

ENERGY POLICY PANEL SESSION

How can investment in nuclear help to stimulate the economy?

Chaired by Tim Yeo, Chairman, The New Nuclear Watch Institute

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Ian Falconer

Structured Finance, Pinsent Masons



THE NEW NUCLEAR
WATCH INSTITUTE



 Pinsent Masons

NNWI Energy Policy Session

Ieuan Williams

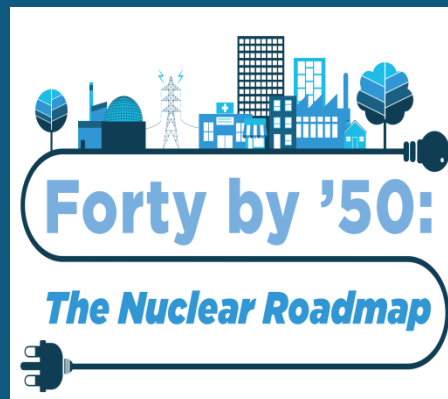
Head of Policy & Public Affairs

Nuclear Industry Association

23 July 2020



Nuclear Industry Association



Forty by '50: The Nuclear Roadmap

- Assessment produced for the Nuclear Industry Council
- Based on existing, well-respected modelling work by Energy Systems Catapult, National Grid, Committee on Climate Change, Oxford Economics and Cogent Skills
- Concludes that nuclear should maintain its 40% share of clean electricity, but can also contribute to the whole energy system, including hydrogen & clean fuels



Figure 3 Forty by '50

BY 2050 NUCLEAR CAN CONTRIBUTE UP TO 40% OF OUR CLEAN ELECTRICITY AND SUPPORT CLEAN DISTRICT HEATING AND HYDROGEN PRODUCTION. IT WOULD EMPLOY OVER 300,000 PEOPLE AND CONTRIBUTE AROUND £33BN PER YEAR TO THE ECONOMY.

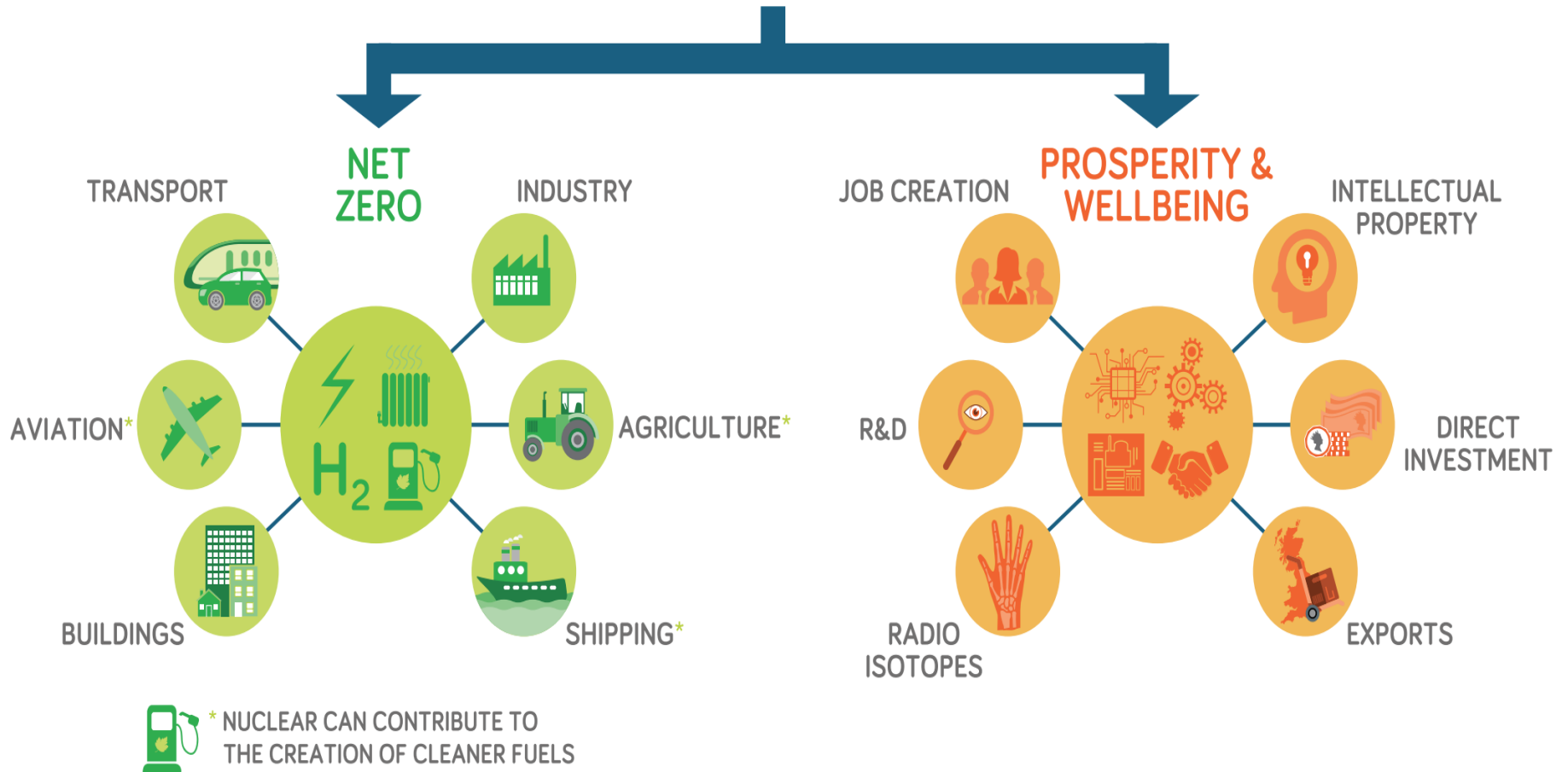
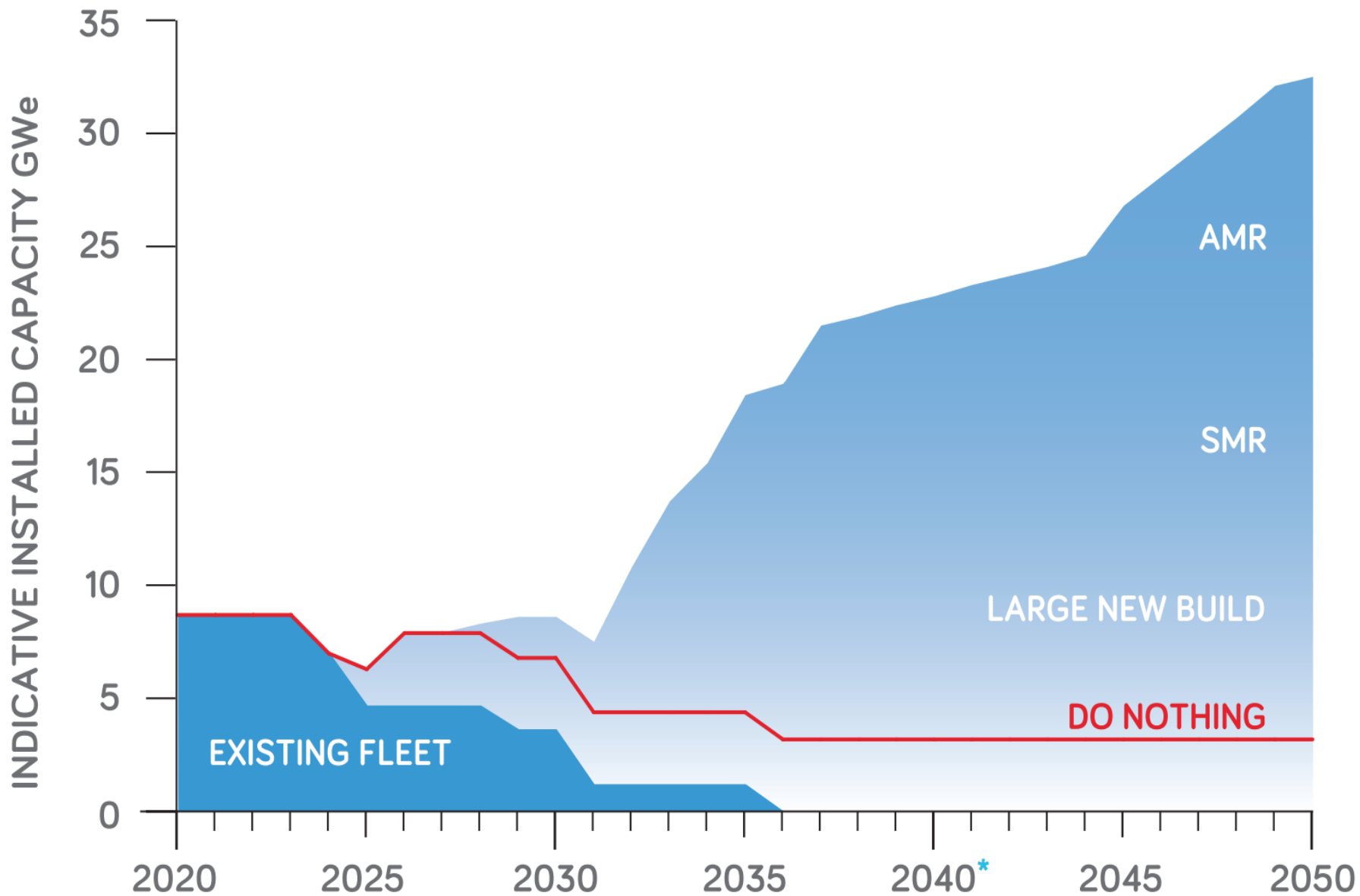


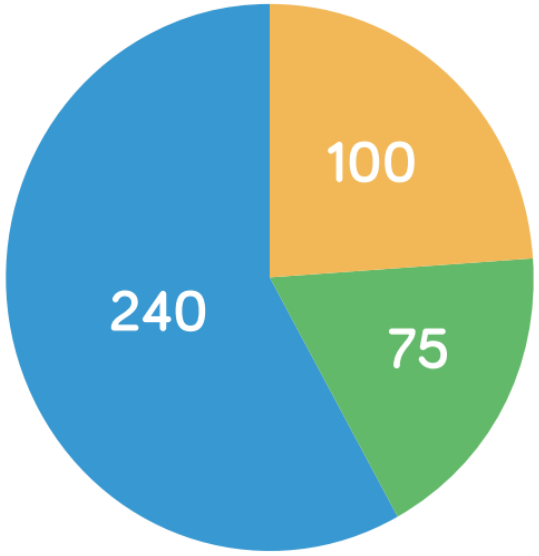
Figure 4 Potential nuclear capacity to 2050



* Delivery of a Spherical Tokamak for Energy Production (STEP) prototype reactor by 2040

Figure 5 *Deep decarbonisation in 2050 - beyond electricity*

415 TWh PER YEAR
OF CLEAN ENERGY



TERAWATT HOURS
PER YEAR

ELECTRICAL POWER GENERATED

POTENTIAL HYDROGEN GENERATED

POTENTIAL DISTRICT HEAT GENERATED

NET ZERO NUCLEAR ECONOMY

H₂ AN ADDITIONAL 18GW OF CAPACITY FOCUSED ON THE PRODUCTION OF HYDROGEN AND DISTRICT HEATING COULD FURTHER REINFORCE NUCLEAR'S CONTRIBUTION TO A NET ZERO ECONOMY



ON AVERAGE AVOIDING 186.75 MILLION TONNES OF CO₂ A YEAR—EQUIVALENT TO ANNUAL EMISSIONS OF 48 COAL-FIRED POWER PLANTS⁶

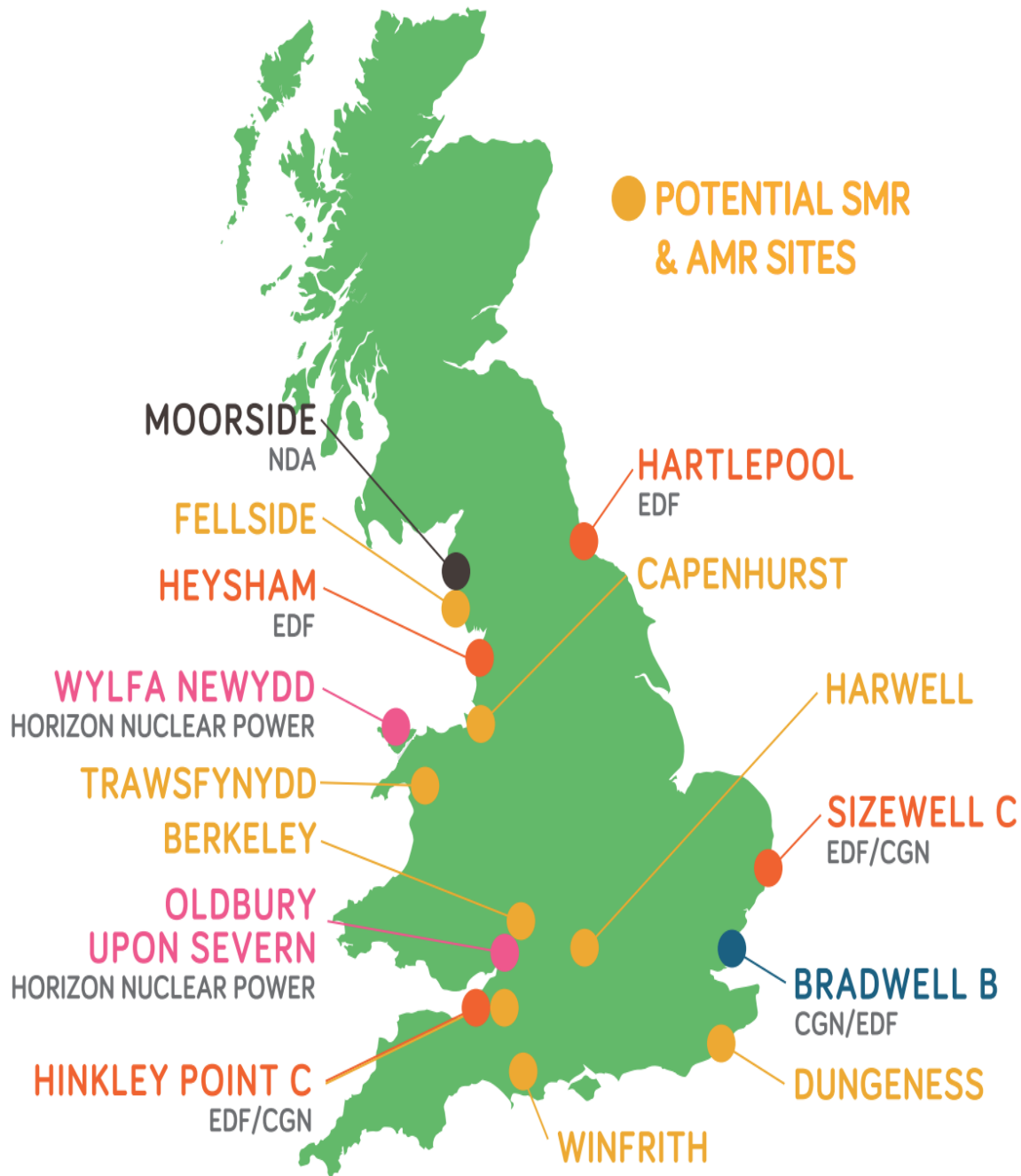


300,000 ADDITIONAL JOBS



£33BN ANNUAL GVA—GREATER THAN THE ENTIRE ELECTRICITY AND GAS INDUSTRY TODAY⁷

Figure 6 Nuclear new build sites



Forty by '50: The Nuclear Roadmap

The report sets out 6 key steps for industry and Government:

1. Continue to drive down costs of new build
2. Articulate a clear, long-term commitment to new nuclear power
3. Make progress on an appropriate funding model for new nuclear
4. Publish a National Policy Statement for small reactors
5. Support the aims of the Nuclear Sector Deal
6. Agree a framework and commitments, outside traditional electricity production including medical isotopes, hydrogen, and synthetic fuels for transport, along with heat applications



Other Recent Reports

- Energy Systems Catapult last week published *Nuclear for Net Zero*, scenarios which deliberately excluded nuclear were very expensive, used vast amounts of land, and risks net zero.
- Aurora released a new report on hydrogen production, concluding “*All Net Zero scenarios require substantial growth in low-carbon generation such as renewables and nuclear.*”
- Latest CCC progress report to Parliament, which reaffirmed nuclear, alongside renewables, will be required to reach Net Zero





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A landscape photograph of a sunset over rolling hills. The sun is low on the horizon, casting a warm orange glow across the sky and the hills. Several power lines stretch across the sky from the top left towards the center. A single transmission tower stands prominently in the middle ground. The foreground is filled with tall, dry grasses. The overall mood is serene and evokes a sense of clean energy and nature.

NUCLEAR ENERGY FOR BRITAIN

NEXT STEPS FOR OUR GREEN RECOVERY

Julia Pyke, Director, Financing for Sizewell C, EDF Energy

Julia.Pyke@sizewellc.com

23 July 2020

WHERE ARE WE?



Hinkley Point C has revived the UK's New Nuclear industry..



Hinkley Point C is providing economic growth, sustained employment and enhanced skills for the UK

£14 bn

To be invested in the UK economy during construction

25,000

Job opportunities created during the construction phase

64%

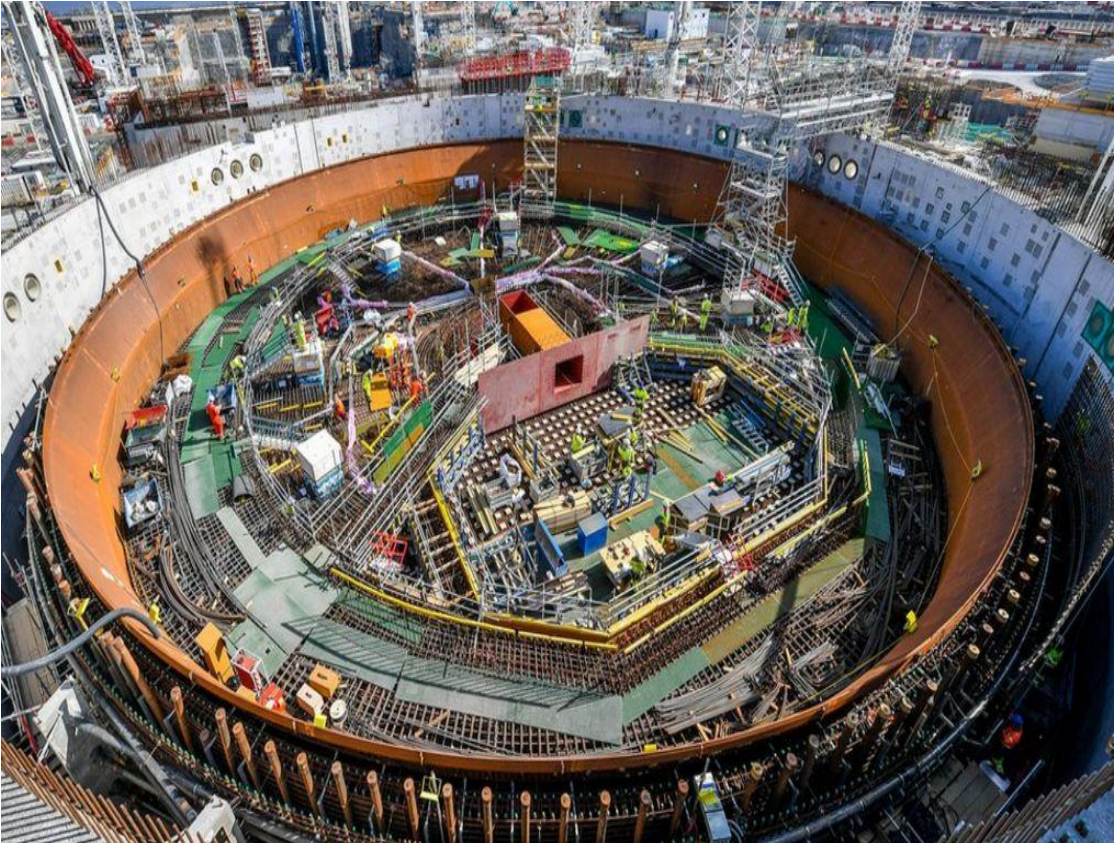
The value of construction contracts that will go to UK-based companies

£1.7 bn

Boost to the regional economy during construction so far

..Sizewell C and Moorside will build on this nuclear renaissance

Hinkley Point C Unit 2 is already showing the benefits of fleet build..



50%

The Reduction in installation time on Unit 2 cooling system components

30%

Less time taken to install liner cup floor

45%

More steel installed in the same time frame

..Sizewell C can start with those fleet benefits

Sizewell C Status Update

- Submitted our **Development Consent Order**, after 8 years of consultation.
- Applied for a **Nuclear Site Licence** and have applied for environmental consents as well.
- Early works** on Sizewell C (e.g. road schemes) are ready to go - £300 million of work could be awarded this year.
- We look forward to the Government's conclusions on the funding model. **Financial investors (including British Pension Funds) want to invest** and are keen to help Government rebuild economy after Covid-19
- Many of the UK's nuclear suppliers are involved in HPC and have come together in a **Sizewell C consortium**. With the EDF team, they are looking at continuity issues for their own teams as HPC moves towards the end of its civils phase.



Moorside: Where are we?

The Moorside Consortium

- A consortium of leading UK construction, engineering and nuclear specialists, along with unions, has **come together to promote a Clean Energy Hub in the North West**
- The consortium will explore: developing a new nuclear project with **twin UK EPRs and hosting small modular reactors (SMRs) and advanced modular reactors (AMRs)**.

The consortium has been seeking advice from the Cumbria Local Enterprise Partnership, Copeland Council and BECBC to develop its plans / identify supply chain linkages.

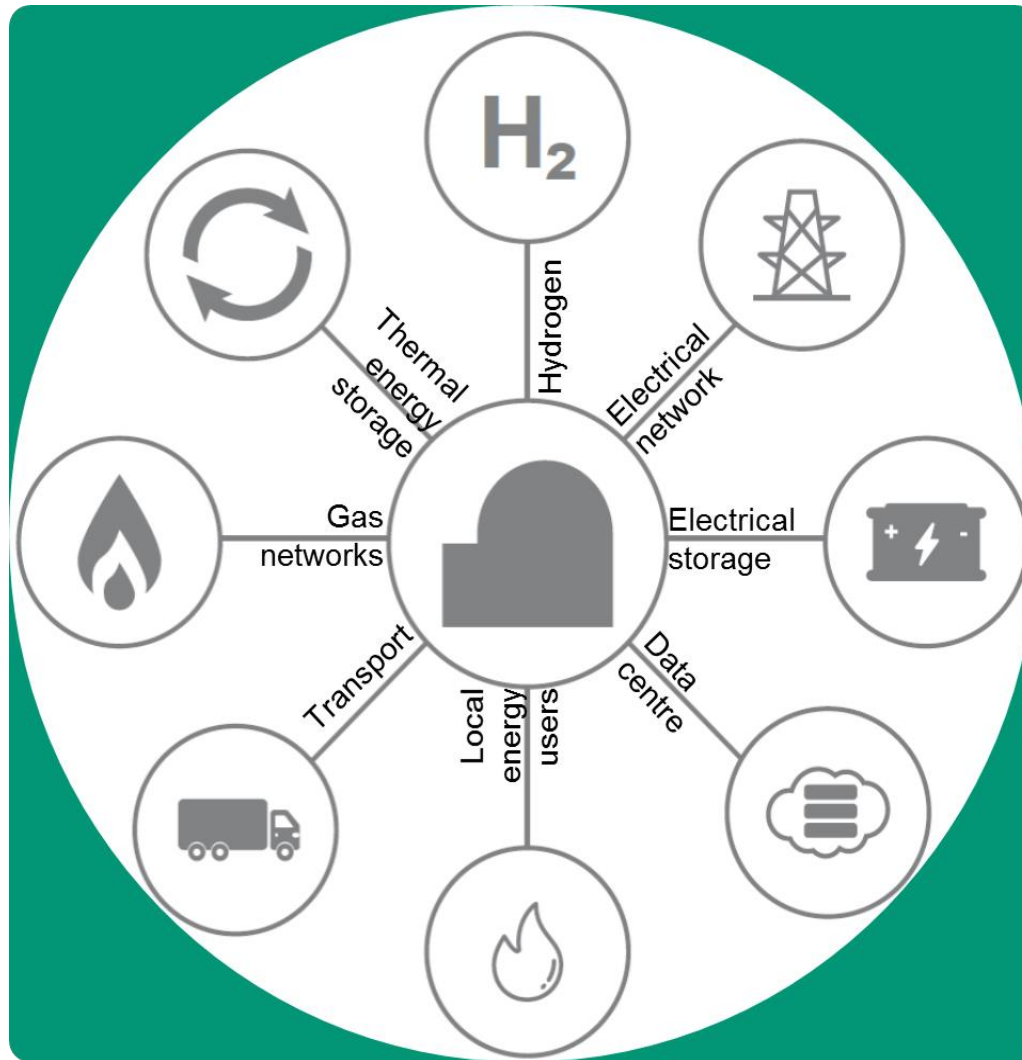
Norfolk & Suffolk nuclear supply chain will benefit from the legacy of jobs and revenue this could create.



WHAT MORE CAN WE OFFER THE UK?

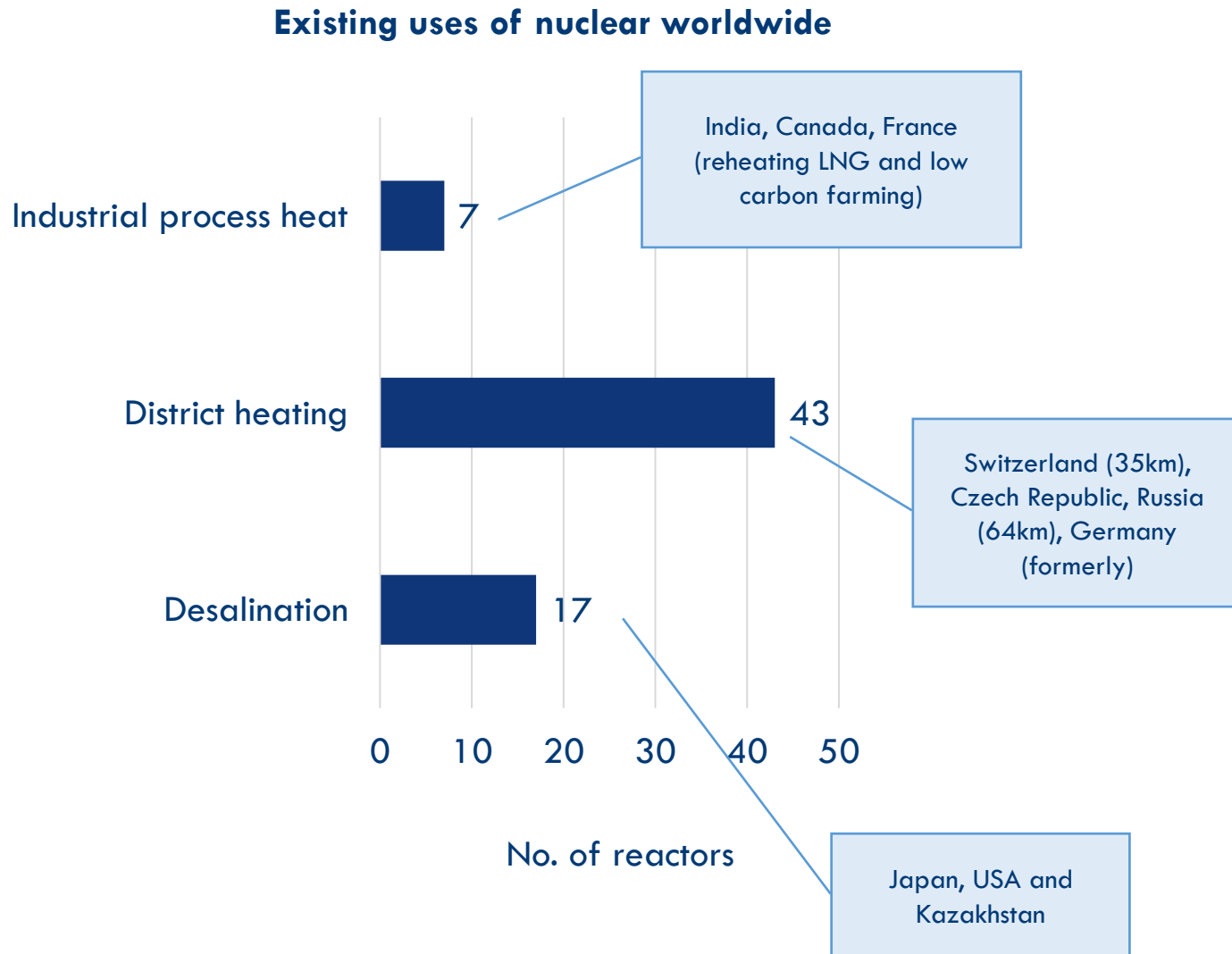


Nuclear power can be an energy hub..



..providing more to the economy than electricity alone

Other countries have embraced this concept



Nuclear power can kick start the hydrogen economy..

A 2MW demo electrolyser at Sizewell B could green the construction for Sizewell C, powering

533 forklifts for one day; or

160 cars for one day; or

16 buses for one day.

Longer terms, a larger electrolyser at Sizewell C would benefit from the hydrogen economy started at Sizewell B.



..using clean, carbon free electricity

NET ZERO TOWN



Proud to be collaborating on a community led project to take a town net zero..



..creating a replicable blueprint for communities in all four corners of our country

Nuclear power provides a real opportunity

A dirt path leads through a lush green field towards a line of trees under a cloudy sky with sunbeams. The path is flanked by tall grass and a wooden fence post on the left. The sunbeams create a dramatic effect, illuminating the scene from the left.

for a green recovery

locally, regionally and nationally

to control our path to a low carbon future

NNWI Energy Policy Session

July 23, 2020

Greg Willetts, Vice President of Technology &
Consultancy

Critical Mission Solutions - International

About Jacobs

54,000
talented
people

Executive
Team
Diversity of
75%

Jacobs Purpose

Challenging today

Reinventing tomorrow

To create a more connected, sustainable world

£13Bn
Revenue

1700+
mental
health
champions

Mission Critical
Solutions

Resilient
Environments

Thriving Cities

175
apprentices

800
graduates

Operational
Advancement

Scientific
Discovery

Advanced
Manufacturing

Key positions - Nuclear

**Strategic
lifetime partner
to EDF UK nuclear
fleet**

Playing a key role
**in every UK civil
reactor new build
project**

**Delivering at the
world's most
challenging
decommissioning**

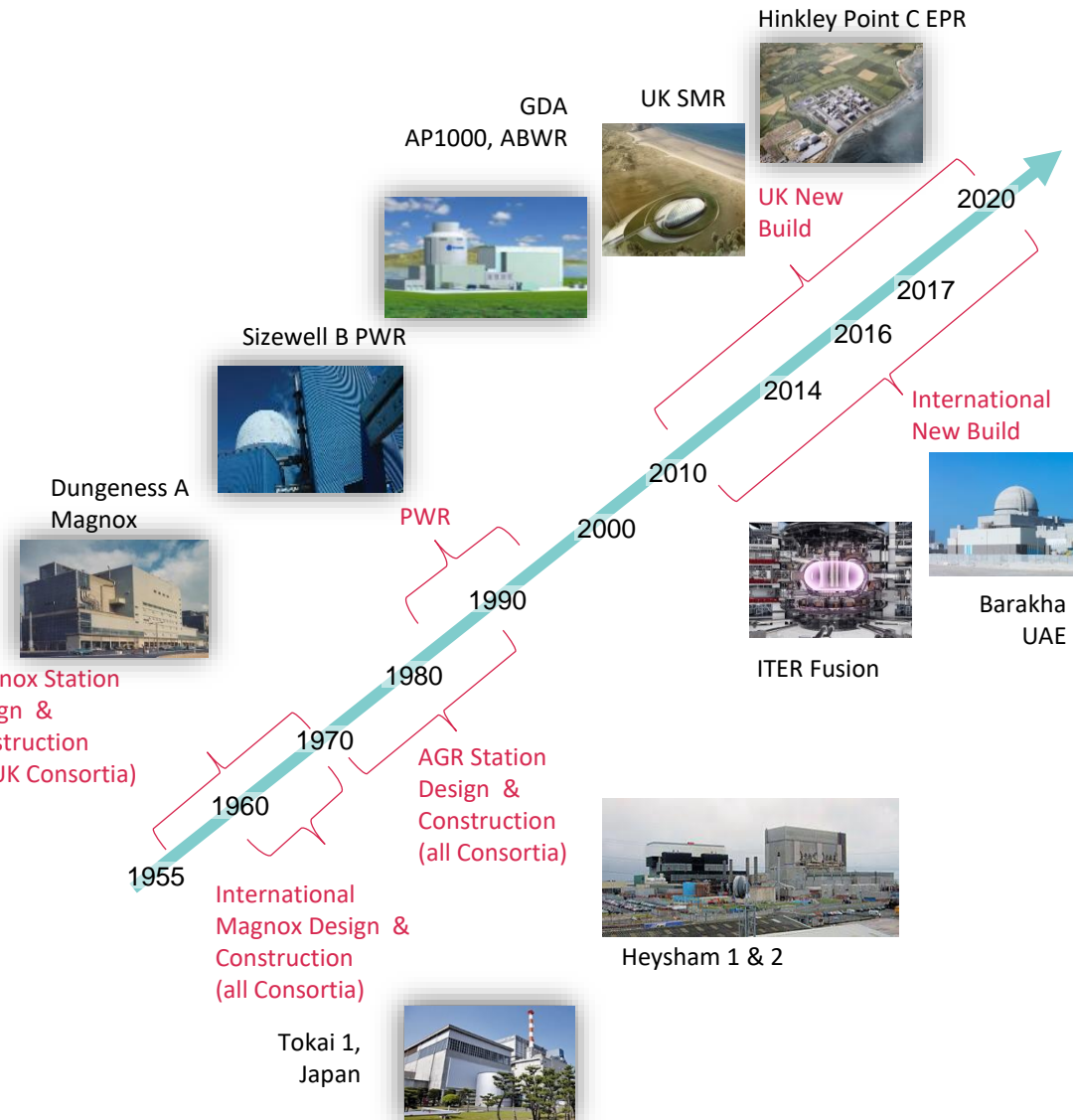
sites Fukushima,
Sellafield, Chernobyl,
Hanford.

Supporting
**Global nuclear
new build**
Barakah (UAE), Hanhikivi
(Finland), Poland

**Supporting nuclear
technology
development and
deployment**
SMRs, AMRs, Fusion,

Jacobs - 65 years of nuclear reactor experience

- Jacobs has played a key role in the design and build of every UK civil nuclear power station
- Currently playing significant roles on reactor new build, operations and decommissioning across the world.
- Continuing to drive investment in technology and innovation, to help shape the future of nuclear energy.



Changing energy systems

- Demand for clean electricity will increase- driven by global development, population growth and decarbonisation of heat and transportation.
- Clean Electricity will be the central pillar for future industrial activity
- Transport solutions pose particular challenges
- Post Covid Impact?

Europe's electricity demand currently c.10% below pre Covid levels, in China bounced back to pre Covid levels

During lockdown pollution levels fell dramatically. Will populations demand an accelerated move to a clean energy economy?



How will 2050 clean energy targets be met?

- Contribution from each different clean energy source (including nuclear) will be needed
- The mixture of variables being at play, including energy density of fuels, intermittency, battery technology, heat output from clean energy sources
- Nuclear can contribute to this clean energy development journey through a combination of large-scale GW reactors, Small Modular Reactors, Advanced Gen IV Modular Reactors and also Fusion.
- These reactor types will come onstream over different timescales in the next 30 years but a combination of all will be needed
- Importantly the UK Government should support and invest into each in parallel and hence empower the development of the supply chain now for this development of UK Nuclear Power capability

Why Invest in nuclear now?

- Immediate stimulus
- Range of projects that can start immediately, significant activity before shovel in the ground
- High-quality engineering, science, project management jobs in Nuclear supply chain across all UK regions, including creating graduate and apprentice positions
- Same supply chain also supports other major infrastructure projects and industries that will be required to stimulate the economy
- Immediate need to progress Sizewell C as a shovel ready major infrastructure project to maintain vital skills in the sector built up on Hinkley Point C (across the UK).
- Export potential for nuclear supply chain post Brexit across the nuclear lifecycle



THE LAWYER
AWARDS 2018
LAW FIRM OF THE YEAR

Supply Chain Finance

Ian Falconer

Ian Falconer is a senior member of the structured finance group at Pinsent Masons. He works closely with the energy and infrastructure teams on financing solutions, including for emerging energy projects. Before joining Pinsents he spent his career as a partner at Freshfields Bruckhaus Deringer working on a wide range of structured finance transactions.

Supply chain finance

- Opportunity to pass economic benefits through supply chain.
- But critical to build resilient supply chain:
 - Evident current distress
 - New models of contracting
 - Financial resilience an integral element
- How supply chain finance can support financial resilience.



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LAW FIRM OF THE YEAR

Supply chain finance

- Companies use receivables to raise working capital
 - Securitization or other receivables financing
 - Sell receivables for immediate payment
 - Accelerate cashflow; improve liquidity
 - Encouraged by Government (by invalidating restrictions on assignment)
- Some companies will have their own securitization programme
 - But many will not
- This is where supply chain finance can help.



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LAW FIRM OF THE YEAR

Supply chain finance

- Supply chain finance (SCF) enables all a company's designated suppliers to raise finance against the receivables owed by the company
 - Suppliers have the option to sell receivables to the SCF programme for immediate discounted payment
 - Cost of finance based on company's, not supplier's, credit
 - May be associated with an extension of credit terms
- Company separately gives a direct payment undertaking to the SCF program
 - Needs careful structuring
 - Remains important to ensure valid perfected assignment of receivables by suppliers to SCF programme



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Supply chain finance

- Supply chain finance encouraged by Government in response to global financial crisis
 - to access non- bank sources of funding
- SCF programmes have evolved
 - Some are provided by banks but bring in other investors
 - They are where fintech and e-contracting meet
- SCF programs can be challenging but rewarding to establish
 - They involve a complex allocation of responsibilities for systems performance, data security and the like
 - They can accommodate suppliers from a range of other jurisdictions



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Any questions?



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