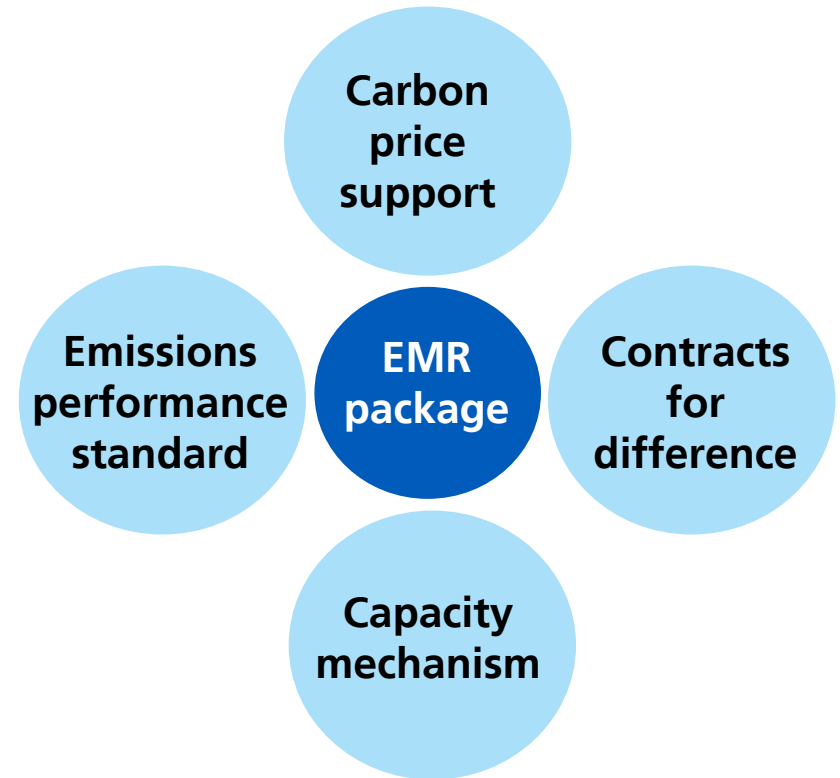
- **Skills & Supply Chain**

Hinkley will require a total of ~150 Tier 1 contracts  
NIA / EDF Energy **Supply Chain Events**  
Investment in **local communities** in training and jobs  
Role for Franco-British relationships:



# Implementation of carbon price support and wider electricity market reform (EMR) are key to low-carbon development

- 12 Jul – **Government's EMR proposals** set out measures to attract low-carbon investment
  - **Confirmed introduction of contracts for difference** for new low-carbon generation
  - Launched **new consultation on capacity mechanisms** to ensure security of supply
  - Confirmed introduction of **emissions performance standard**
- 19 Jul – Finance Act **brings into law carbon price support**, to be introduced from Apr 2013
- **Technical Update** to be published around the turn of the year, providing more detail on capacity mechanism, institutional arrangements and transitional arrangements
- Spring 2012 – **New Energy Act** to establish capacity mechanism, emissions performance standard and contracts for difference



# Visualisation of Hinkley Point C – will generate c7% of UK electricity

