

# UKERC

UK Energy Research Centre

## Innovation and transitions to low carbon societies: lessons from the UK

Jim Watson, Director, UKERC

LCS-RNet Annual Meeting, Yokohama 17th July 2018

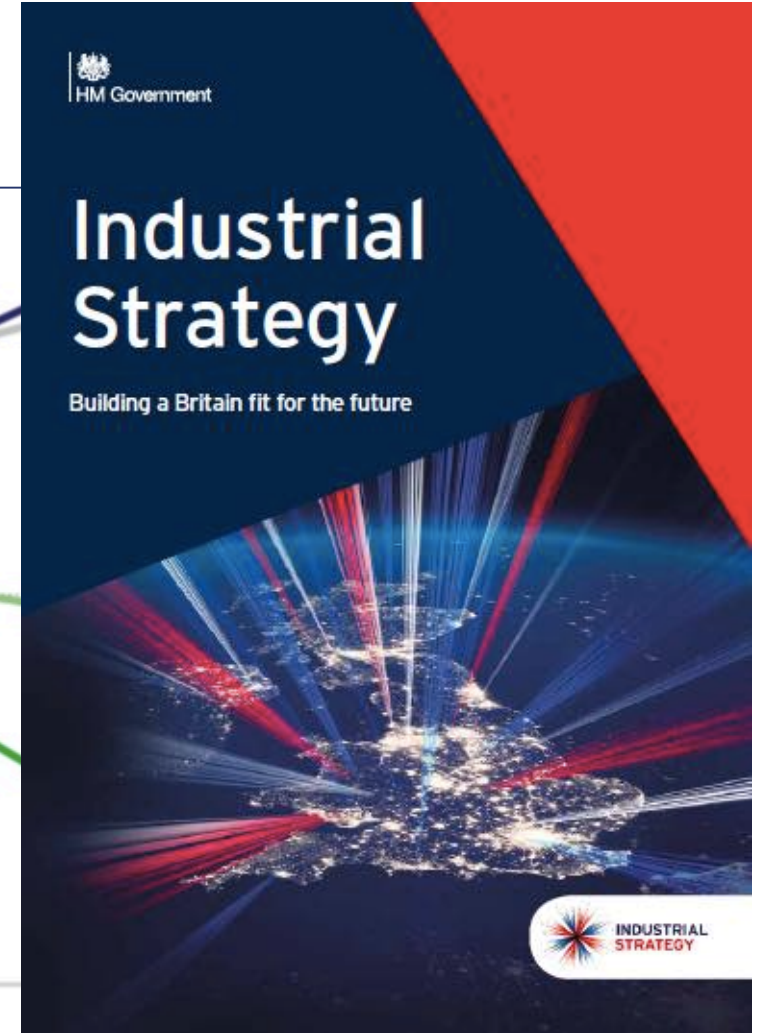
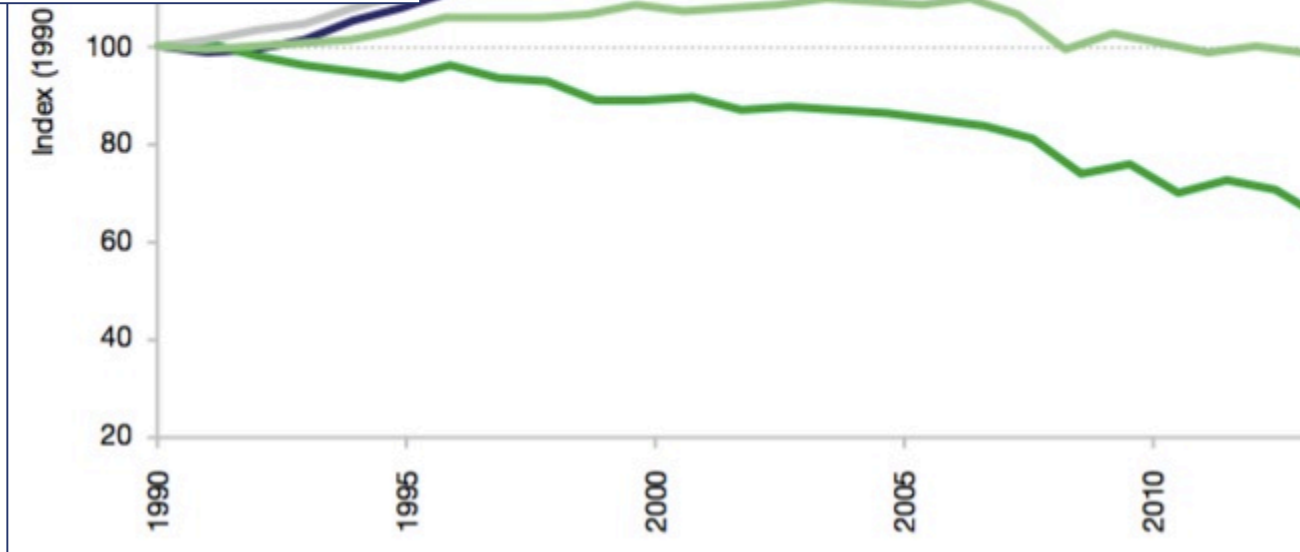
# Overview

1. UK policy context
2. Innovation: a systems perspective
3. Three case studies of UK policy
4. Conclusions and policy lessons

# UK policy context

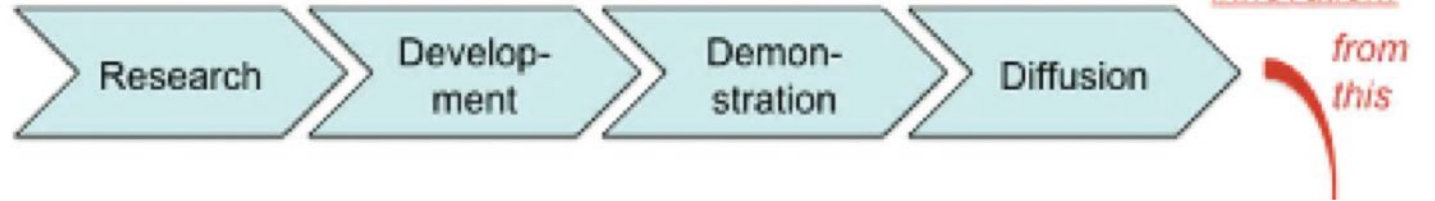


Climate Change Act 2008



# Innovation systems

## Linear model of Innovation process



Source:  
Global Energy  
Assessment

KERCHQ

# Innovation systems

## Linear model of Innovation process

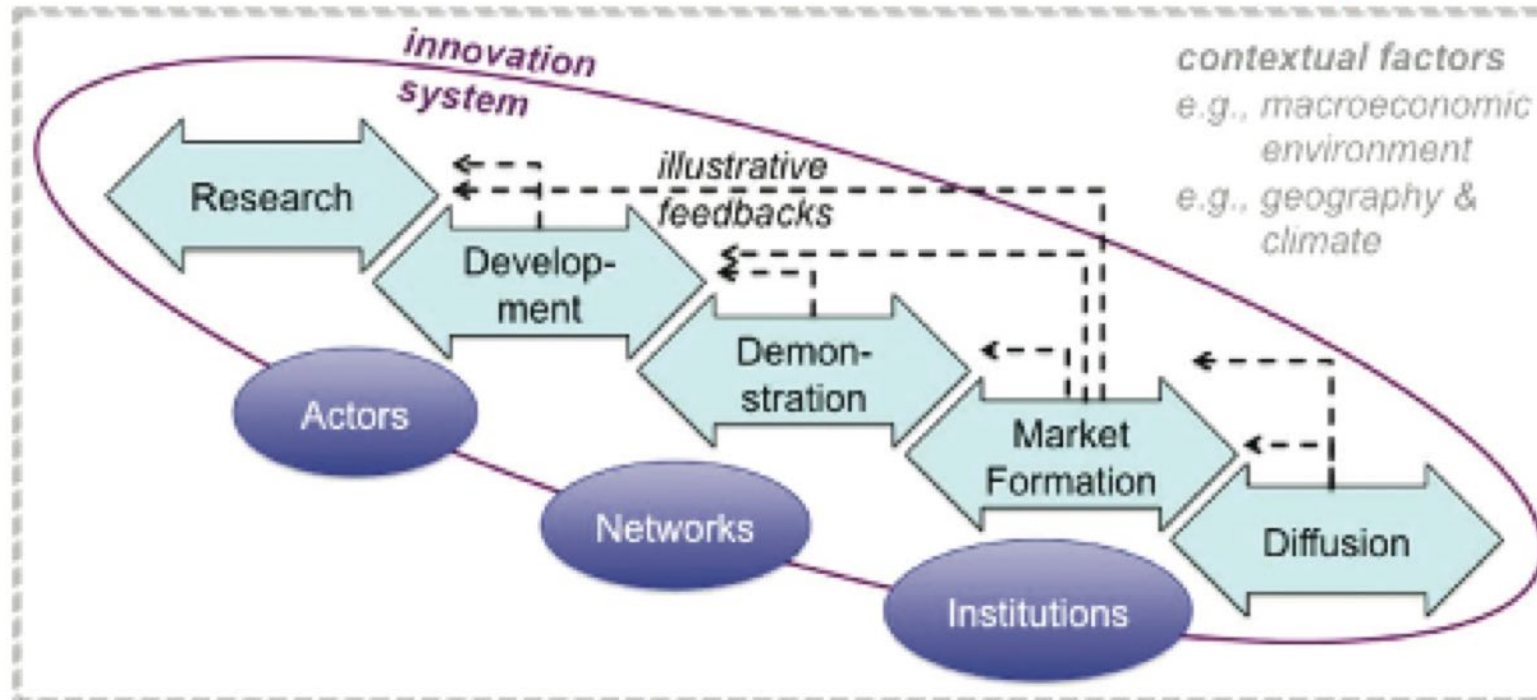


*Understanding innovation:*

*from this*

*to this*

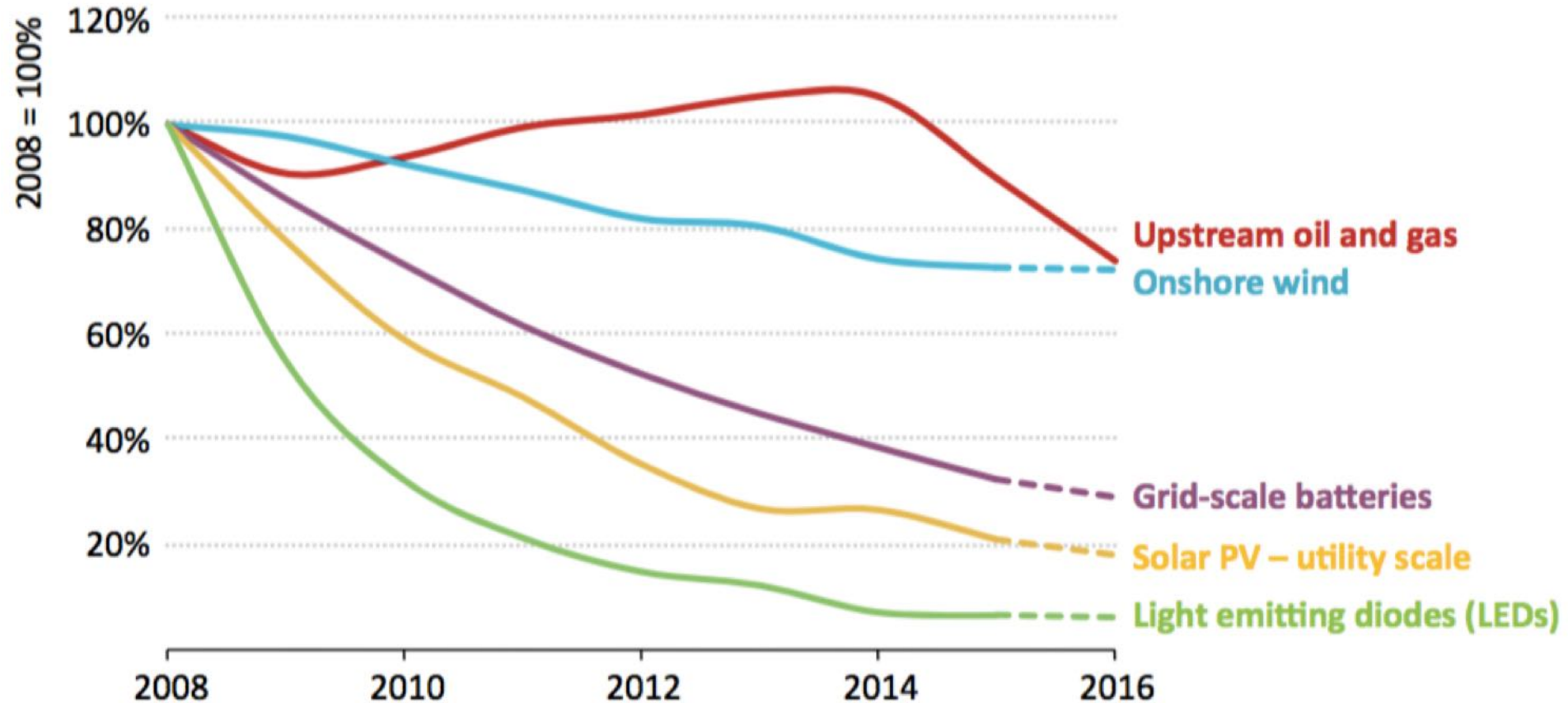
## Systematic representation of innovation with chain-linked model of innovation process



Source:  
Global Energy  
Assessment

# Meeting global climate targets

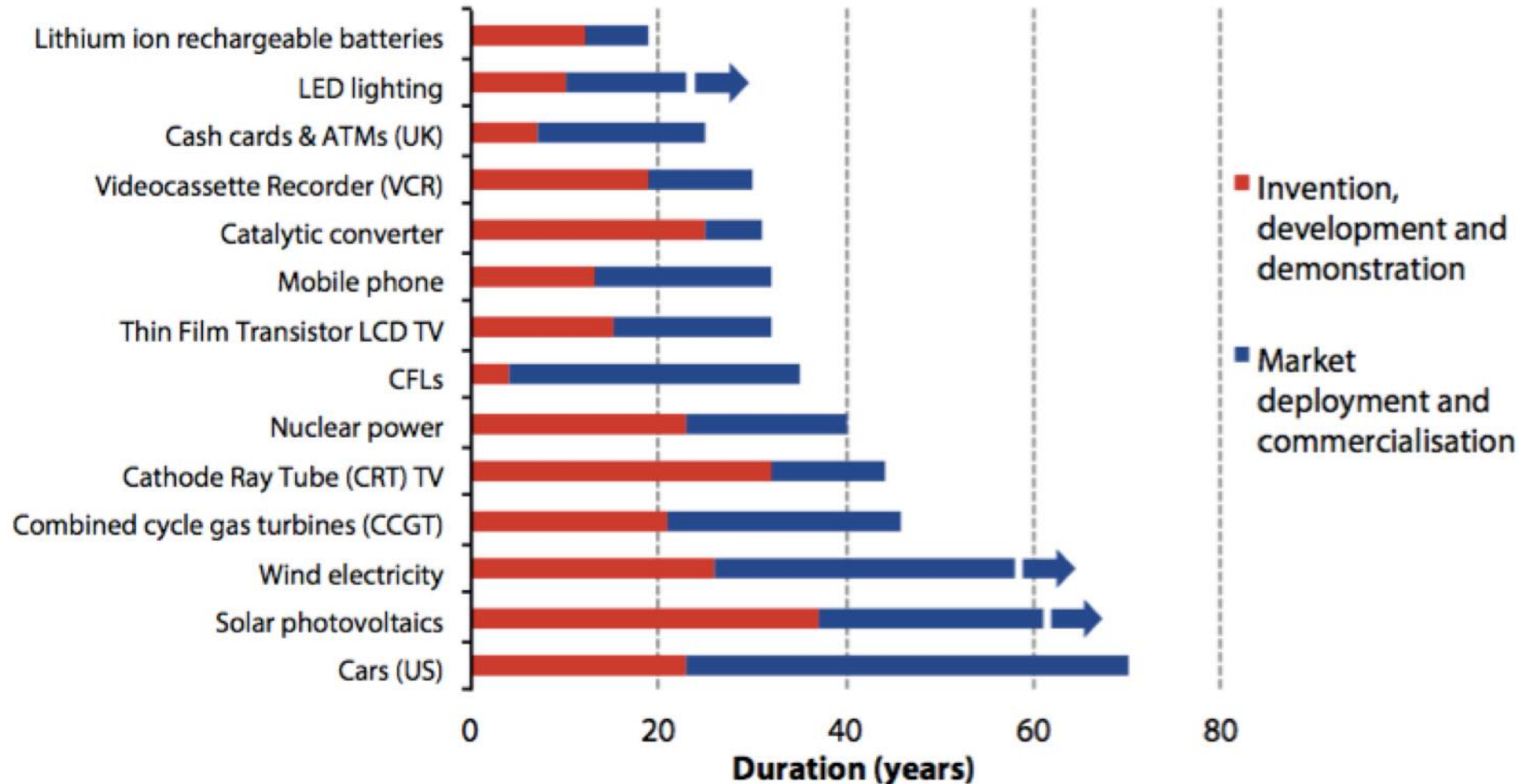
## Innovation is already making an impact



*Cost deflation has affected diverse technologies across the energy spectrum*

# Meeting global climate targets

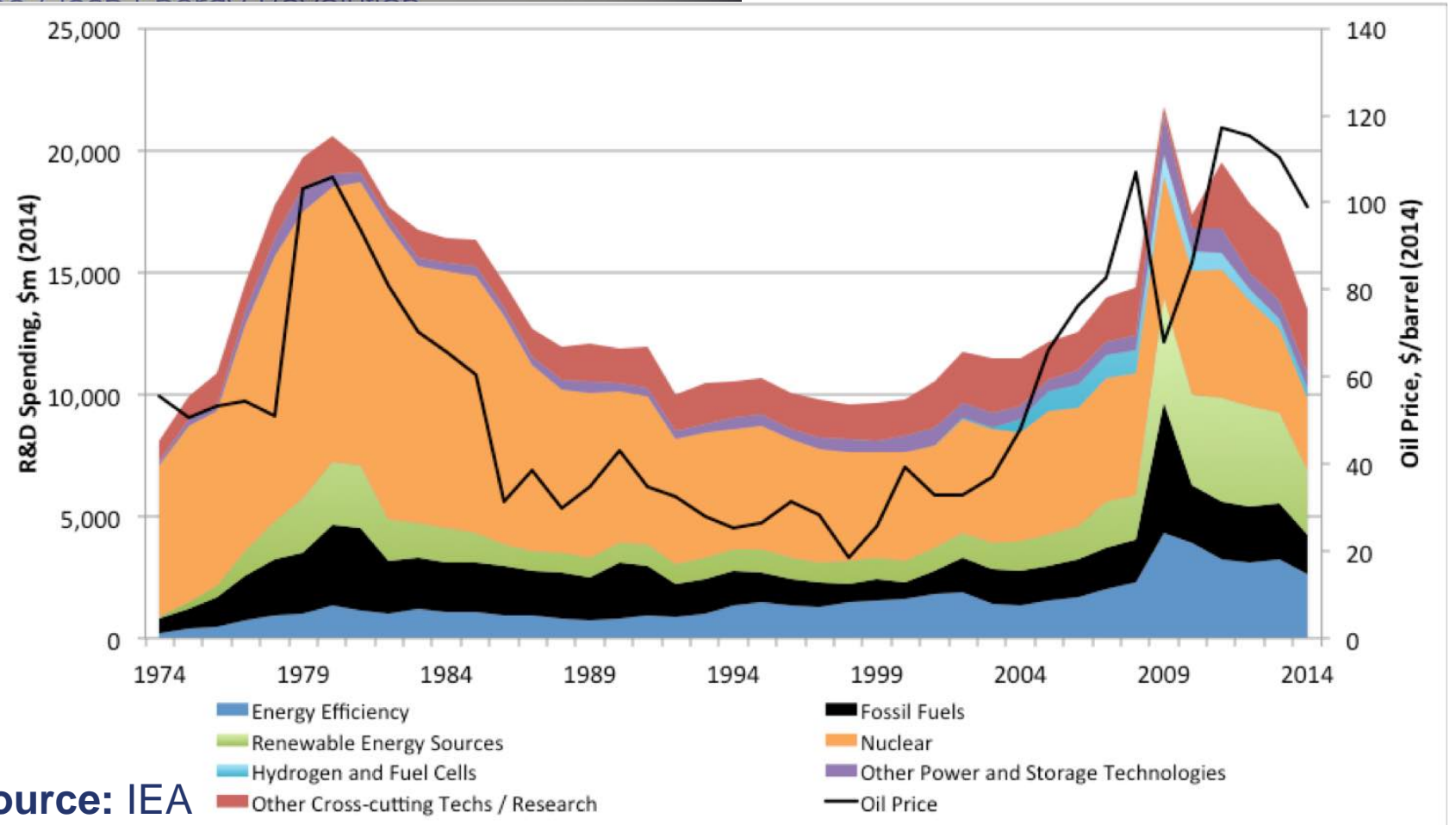
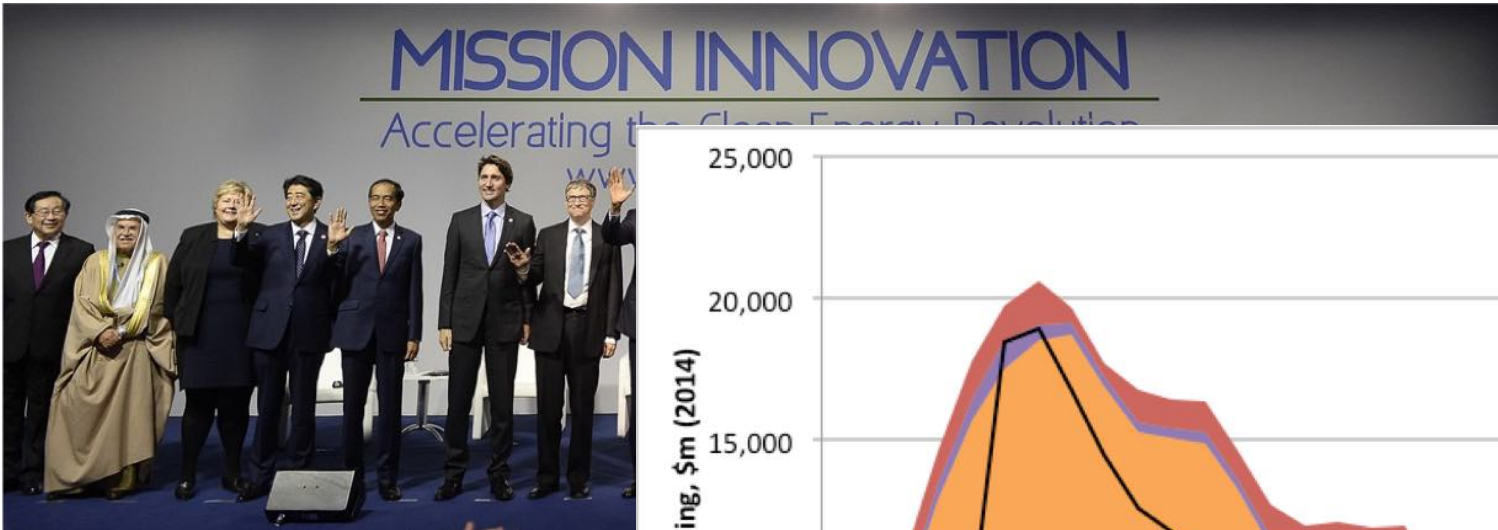
## But: innovation takes time



Source: UKERC / Committee on Climate Change

# Meeting global climate targets

## Public funding for energy R,D&D

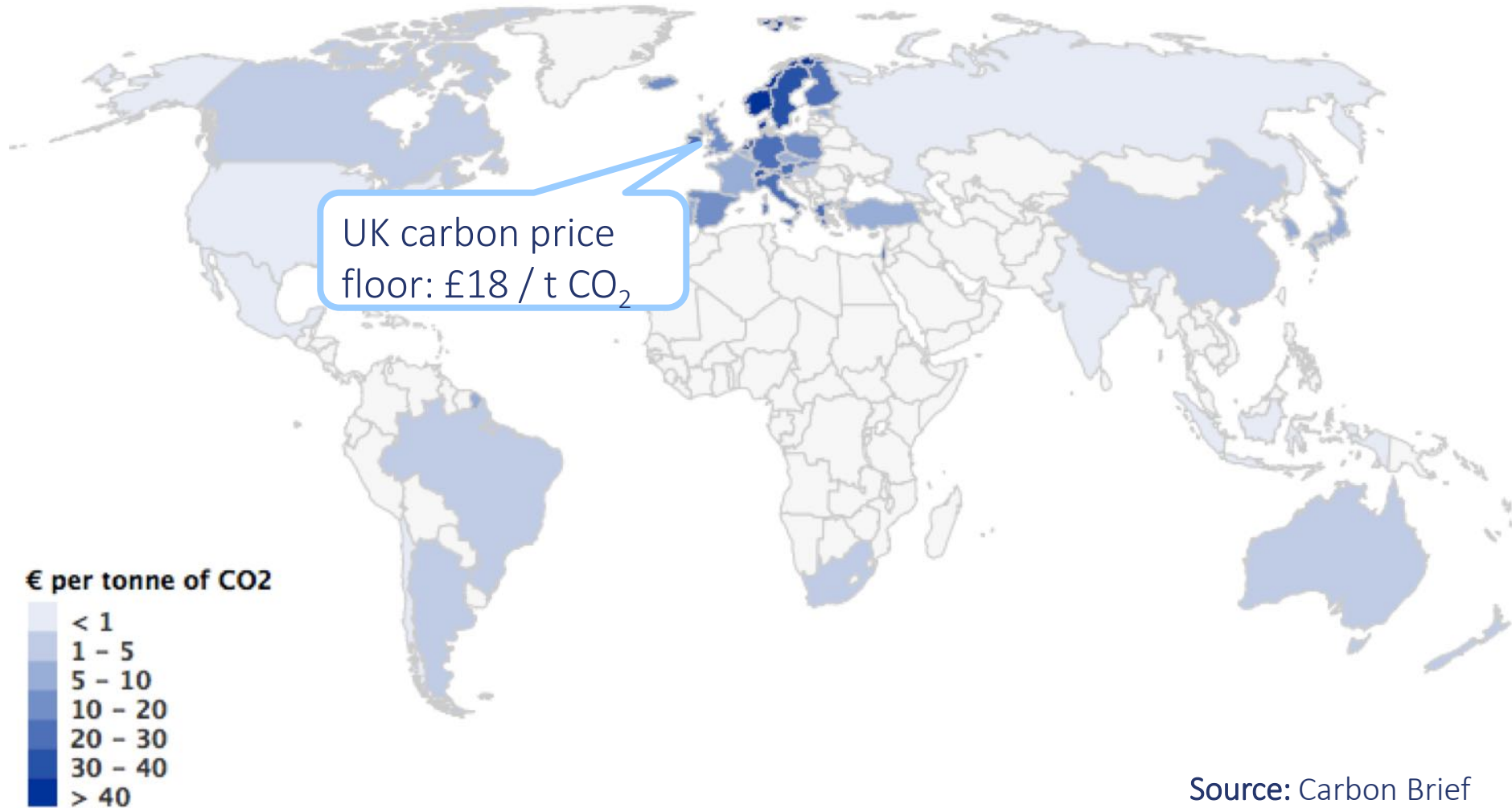


Source: IEA

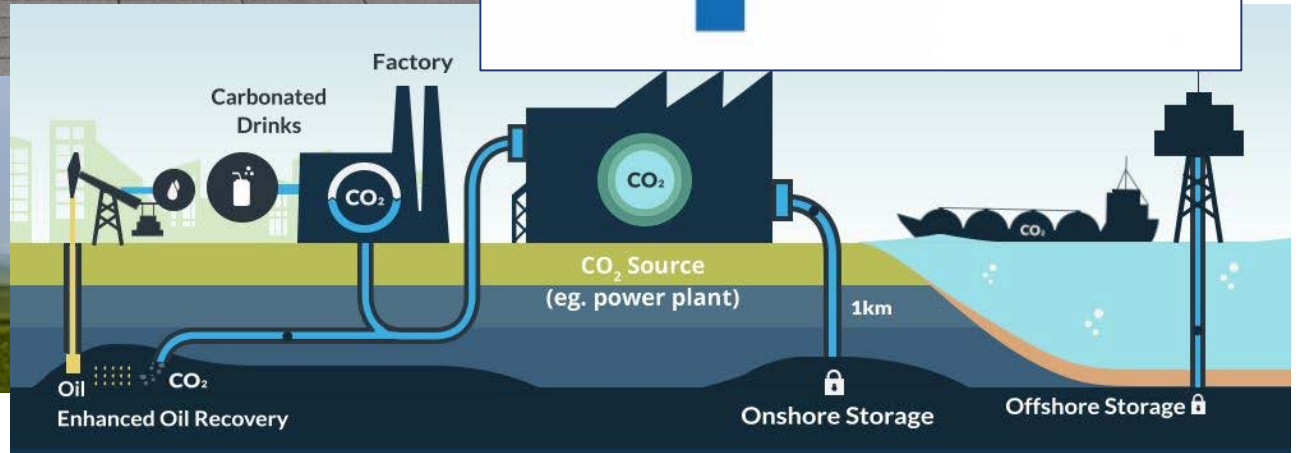


# Meeting global climate targets

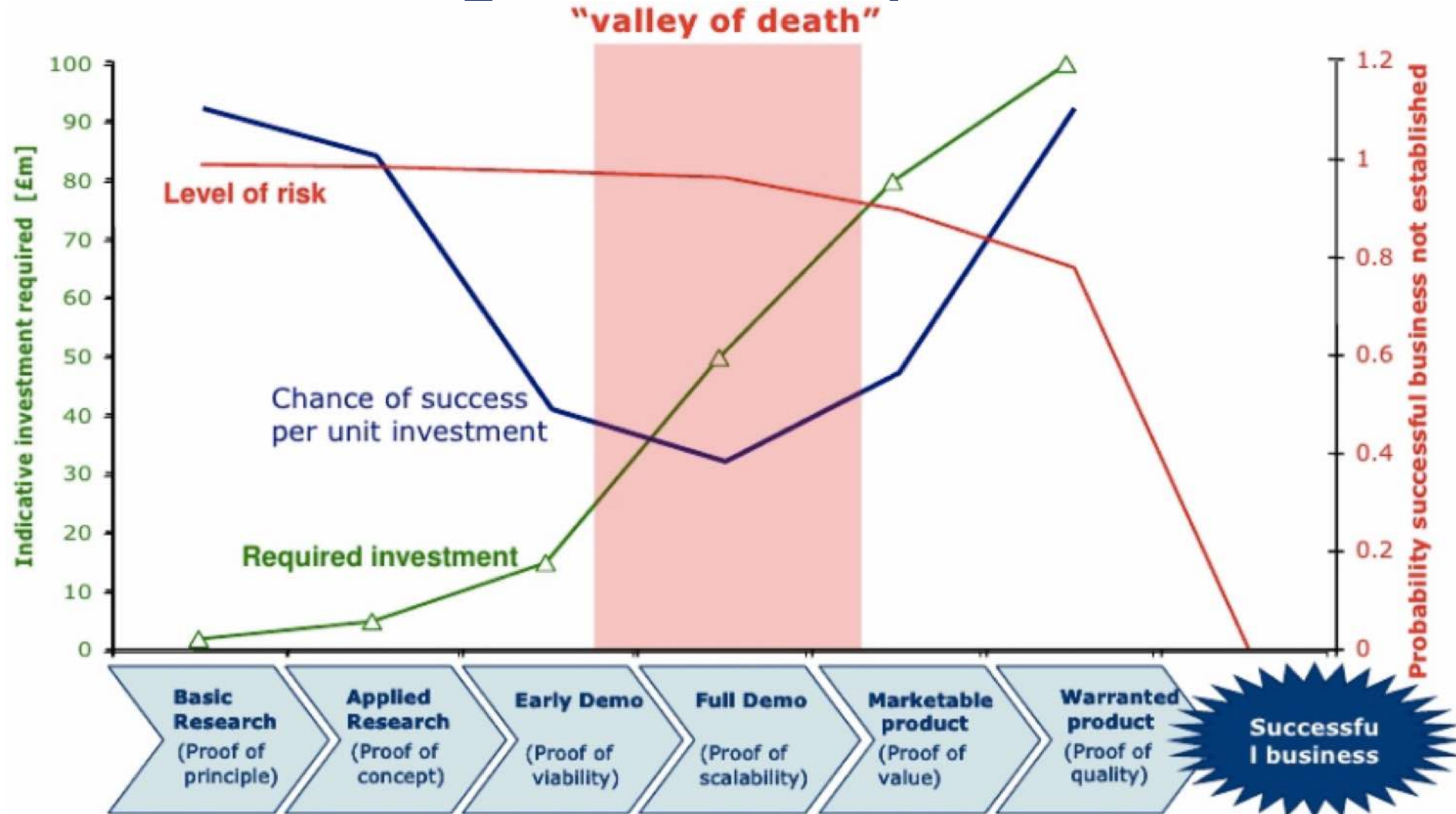
## Carbon pricing



# Markets and technologies are diverse: one price doesn't fit all



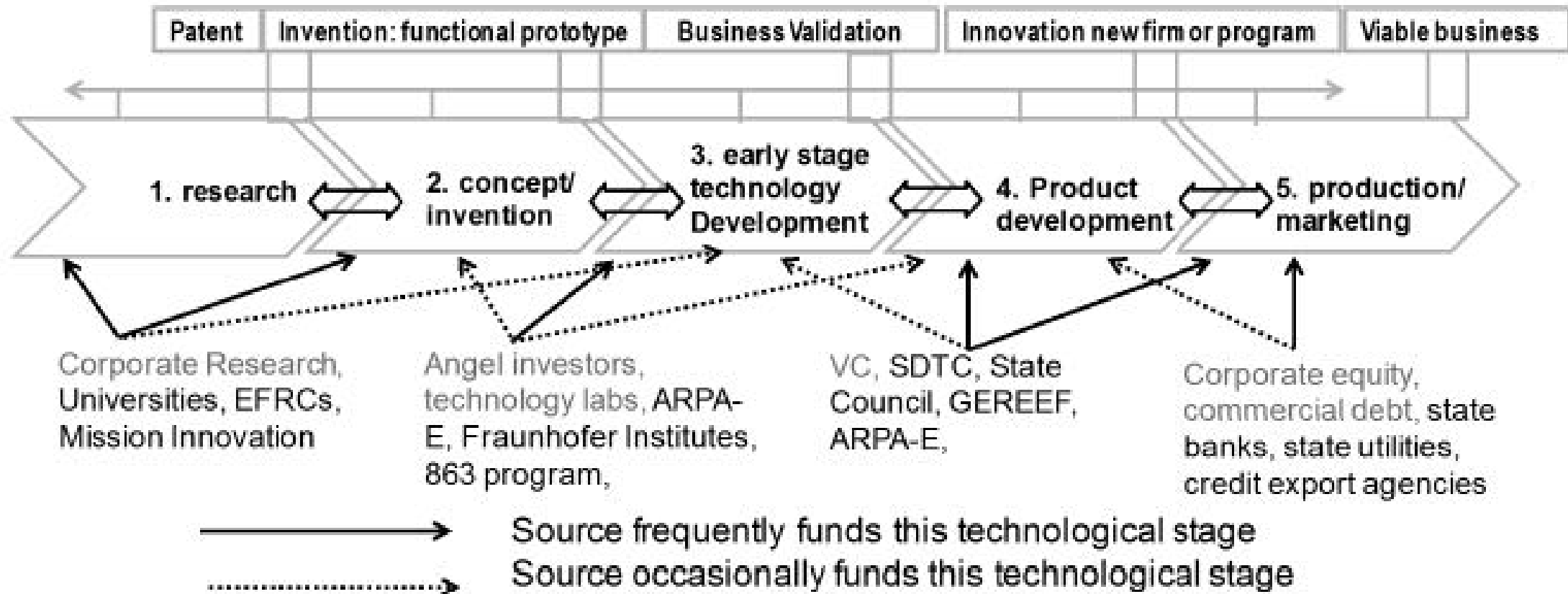
# There is often a need to bridge the 'valley of death'



Source: The Carbon Trust / Infrastructure Intelligence

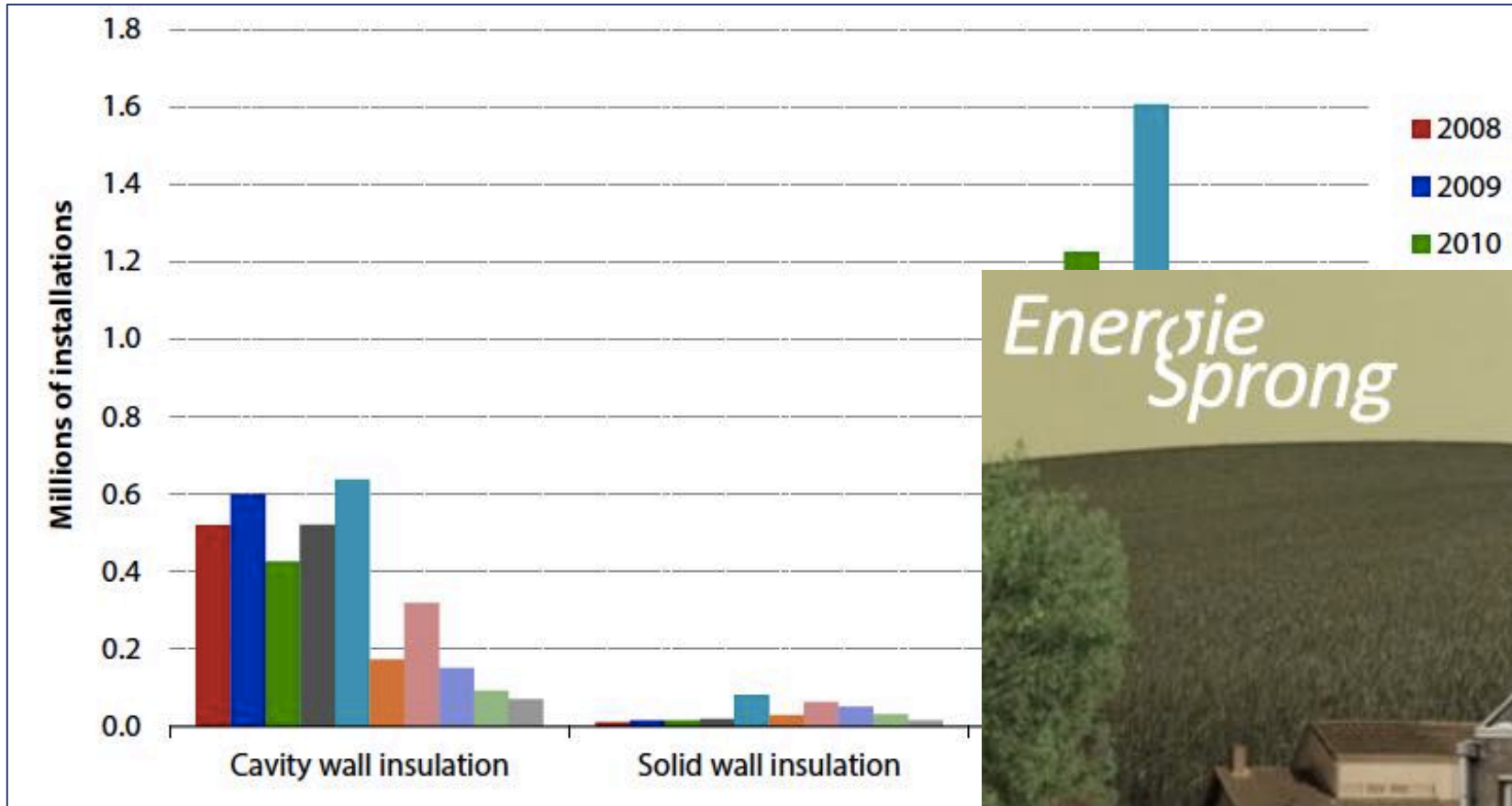
# Different types to public and private finance also required

Figure 5: Mission-oriented finance along entire innovation chain in the renewable energy sector



# UK case studies

## Energy efficiency in buildings

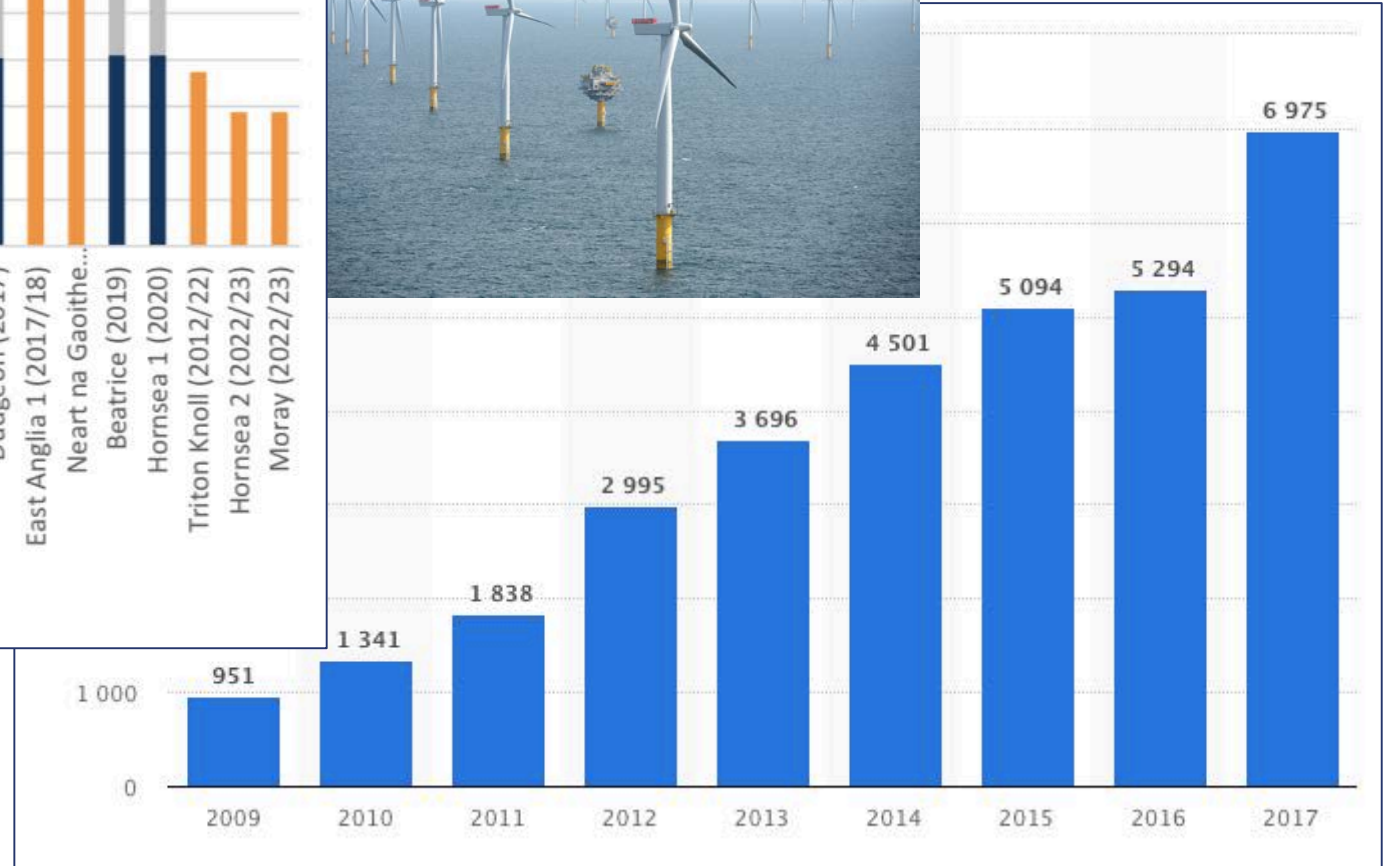
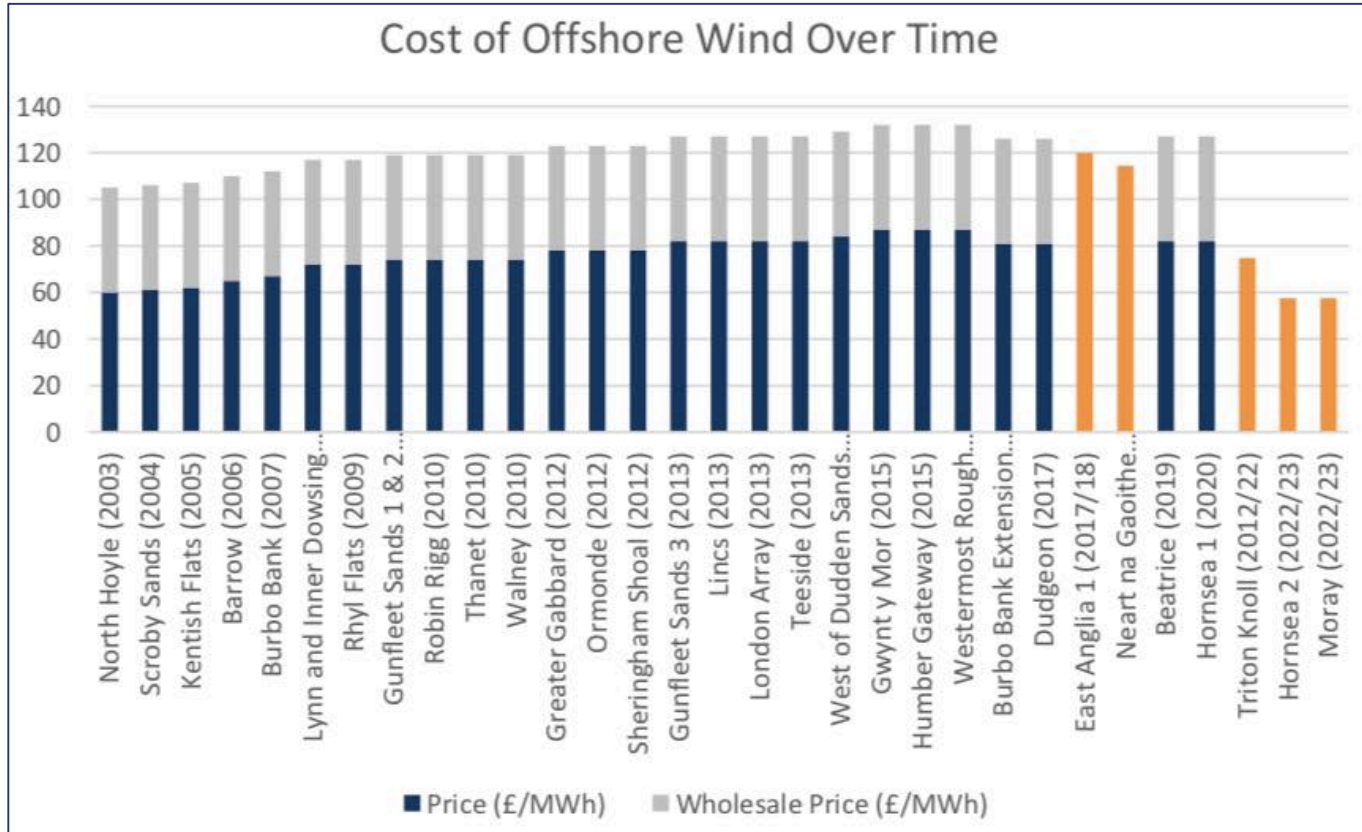


Source: Committee on Climate Change



# UK case studies

## Offshore wind



# UK case studies

## Low carbon vehicles

June	Total	Diesel	Petrol	AFV
2018	234,945	74,361	145,035	15,549
2017	243,454	103,564	129,169	10,721
% change	-3.5%	-28.2%	12.3%	45.0%
Mkt share 2018		31.7%	61.7%	6.6%
Mkt share 2017		42.5%	53.1%	4.4%

Year-to-date	Total	Diesel	Petrol	AFV
2018	1,313,994	428,612	812,535	72,847
2017	1,401,811	613,985	729,168	58,658
% change	-6.3%	-30.2%	11.4%	24.2%
Mkt share 2018		32.6%	61.8%	5.5%
Mkt share 2017		43.8%	52.0%	4.2%

Source: Society of Motor Manufacturers and Traders




The Road to Zero

Next steps towards cleaner road transport and delivering our



# Lessons for policy

- Government policies shape the rate and direction of energy innovation, but national policies need to account for global trends
- Public funding of innovation is important, and needs to go beyond R&D to support demonstration and scaling up
- Carbon pricing necessary but not sufficient to create markets: specific policies, financing and institutions also required
- The UK has embraced a more ‘mission-oriented’ approach at a conceptual level, but implementation is very mixed



**UKERC**

UK Energy Research Centre

Thanks

@UKERCHQ

@watsonjim2

[www.ukerc.ac.uk](http://www.ukerc.ac.uk)