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Options, Choices, Action: UK Scenarios for a low carbon transition. The next decade is critical!

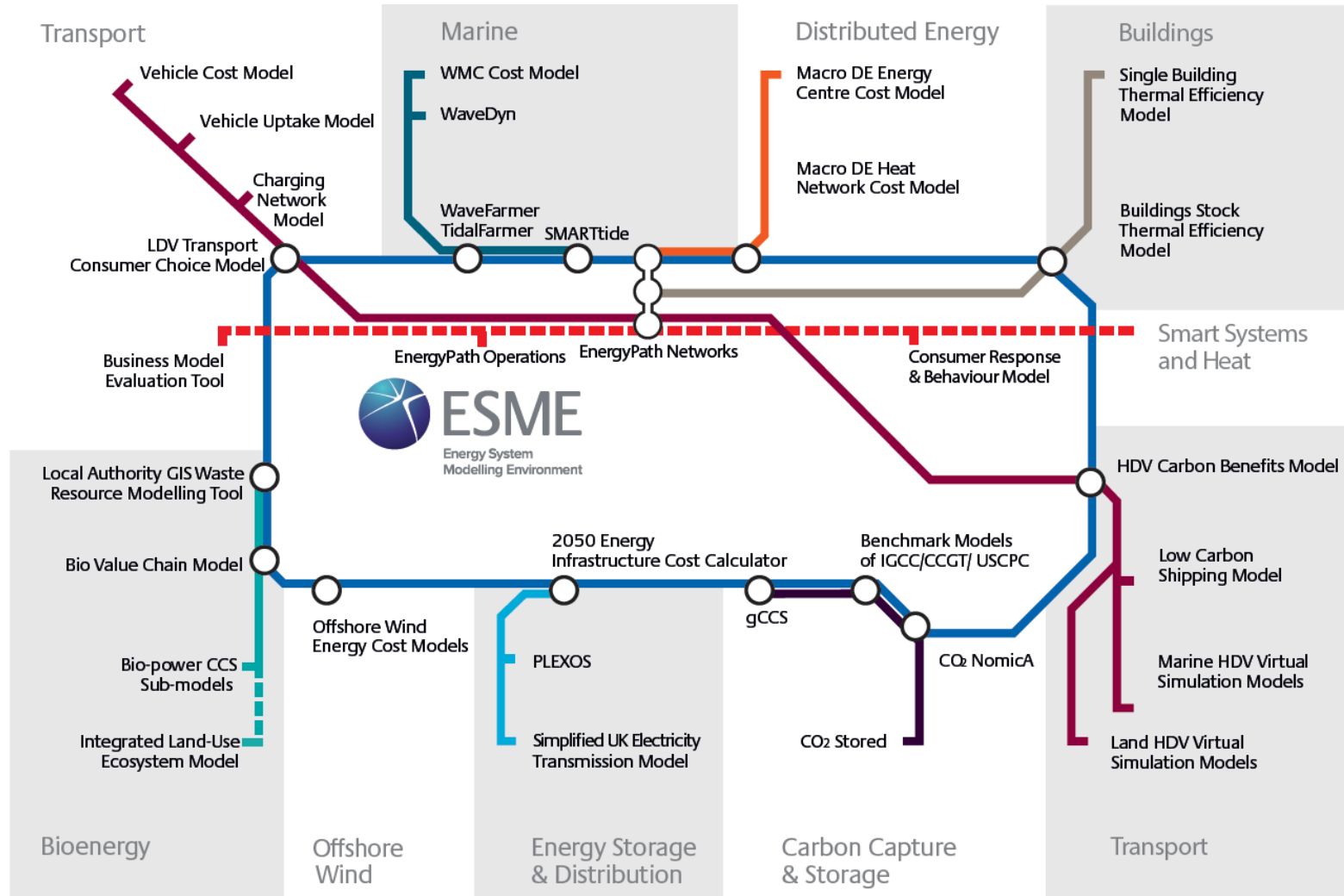
Jo Coleman, 26th February 2016

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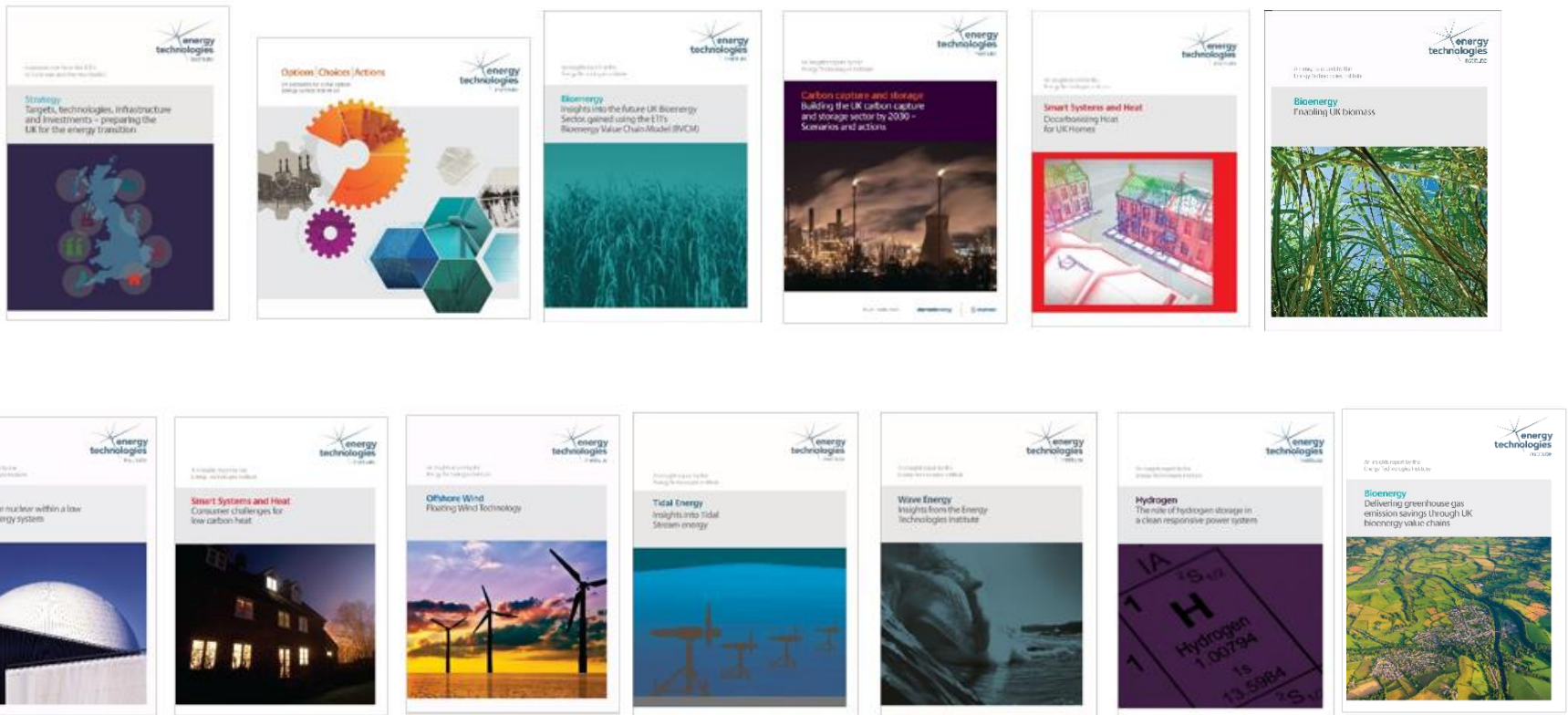


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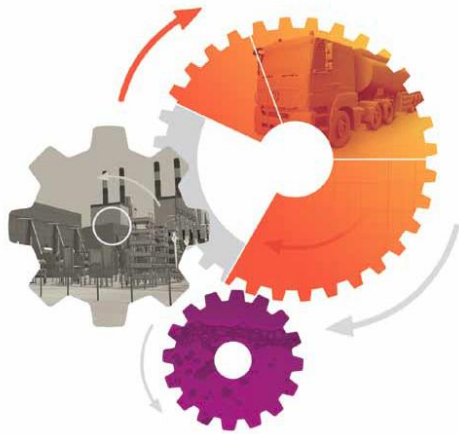
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INTRODUCING THE **SCENARIOS**

CLOCKWORK



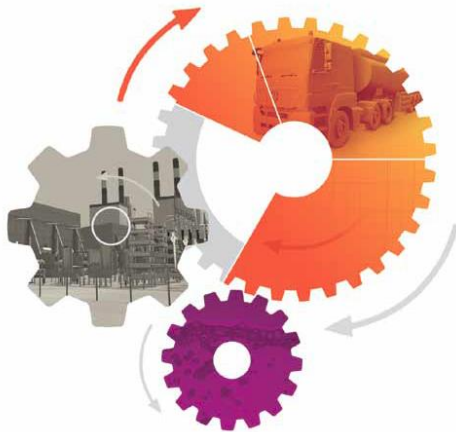
PATCHWORK





INTRODUCING THE **SCENARIOS**

CLOCKWORK



Institutional Mandate

A national planning approach establishes a framework for energy system decision-making. There is societal acceptance of chosen solutions.

Carbon Offsetting

Realising the system-wide value of CCS and biomass in generating negative emissions, provides headroom for other sectors to postpone expensive decarbonisation decisions.

National Scale Infrastructure

A focus is placed on national co-ordination of supply-side generation and shared infrastructure.

Phased Decarbonisation

Emissions reduction is led by action in the power sector, followed by buildings and finally transport, where regulation drives incremental efficiency improvements in vehicles, including through adoption of plug-in hybrids.



INTRODUCING THE **SCENARIOS**

Societal Engagement

Alongside decarbonisation, popular concerns over other social and environmental values (including land use and air quality) influence decisions taken on energy system planning at a local level.

Multi-Scale Infrastructure

A mixture of national, regional and local approaches continue to deliver a patchwork of low carbon energy infrastructure and supply, with active societal engagement.

Extensive Renewables

A renewables-heavy solution to energy supply is dominated by offshore wind and supported by smaller-scale technologies including the continued growth of solar.

Parallel Decarbonisation

Transformation of the power sector is followed by extensive, parallel abatement action across buildings and transportation, with a substantial uptake of hydrogen fuel cell vehicles and plug-in hybrids.

PATCHWORK





Key Messages

1

The UK can achieve an affordable transition to a low carbon energy system over the next 35 years. Our modelling shows abatement costs ranging from 1-2% of GDP by 2050, with potential to achieve the lower end of this range through effective planning

2

The UK must focus on developing and proving a basket of the most promising supply and demand technology options. Developing a basket of options (rather than a single system blueprint) will help to limit inevitable implementation risks

3

Key technology priorities for the UK energy system include: bioenergy, carbon capture and storage, new nuclear, offshore wind, gaseous systems, efficiency of vehicles and efficiency/heat provision for buildings



Key Messages

4

It is critical to focus resources in the next decade on preparing these options for wide-scale deployment. By the mid-2020s crucial decisions must be made regarding infrastructure design for the long-term

5

CCS and bioenergy are especially valuable. The most cost-effective system designs require zero or even “negative” emissions in sectors where decarbonisation is easiest, alleviating pressure in more difficult sectors

6

High levels of intermittent renewables in the power sector and large swings in energy demand can be accommodated at a cost, but this requires a systems level approach to storage technologies, including heat, hydrogen and natural gas in addition to electricity

“ BY 2025, CHOICES MUST BE MADE REGARDING INFRASTRUCTURE DESIGN FOR THE LONG-TERM. CLOSING DOWN OUR OPTIONS TOO SOON COULD PROVE UNNECESSARILY COSTLY FOR THE UK, BUT THE BIGGER THREAT IS FAILING TO BUILD UP THOSE OPTIONS AT ALL ”





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