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Assessing UK and Global Challenges and Uncertainties

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WEF
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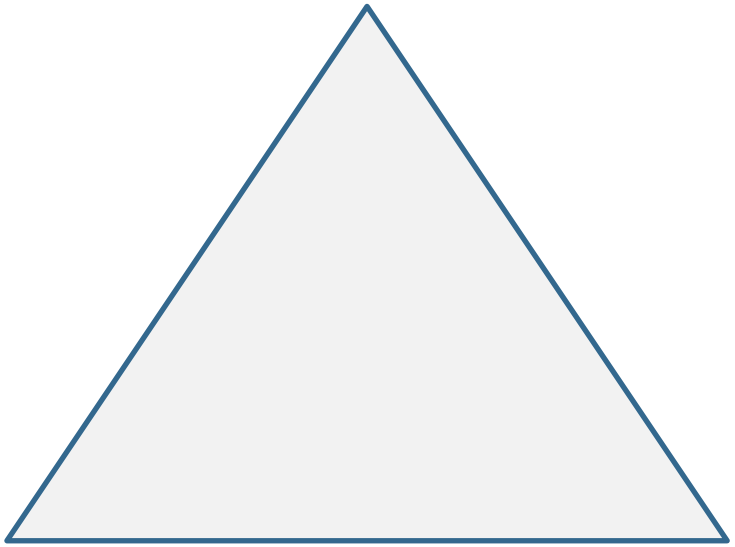
Net zero - implications for investments and deploying transition infrastructure

Energy Trilemma 're-loaded'

Security
Technologies / infrastructure



Sustainability
Governance and public engagement

Affordability
Financial and socio-economic implications

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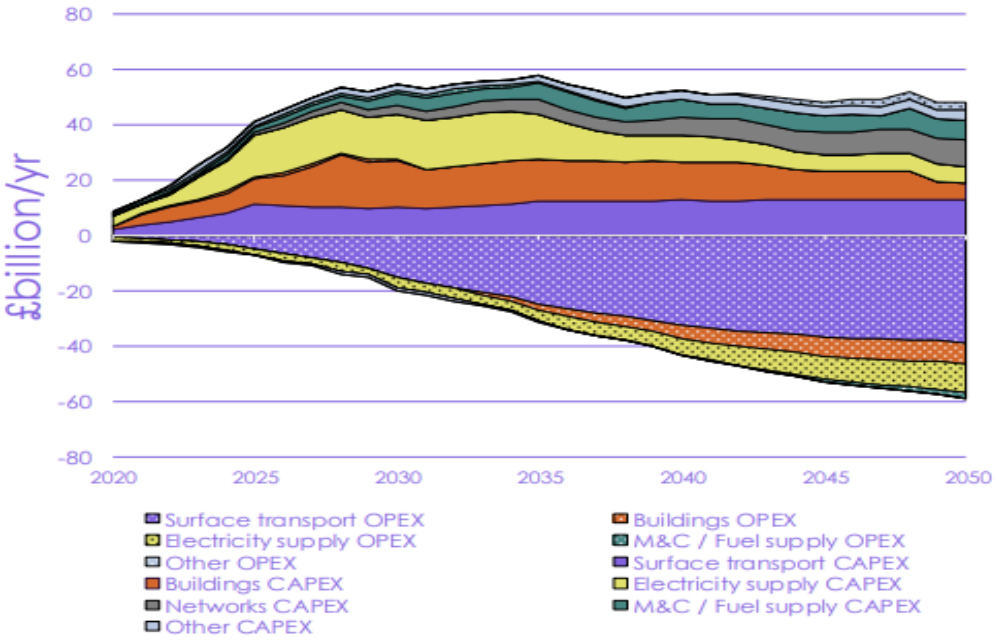
Energy transition challenge

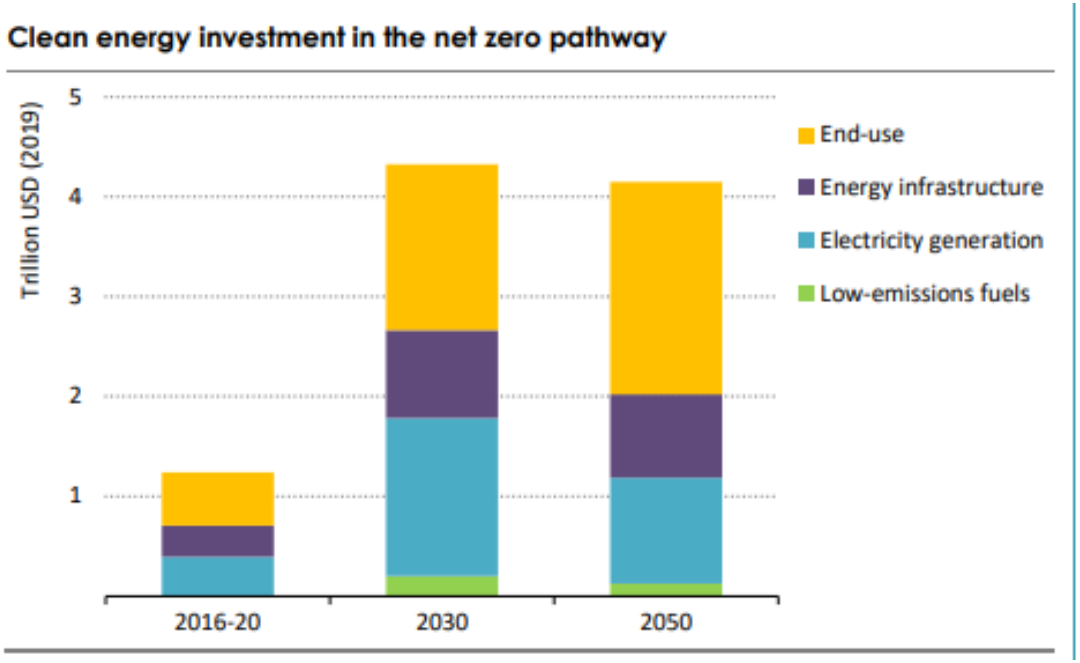
Capital investment costs and operating costs savings in the balanced pathway [UK]

Source: CCC analysis



Clean Energy Investment 2050

Source: IEA Net Zero Report 2021



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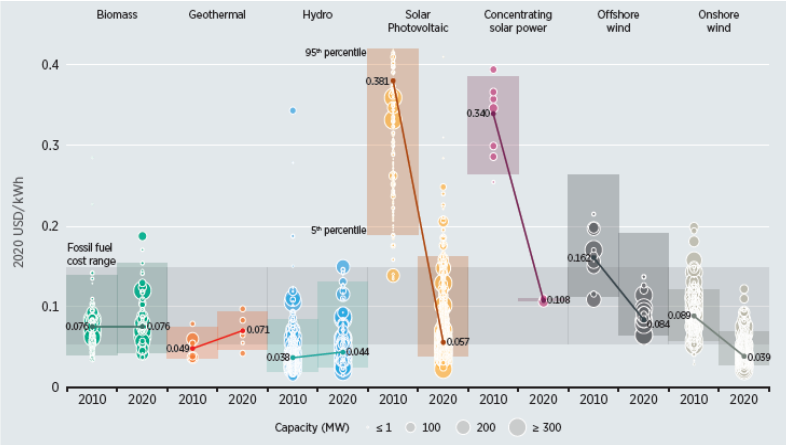
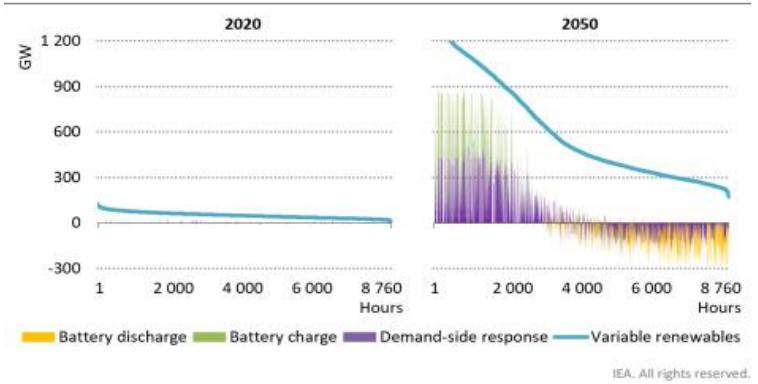
Security – Technology / Infrastructure

Innovation and cost reduction



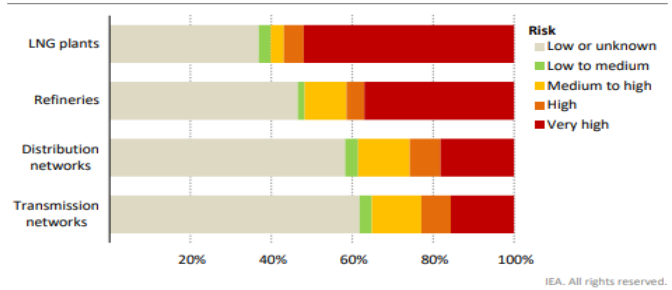
System balancing / Integration



Managing the rise in variable renewables requires the deployment of demand response and storage capabilities, enabling larger two-way flows between supply and demand

Security of infrastructure – natural disasters

Figure 6.11 ▷ Share of energy infrastructure capacity at risk of destructive cyclones, 2020

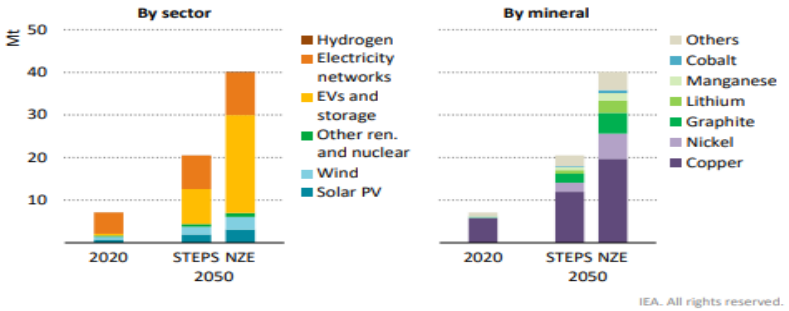


A large portion of electricity networks and fuel supply infrastructure is exposed to high risk from destructive cyclones

Notes: Risk levels are classified based on the probability of wind speed exceeding 80 kilometres per hour (1 in 50, 100, 250, 500 and 1 000 years). Those within 60 degrees latitude north and south are included in the assessment. Source: IEA analysis based on UNDRR (2015) and Arderne et al. (2020).

Supply chain – minerals

Figure 6.14 ▷ Mineral requirements for clean energy technologies by scenario



In the NZE, mineral requirements for clean energy technologies increase by up to six-times by 2050, with particularly high growth for EV-related materials

Notes: Mt = million tonnes; ren. = renewables. Includes most of the minerals used in various clean energy technologies, but does not include steel and aluminium. (See IEA, 2021g for a full list of minerals assessed.)

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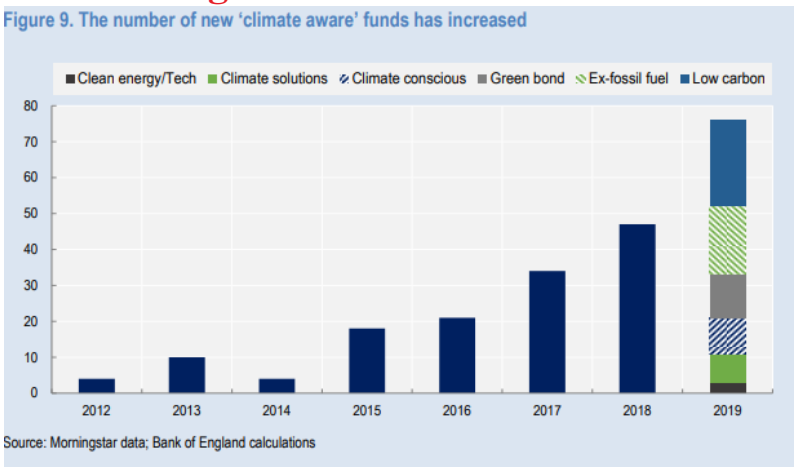
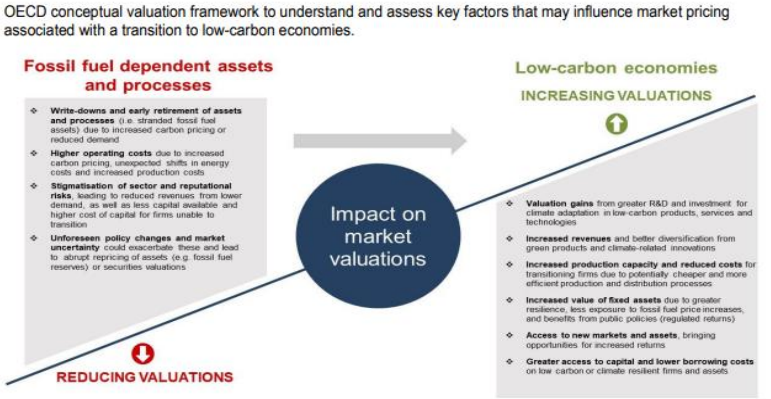
Affordability – Financial and socio-economic implications

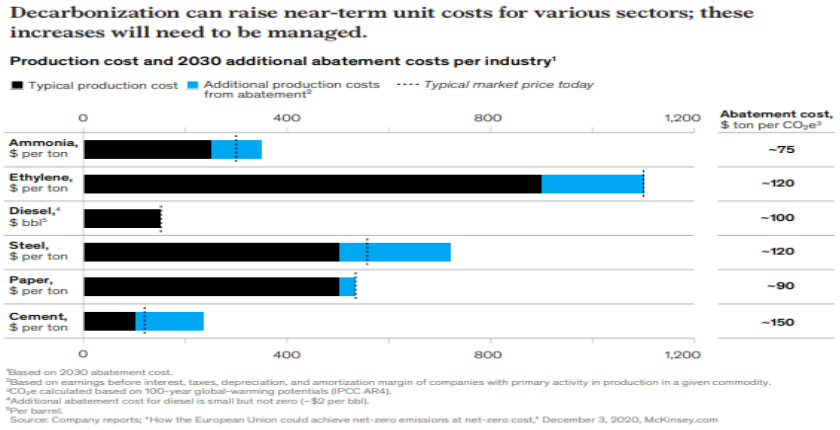
New funding mechanisms



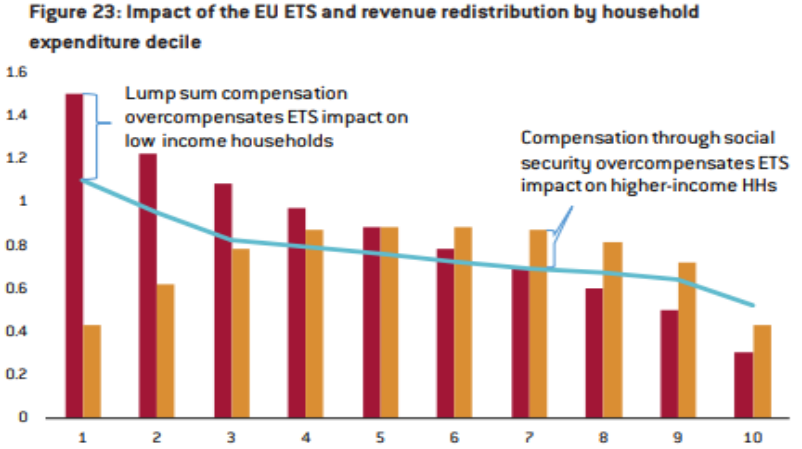
Financial valuations of assets and



Unit costs change in energy and



Distributional impact



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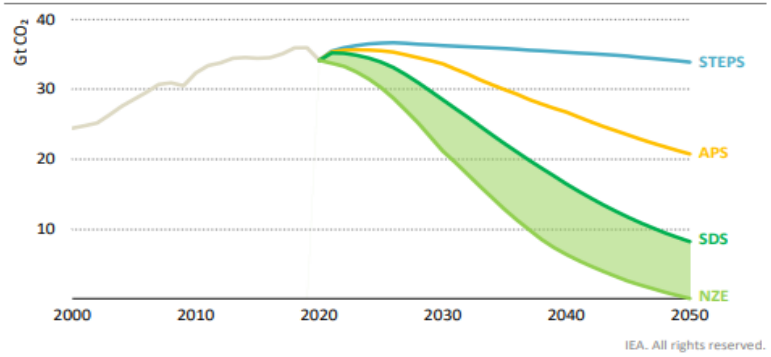
Sustainability – governance and public engagement

International cooperation

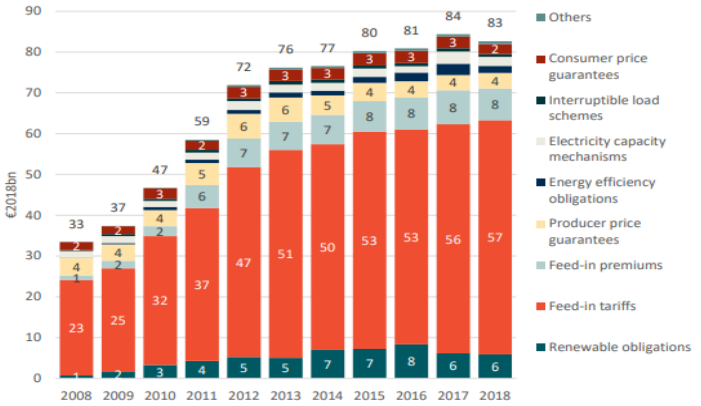
Figure 1.4 ▹ CO_2 emissions in the *WEO-2021* scenarios over time



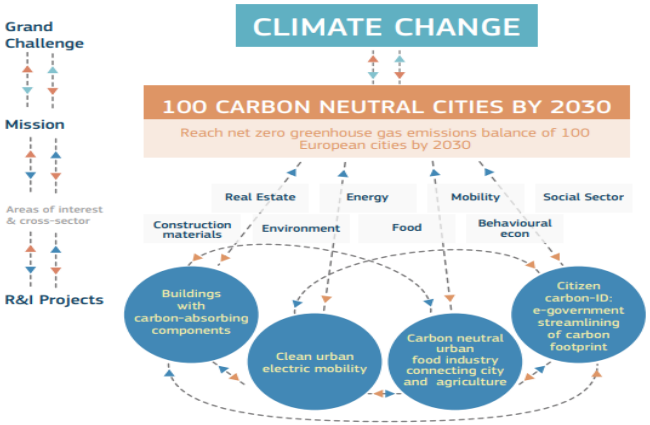
The APS pushes emissions down, but not until after 2030; the SDS goes further and faster to be aligned with the Paris Agreement; the NZE delivers net zero emissions by 2050

New and changing mechanisms

Figure 2-16 Income and price supports in the EU27 by type (€2018bn, 2008-2018)[11]

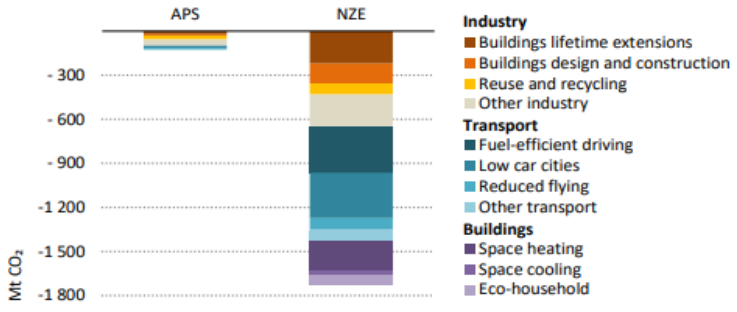


Governance standards, metrics and



Citizens buy-in – Behavioural change

Figure 3.29 ▹ Impact of behavioural change and materials efficiency by sector and scenario, 2030



Only limited behavioural changes are included in the APS, while the NZE projects far more, but needs targeted policies to realise them

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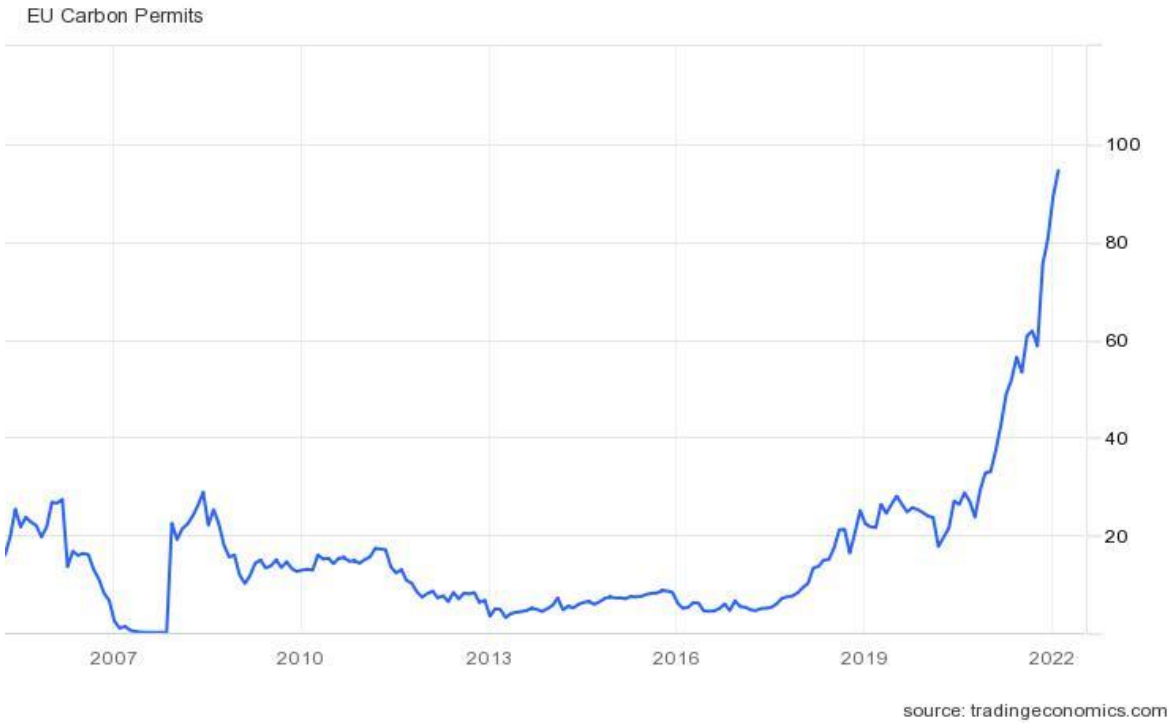
What role for carbon markets?

Carbon prices



source: tradingeconomics.com

"The Spirit of Green is a conceptual framework for the design of institutions, laws and ethics for an interconnected society."
William Nordhaus 2021

Compliance Carbon Markets

Carbon allowances could provide **downside protection** and **enhance risk adjusted returns** in scenarios involving **immediate or delayed climate actions.**

Annualised return[3]
+ 50 to 70
basis points

On average, approximately **0.5% to 1%** allocation of carbon allowances could mitigate negative impact of portfolio returns[4]

Voluntary Carbon Markets

VCMs are expected to **experience significant growth** with the potential to reach market value of **US$5B -US$30B** in 2030

Natural climate solutions account for **65-85%** of total supply potential by 2030

Number of corporate net-zero pledges has increased by **2x** in 2020

15x increase in potential demand for carbon credits by 2030

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