

---

# Introducing a Low Carbon Economy

Simon Parke

TBAT Innovation Ltd

# Agenda

---

- What are the legislative drivers
- Low carbon transition
- Low carbon sectors
- Market opportunities
- Summary

# Policy Driver

---

The challenge for the UK and the rest of the world is to reduce emissions and build a better, lower carbon future

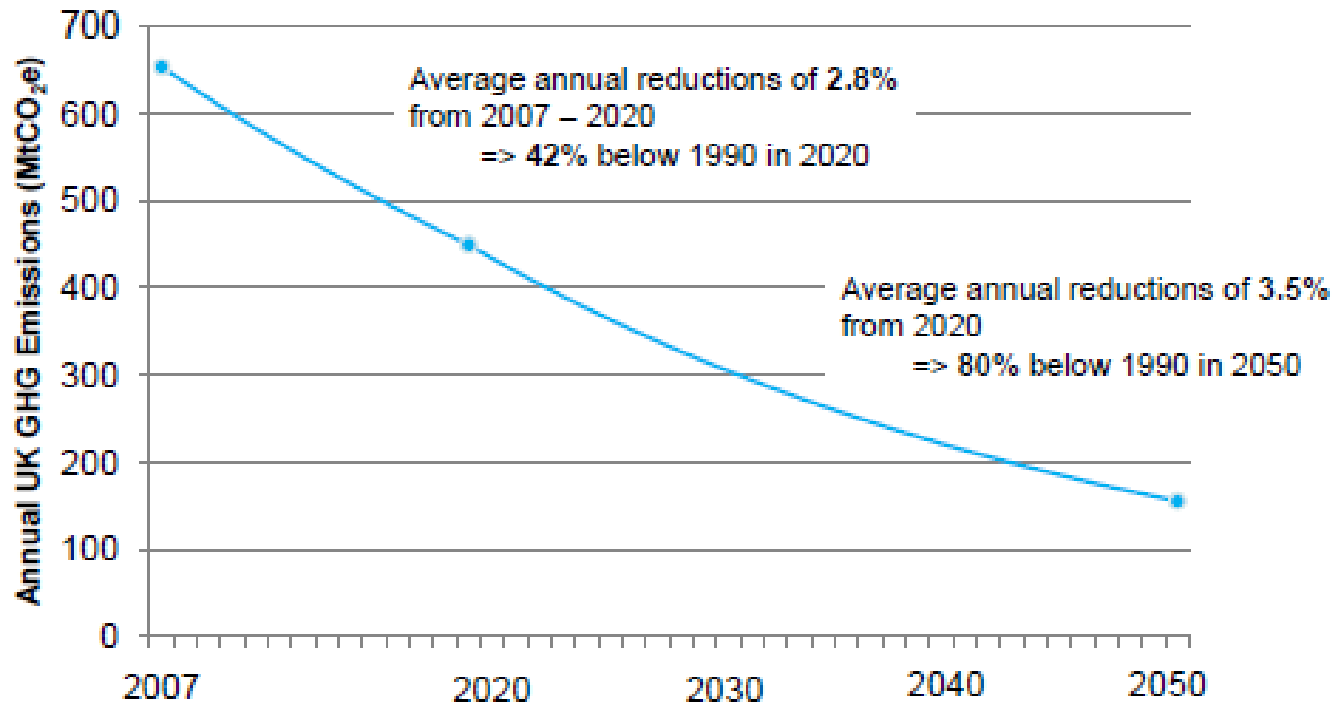
and in doing so.....

Keep our energy  
supplies safe and  
secure

Maximise  
economic  
opportunities

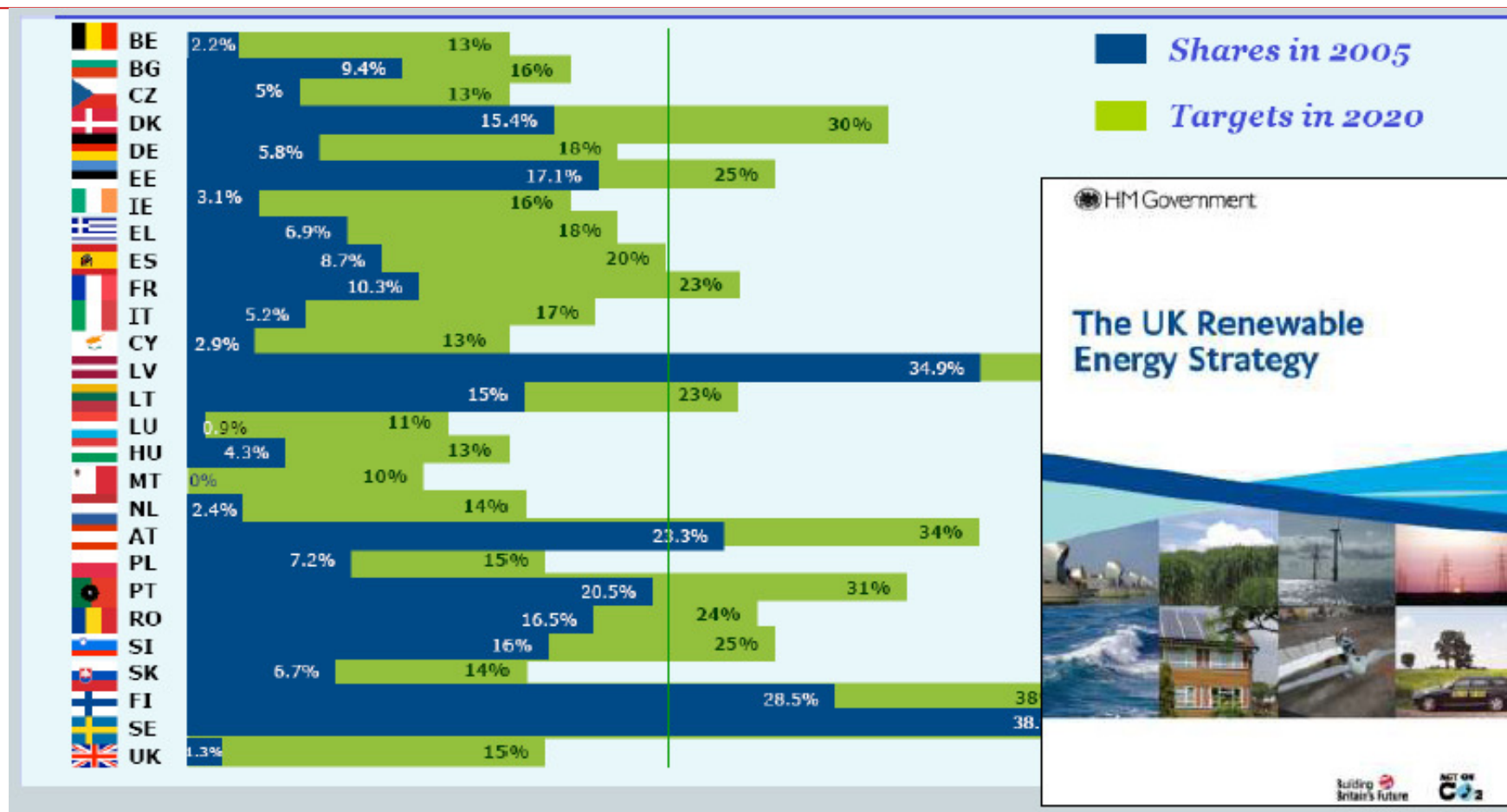
Protect the most  
vulnerable

# Climate Change Act 2008



- Commits the UK to achieving at least an 80% reduction in greenhouse gas emissions by 2050 compared with 1990 levels
- Budget period centred on 2020 requires a 34% reduction in emissions from 1990 levels or 18% reduction from 2008 levels

# EU 27 renewable targets



- UK legally committed to achieve 15% of all energy from renewables by 2020

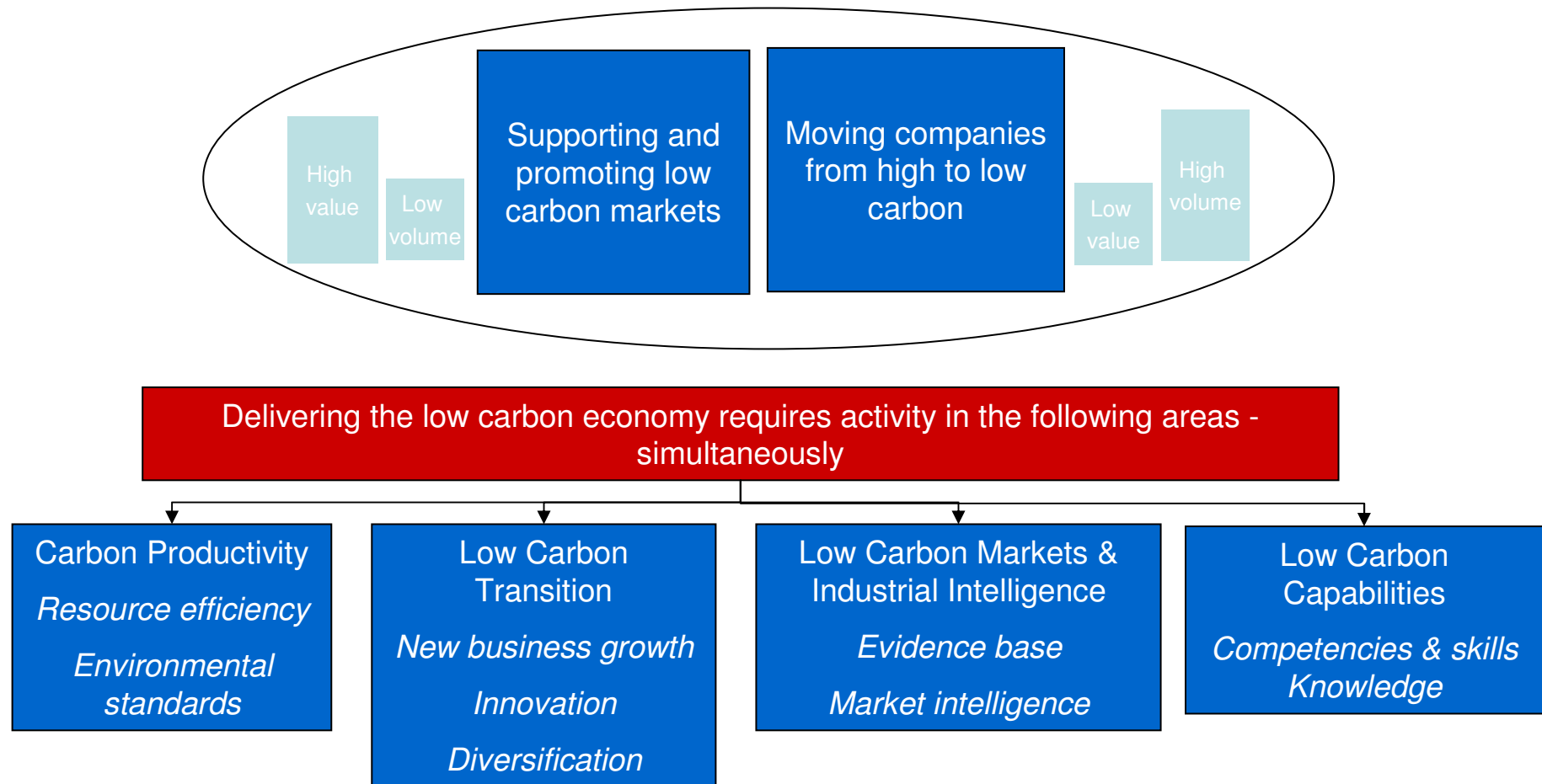
# Low carbon transition

---

- The 2020 targets are planned to be achieved by;
  - Transforming the power sector cutting emissions from power and heavy industry by 22% on 2008 levels, which means around 40% of electricity will need to come from low carbon sources
  - Transforming homes and communities reducing emissions from homes by 29% on 2008 levels, whilst protecting the vulnerable, and improving the security of supply.
  - Transforming workplaces and jobs reducing emissions in workplaces by 13% on 2008 levels, build on the UK's position as a global centre of green manufacturing in low carbon sectors such as offshore wind, marine energy low carbon construction and ultra low carbon vehicles
  - Transforming transport – 20% of greenhouse gas emissions come from transport – the plan to 2020 is to reduce emissions from transport by 14% on 2008 levels and secure the oil supplies needed during the transition to a low carbon economy

# Low Carbon Economy (LCE)

---



# Low carbon & Environmental Goods and Services (LCEGS) Sector

---

- Worth £106.5 billion in the UK in 2007/8
- UK as the 6<sup>th</sup> largest LCEGS economy with 3.5% global market share & estimated growth of 4%
- 467 companies identified in Derbyshire as part of LCEGS mapping
- East Midlands is home to nearly 6.6% of UK's low carbon activity
- Over 60,000 employment and £7 billion of regional GVA in 2007/8





# LCE East Midlands

---

Global market  
worth £3 trillion  
↑ High growth  
expected by 2014

East Midlands market worth approx £7bn  
LCEGS survey identified 2,027 companies  
operating in the sector  
74% of companies planning to grow

Environmental Goods & Services: *Mature market*  
Renewables and emerging low carbon: *Small in size, but with strong growth prospects supported by HE/research capacity*

Civil Nuclear



Biomass



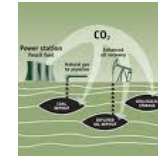
Wind & Solar/PV



Hydrogen Fuel Cells

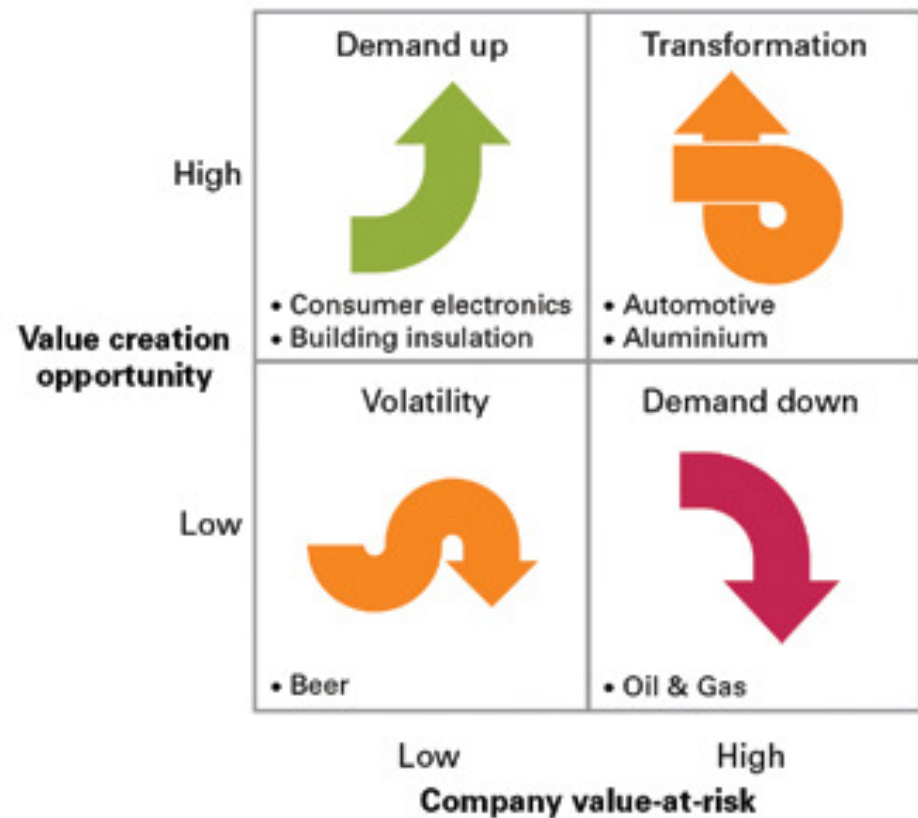


CCS



# Low carbon transition

- The Carbon Trust report *Climate change – a business revolution?* Suggests tackling climate change can create opportunities for a company to increase its value by up to 80% if it is well positioned and proactive. Conversely, it could threaten up to 65% of value if the company is poorly positioned or a laggard.



# Key carbon market opportunities

---

- Low carbon market areas
  - Offshore wind
  - Wave and Tidal power
  - Civil nuclear power
  - Ultra-low carbon vehicles
  - Renewable construction materials
  - Renewable chemicals
  - Low carbon manufacturing



# Resource Efficiency

---

Estimated regional potential low cost/ no cost savings £452.2m

- Businesses in the region produce around 14 million tonnes of material waste each year and waste around one third of all the energy they buy. This has significant costs to the regional economy and to profitability.
- National findings of the Environment Agency show that waste minimisation could yield almost a £3 billion saving in manufacturers' annual operating costs and that industry could save £1.8 billion through energy efficiency.



Oakdene Hollins and Grant Thornton(2007) **Quantification of the business benefits of resource efficiency**

# Homes and communities

---

- Significant opportunities in energy efficiency and small scale renewable energy technologies such as photovoltaics, solar thermal systems and heat pumps will play a significant role in future electricity production.

# Wind

---

- An ambitious target has been set for generating 15% of all the UK's energy from renewables by 2020, which means that 35-40% of electricity will have to come from renewable sources.
- A major share of this renewable energy will be generated from onshore and offshore wind, which together can deliver 30% of the UK's electricity supply by 2020 and play a major part in the decarbonisation of UK's economy by 2030.
- The offshore wind sector is expected to grow particularly fast over the next decade, boosted by a predicted £100 billion investment in Round 3 developments that will add some 32GW to the current wind energy capacity.





# Wave and Tidal

---

- The UK is currently the world leader in marine energy technologies due to its excellent wave and tidal resources and expertise in oil and gas exploration.
- The country is in a unique position to benefit from this type of renewable energy – and to develop related wave and tidal services.
- The Carbon Trust estimates that the UK could meet up to 15% of its electricity needs from marine sources, and that we could install 2GW of generation capacity by 2020, and up to 30GW by 2050.



# Civil Nuclear

---

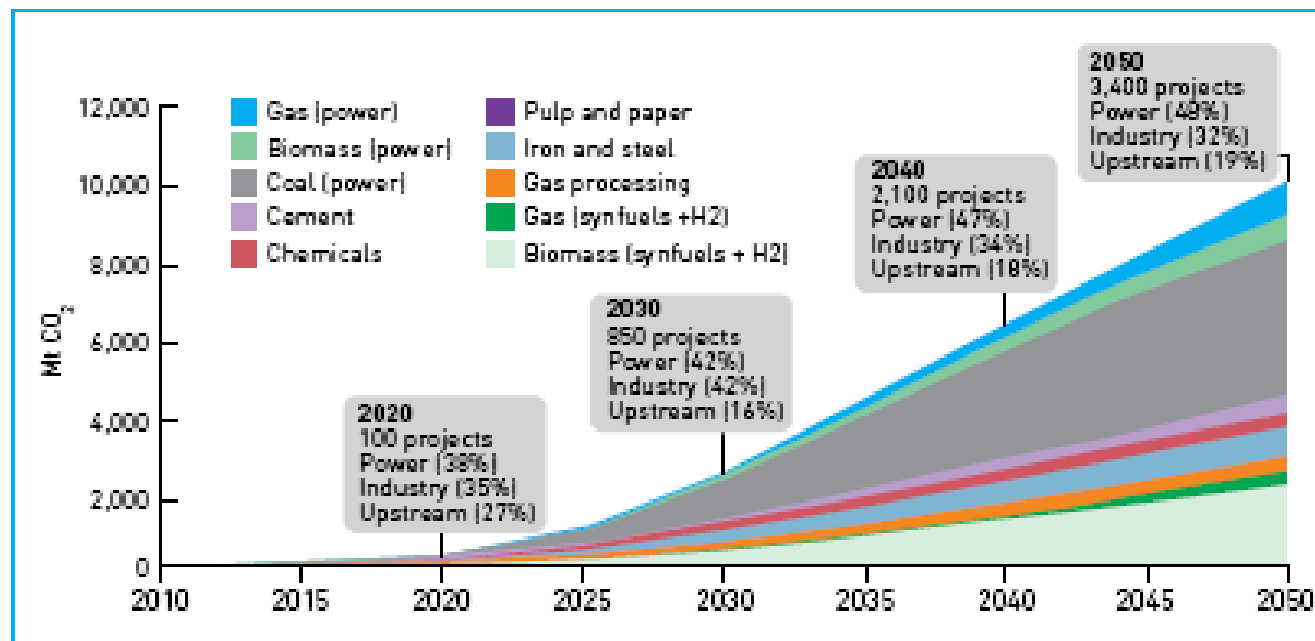
- Extension of life of existing nuclear power stations and the development of a nuclear new build programme creates long term growth opportunities
- Re-emergence of civil nuclear build worldwide phenomenon
- IEAE projection suggest there may be global build rate of between 8 and 16 new reactors per year and that up to 50 new reactors may be under construction at any given time up to 2030 i.e. double the current build rate





# CCS

Figure 2: IEA Blue Map scenario projections of CCS deployment between 2010 and 2050 broken down by sector.<sup>28</sup>



- IEA estimates that between 2010 and 2050 the total investment required for base plant with CO2 capture will be around \$5,000bn.
- When transport and storage and the additional operating costs of CCS compared to conventional plant are also included, the total investment between 2010 and 2050 is estimated to be almost \$6,000bn.

# Summary and Conclusions

---

- Significant international and national legislative drivers for transition to low carbon economy
- Significant market growth projections both nationally and internationally
- Higher proportion of manufacturing businesses in the low carbon sectors
- Provides opportunities for long term higher skilled sustainable employment