NATIONAL NUCLEAR LABORATORY

The Role of the National Nuclear Laboratories UK Nuclear Energy Policy and the Role of R&D

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WM2015, Phoenix
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UK National Nuclear Laboratory's History

1954 UKAEA formed

1957 CEGB formed

1971 BNFL formed

1991 Nuclear Electric & Scottish Nuclear formed

1996 AEA Technology, Magnox Electric and British Energy formed. BNFL R&T Division established

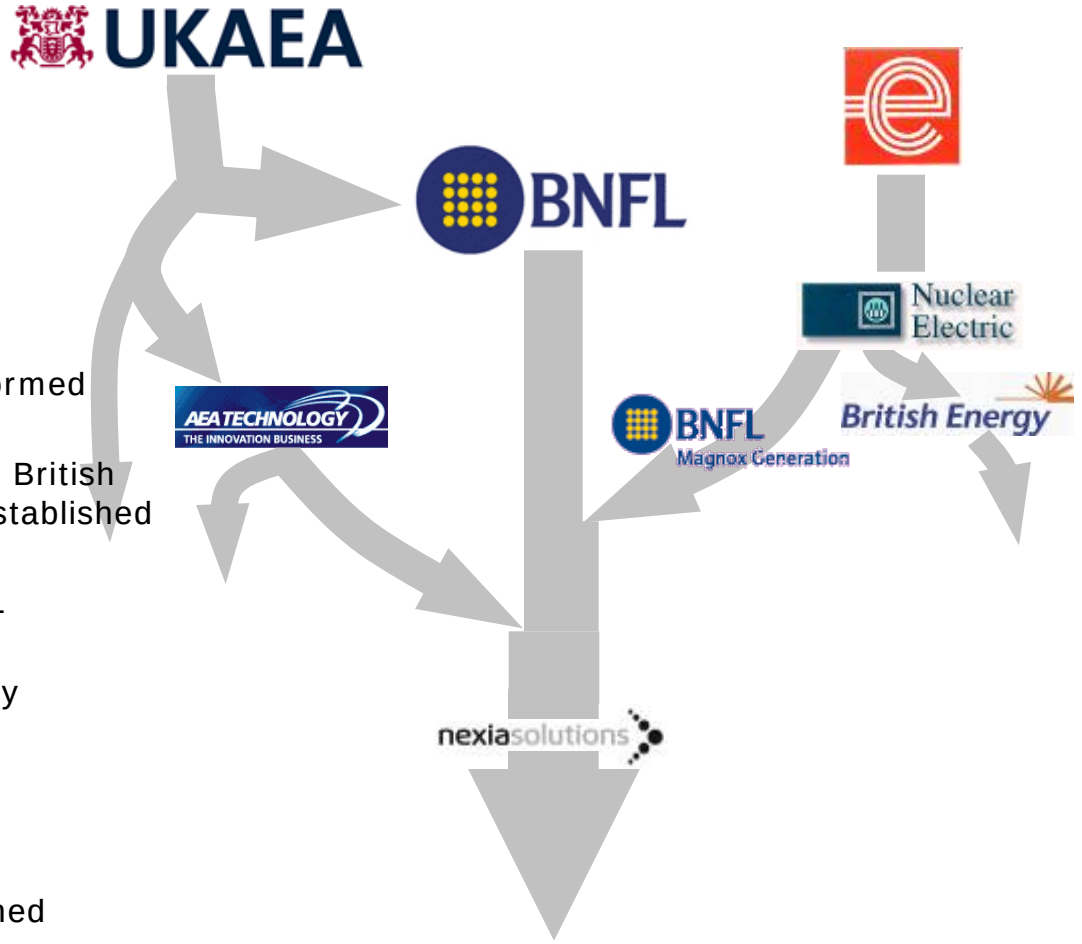
1998 Magnox Electric became part of BNFL

2003 AEAT Nuclear Engineering acquired by BNFL R&T, which rebranded as NSTS

2005 Rebranded as Nexia Solutions

2008 National Nuclear Laboratory established

2009 3+1+1 year M&O contract awarded to SBM



NNL Overview

NATIONAL NUCLEAR LABORATORY

- Turnover ~£100m, 1000 staff with 50% STEM trained
- Operate unique national facilities
- Owned by Government's Dept. of Energy & Climate

- 6 Locations across UK:
  - 13 Industrial Hot Cells at Windscale
  - 5 State of the Art Hot Cells at Sellafield Central Lab
  - World Class Alpha Labs at Sellafield
  - Active and Inactive Experimental Facilities at Sellafield
  - Uranic Processing Facility at Preston Lab
  - 8000 m^2 Inactive Demonstration Facility at Workington
  - Offices at Risley, Stonehouse and Harwell

NNL Role and Remit

NNL identified in Government's Nuclear Industry Strategy as principle R&D organisation to underpin UK's national nuclear programmes

NNL supports all aspects on the UK Civil nuclear fission programme.

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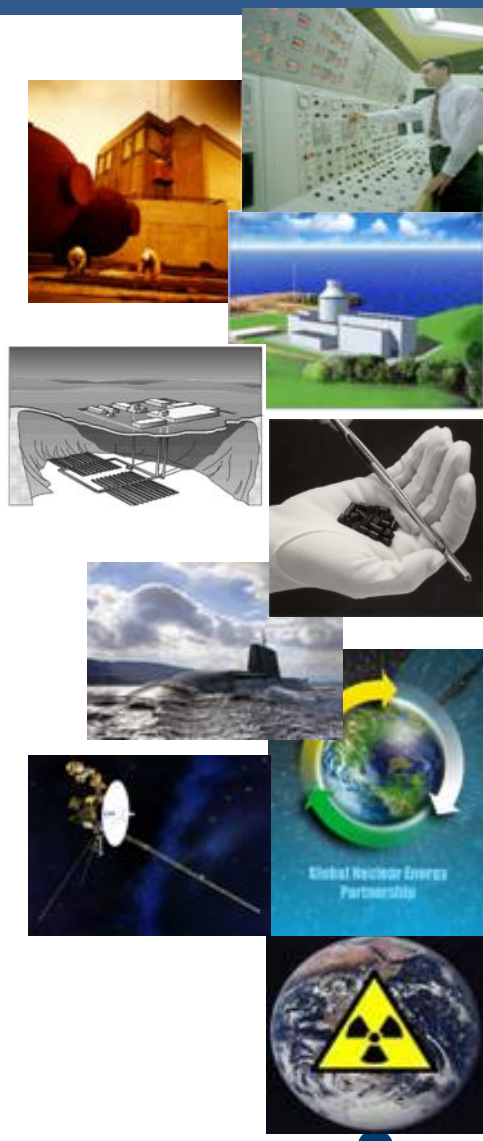
- Continued operation of existing reactors
- Legacy waste management / decommissioning
- New nuclear build
- Geological disposal
- Plutonium stockpile disposition
- Naval propulsion support programme
- Advanced reactor (Gen IV) and fuel cycle development
- Space Power systems
- Security, non-proliferation & safeguards



NNL Facilities

An investment of over £300M in world-leading nuclear R&D facilities

- Dedicated Mixed Oxide (MOX) Fuel Development Laboratories
- High-active modular cells
- Active & Inactive solvent extraction labs

The Energy White Paper 2003 – "Creating a Low Carbon Economy"

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- 2003 Energy Policy focus on renewable energy & energy efficiency
- 2006 Reconsideration over nuclear
- 2007 Nuclear Energy re-instated

Carbon Calculator: 80% reduction in CO_2 levels from 1990 levels are legally binding

Scenarios for UK deployment

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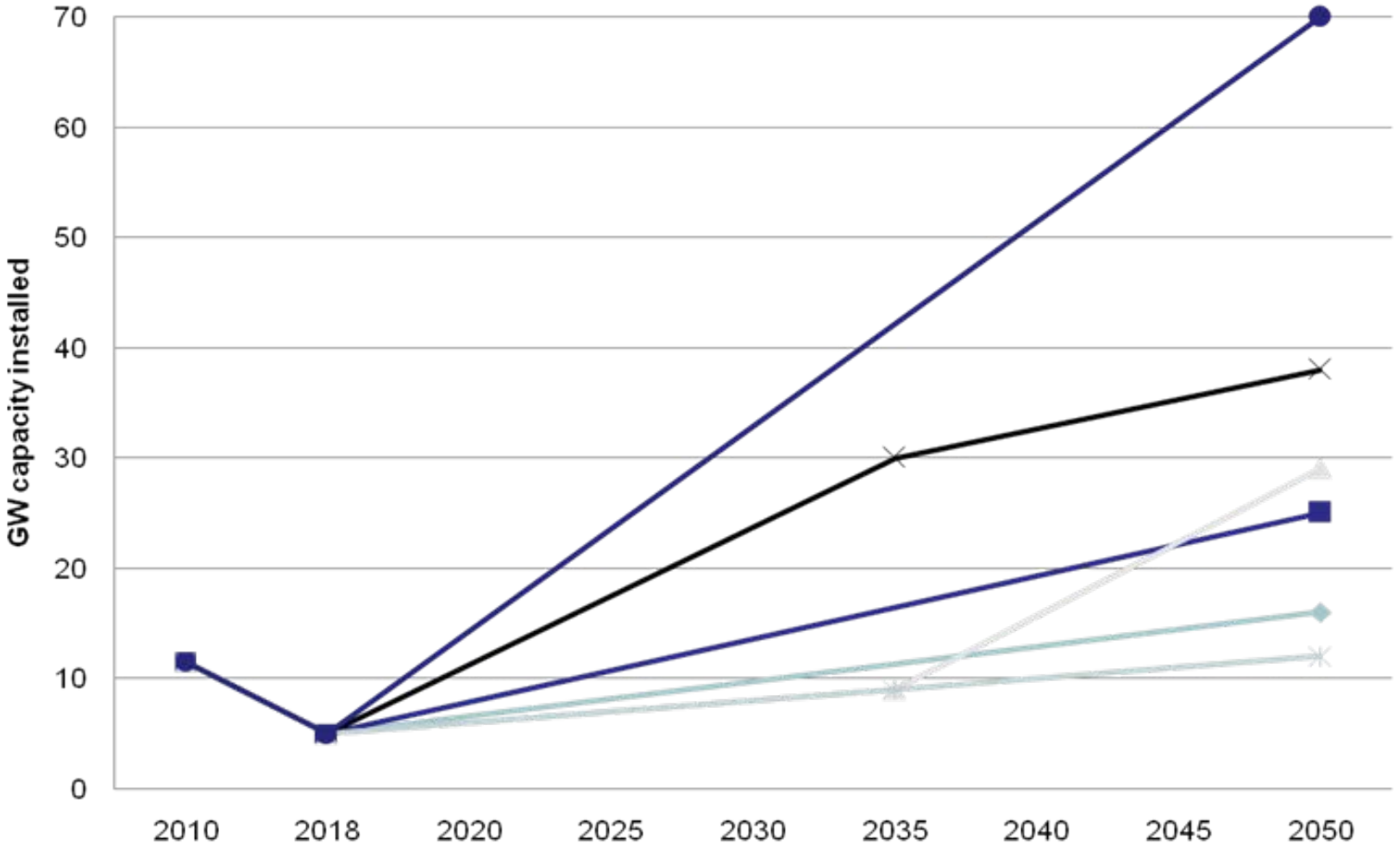

Need for nuclear R&D

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HOUSE OF LORDS

Select Committee on Science and Technology

3rd Report of Session 2010–12

Nuclear Research and Development Capabilities

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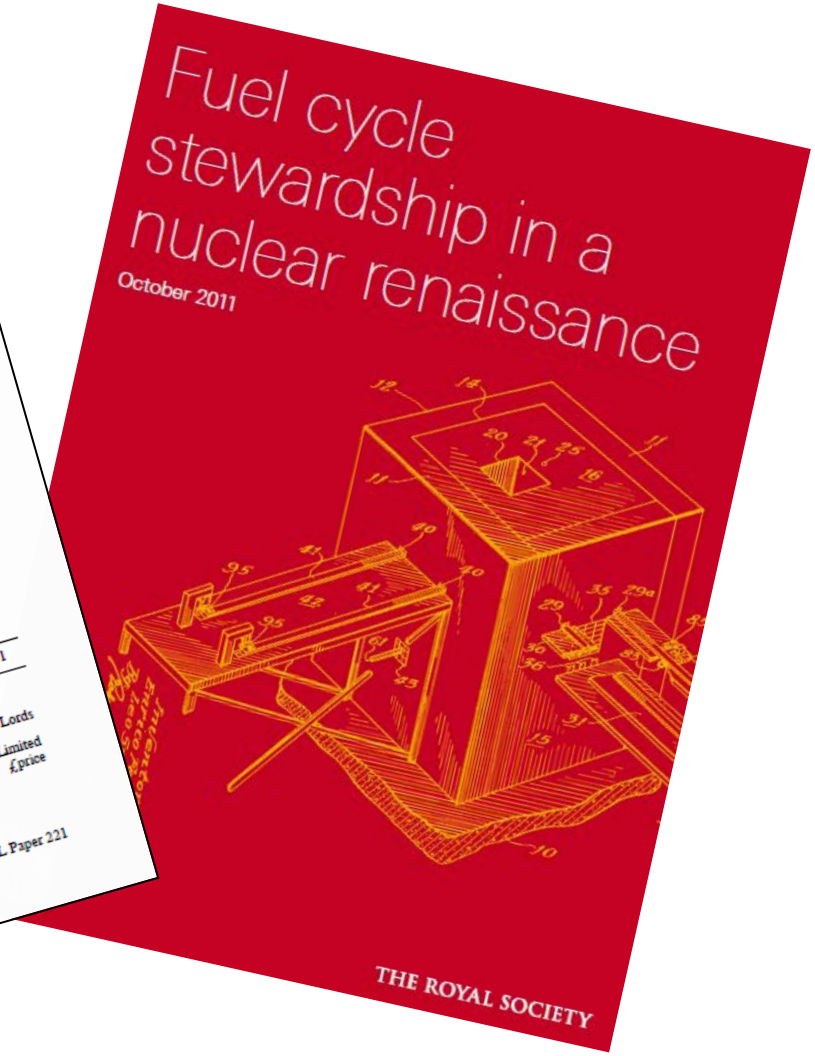

Fuel cycle stewardship in a nuclear renaissance

October 2011

THE ROYAL SOCIETY

Government's Nuclear Industry Strategy

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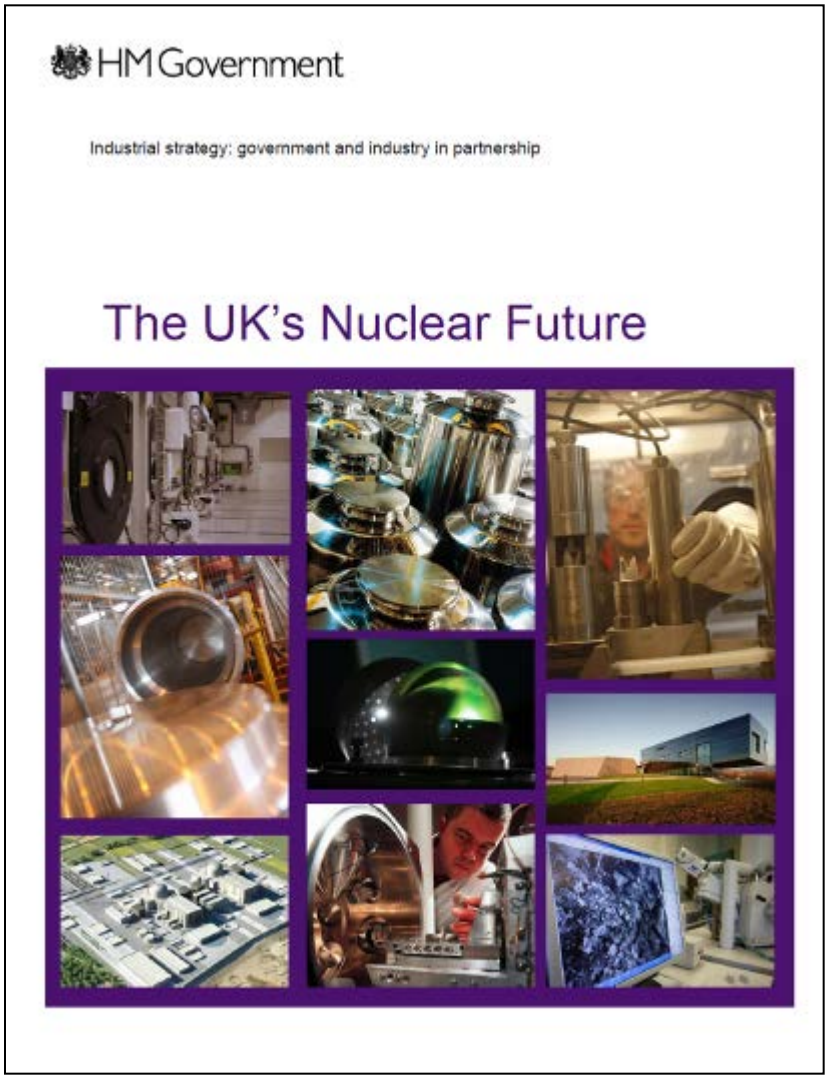
- **Home markets challenges and opportunities**
- **Enhancing the UK's innovation and R&D landscape**
- **Government attract domestic and inward investment and help firms in overseas markets and**
- **Ensuring UK has necessary skills .**



What Government said

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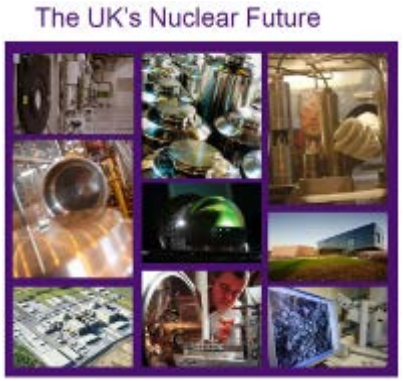
- Ambitious *Strategy* covers:
  - Safety
  - New nuclear build
  - Waste management and decommissioning
  - Home and overseas R&D collaborations



- Long-term partnership between Government, industry and research community.

- *"The beginning of a new approach and a new commitment. The Government will contribute funding for research and development, innovation, skills."*

Summary

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- UK policy on nuclear has changed 180º within 10 years
- Legally binding CO_2 targets drives the energy-mix
- Government support long-term policy on nuclear
- R&D has a crucial role to play, hence role of NNL
- Significant opportunity for international collaboration on Gen III deployment, MOX and Advanced Fuels and ultimately Fast Reactors and Advanced Fuel Cycles
- Success requires shared:

SKILLS + FACILITIES + PROGRAMMES

- NNL has a key role in this new strategy

THANK YOU FOR LISTENING

ANY QUESTIONS?