Perspectives on Risks to the Transition and Innovative, Integrated Solutions to overcome them and optimise Resilience

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The scale of the challenge

To achieve net zero **by 2050**, an economy-wide transformation is required

Transport (28% of emissions)	Industry / Business (25% of emissions)*	Power (15% of emissions)	Land Use / Nat'l Resources (15% of emissions)	Buildings (Domestic) (15% of emissions)	Greenhouse gas removals
					
Department for Business, Energy & Industrial Strategy | Department for Transport	Department for Business, Energy & Industrial Strategy	Department for Business, Energy & Industrial Strategy	Department for Environment Food & Rural Affairs	Department for Business, Energy & Industrial Strategy | Ministry of Housing, Communities & Local Government	Department for Business, Energy & Industrial Strategy | Department for Environment Food & Rural Affairs
EVs: **42m** up from ~200k today **HGVs**: **1.6m** ultra low emission up from <1K today	**CCUS**: Capture **10 MT p.a.** by 2030 **Hydrogen**: aim for **5GW** low carbon hydrogen production capacity by 2030 (~ **42TWh**)	**Total Generation**: **2x today** - 550-750TWh **Low carbon generation**: **4x today** - 95% up from 53%	**Woodland**: **3x today** 30kha p.a. up from 9kha p.a. today **Biomass**: **~85% increase** for high value demands	**Low carbon heating**: **~25 million homes** from ~200k today **Solid wall insulation**: **~6m homes** >10x today	**Bioenergy with CCS (BECCS)**: **74 MT p.a.** **Direct Air Capture (DACCS)**: **13 MT p.a.**

Source: BEIS analysis (drawing on CCC). Figures indicative and reflect one scenario
**Note: Industry accounts for 19% of total emissions (other business emissions are from oil & gas production (4%) and non-domestic buildings (2%))*

Department for Business, Energy & Industrial Strategy

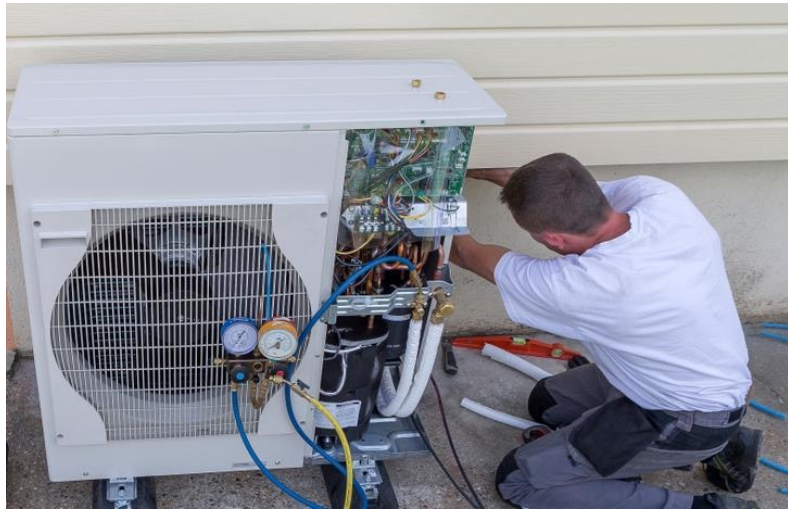
Risks to the Transition

- **Making delivery progress quickly in known areas – deploying existing technologies, processes and systems**
- **Aggregated micro-level actions supporting the broader infrastructure push**

- Key challenges & risks
  - Labour force & skills
  - Planning and development
  - Consumer behaviour and response – household demand
  - Policy and regulatory environment
  - Investor confidence
  - Capital/Operational costs
  - Supply chains

Labour Force & Skills

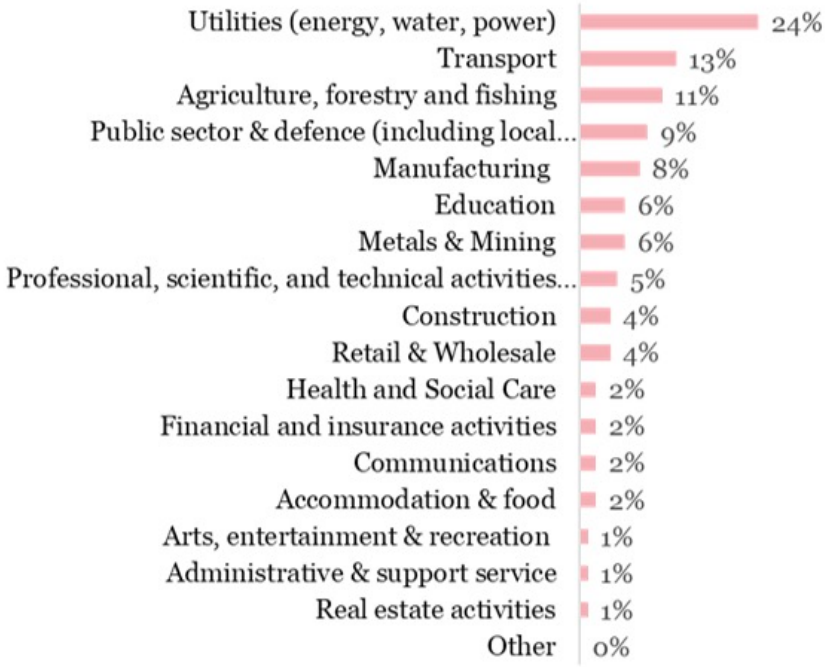
- Developing the skills base quickly is vital
- Entry into relevant **technical training/learning** – challenges around take-up and industry selection
- Role of both **Higher and further education** is important – to support workforce expansion and effective sectoral transition
- An inability to address skill & labour force needs will exacerbate development cost challenges and limit resilience

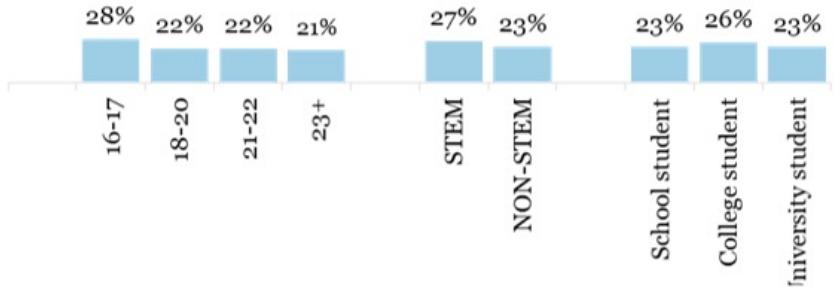


Labour Force & Skills

Perception of industries within future workforce

Important Industry-Sectors for achieving net zero emissions targets





- A quarter of students think that the utilities sector is the most important in helping the UK reach its net zero emissions targets
- The perceived importance of the utilities sector is predominantly driven by those who are 16-17 years old (28%), STEM students (27%), and college students (26%).

Source: WSP Green Jobs & Green Skills Survey

Planning & Develop-ment

- Need for sufficient **capacity** within the planning system – particularly across public planning authorities
- Urgent capacity and skills issues
- Need for more capacity and capability for effective case-making, negotiation and communication
- Alignment of major infrastructure, housing and economic development challenges

Consumer behaviour & response

- Deploy household-based technologies quickly and properly – demand reduction and self-generation, enhancing resilience
- Rooftop solar
- Electric heating
- EV charging
- Important role of aggregation-oriented programmes and policies
- Communication is critical
- Funding
- ‘Taking advantage’ of high energy costs in the short to medium term to incentivize

Market response & economic impact

- Effective market signals and business models
- Enhanced role of UKIB - risk finance?
- Opportunity to achieve sustainable economic development across numerous sub-regions of the UK is being delayed
- Levelling Up?
- May require a concerted multi-departmental response and greater sub-regional devolution

Policy & Regulatory Environment

GOV.UK

- All electricity to come from **low carbon sources by 2035;**
- Review frequency of Contracts for Difference auctions to accelerate deployment of renewable energy;
- Deliver **40GW of offshore wind, including 1GW of floating offshore wind, by 2030;**
- Implement the Dispatchable Power Agreement (DPA) to support the deployment of CCUS plants;
- Secure a final investment decision on a large-scale nuclear plant by the end of the Parliament;
- Adopt a **new approach to onshore and offshore electricity networks** to incorporate new low carbon generation and demand efficiently;
- Deliver the commitments in the *Smart Systems and Flexibility Plan* & *Energy Digitalisation Strategy*;
- Provide **£380 million for the offshore wind sector**;
- Reform system governance
- Drive market-wide rollout of smart meters with a new four-year policy framework;
- Consider need for broader reforms to market frameworks to unlock potential of low carb technologies;
- Explore system need/case for **further market intervention for long duration storage and hydrogen**

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