

Challenges in Financing the Energy Transition

May 2025

Akseki & Co.
Investment Bankers

Global Trends and Regional Highlights

Global Trends

- Global emissions are projected to peak between 2025 and 2035 before beginning to decline but remaining above a 1.5° pathway.
- Global energy demand is projected to grow between 11-18% by 2050. Most of this growth will come from emerging economies due to population growth, demands of strengthening middle class and relocation of manufacturing.
- New demand centres, including data centres, transport, and hydrogen, are projected to see the rapid growth in power demand.
- Low carbon energy sources projected to account for 65-80% of global power generation by 2050.

Regional Highlights

- Europe: Leader in renewables, green hydrogen, and net-zero legislation (i.e. EU Green Deal approved in 2020).
- UK: Champion in decarbonisation performance since peak emissions but facing a stagnant economy and deteriorating living standards over the last few years.
- U.S.: Growing investment in clean tech in the recent years with Inflation Reduction Act (IRA) incentives. Recent policy reversals in the IRA.
- China: World's largest installer of solar and wind; strategic focus on energy tech leadership.
- Developing Markets: Leapfrogging fossil infrastructure with decentralized renewables and mini-grids.

Challenges Ahead

Global Challenges

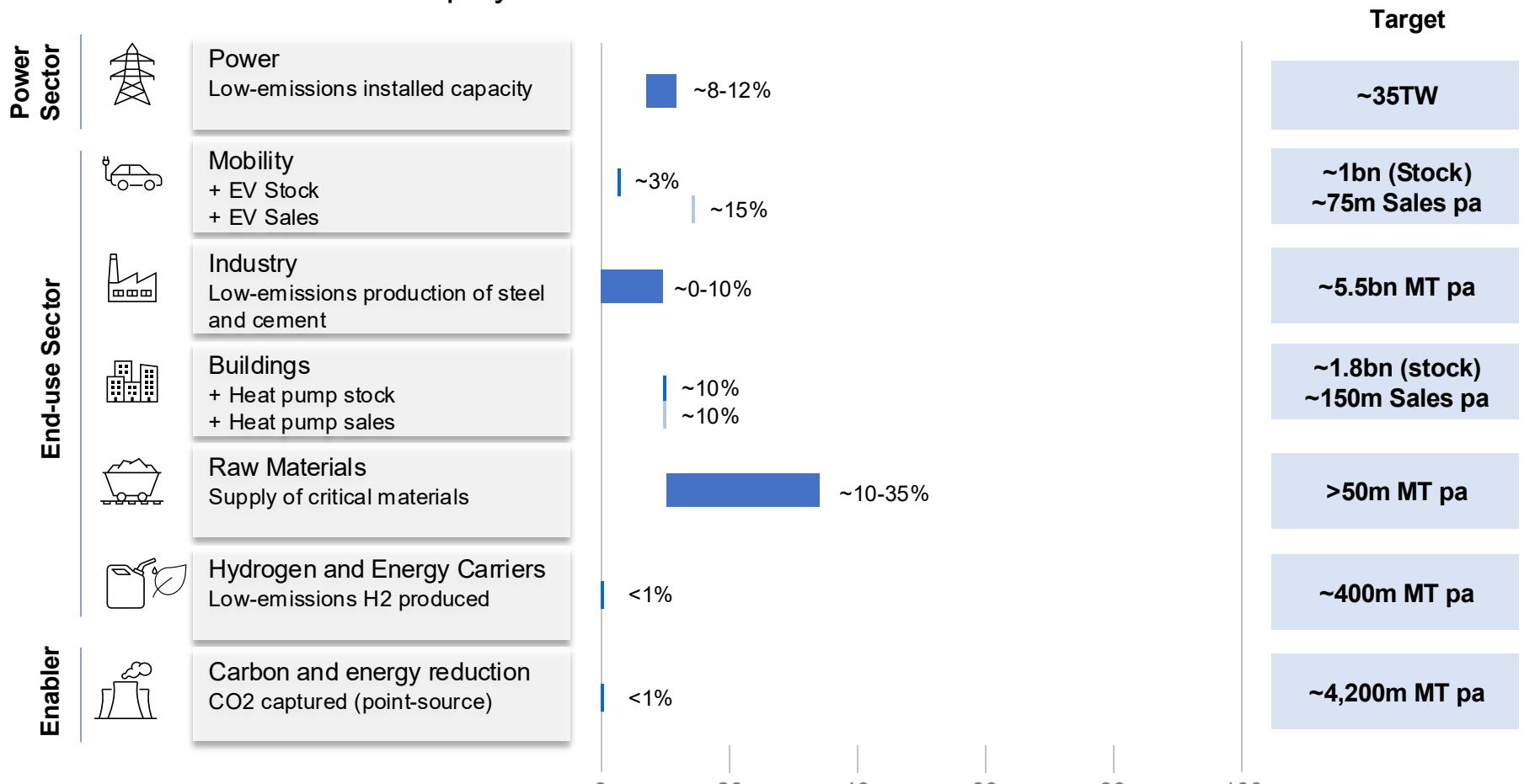
- Financing: Large amounts of capital needed in infrastructure, especially in emerging economies.
- Policy Stability: Clear, long-term signals are essential for investor confidence.
- Social Impact: Managing job transitions, energy affordability, and equitable access.
- Technical Integration: Ensuring grid stability with intermittent renewable sources.
- Economic Challenges: The global growth surge that followed the financial crisis has waned in the wake of the C19 pandemic, which inflicted significant damage on national budgets and revealed structural vulnerabilities.

Sector Specific Issues

- Challenges facing RES build-out, including power pricing and firmness, need to be overcome (the comparatively lower marginal costs of RES mean that the price of electricity tends toward zero in high penetration areas).
- Fossil demand is projected to plateau before declining but still accounts for 40-60% of total energy demand in 2025.
- Significant grid build-out will be needed to enable electrification, with transmission and distribution investments required to grow threefold.
- Slowdown in the uptake of energy efficiency technologies could lead to electricity demand not materializing in Europe.
- In the European Union and the United States, the deployment pipeline for several technologies falls short of 2030 targets.

Global Deployment of Key Decarbonisation Initiatives

Only about 10 percent of low-emissions technologies needed by 2050 to meet global commitments have been deployed.



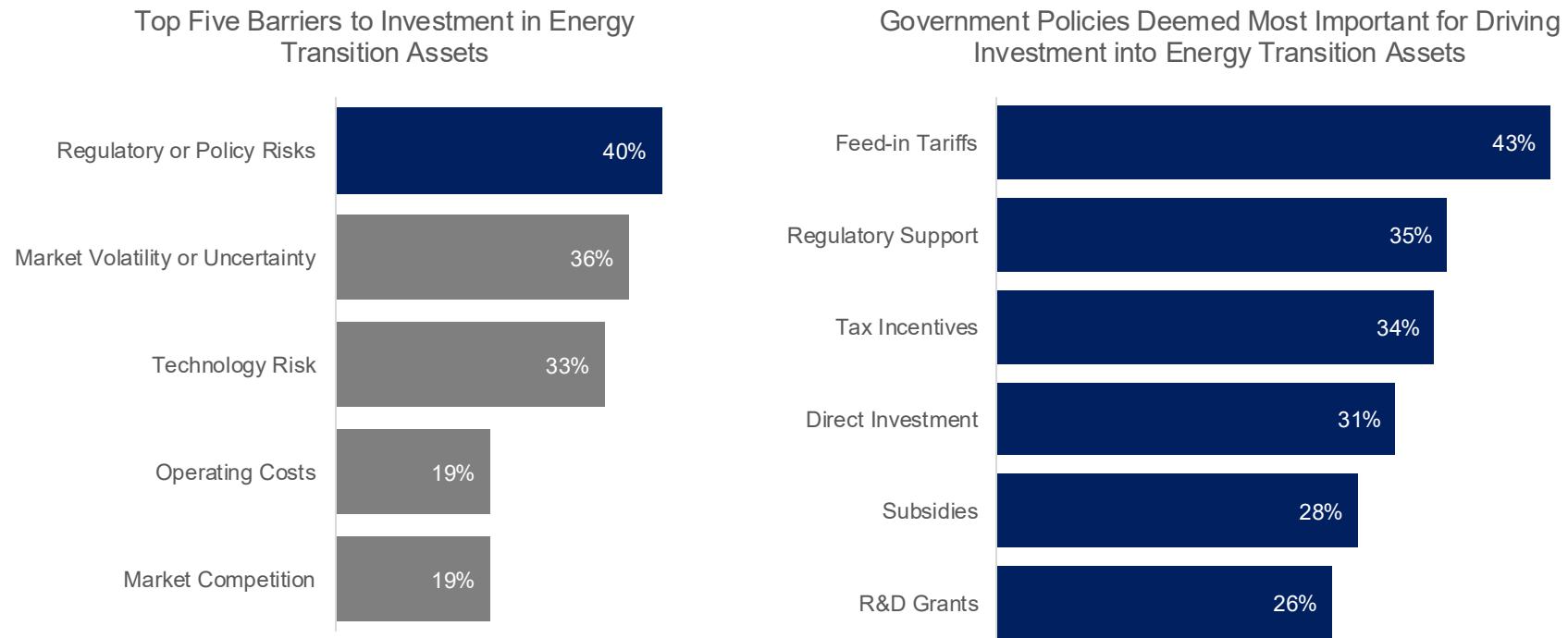
Source: McKinsey Global Institute.

Global Investor Considerations

	Financial Investors	Strategic Investors
Types of Investors	Banks, asset managers, venture capital investors, private equity investors, infrastructure investors	Energy providers, oil and gas, natural resources, automotive, transportation
Involvement with Energy Transition Assets	Invest for the benefit of clients and shareholders; typically providing debt and/or equity finance	More likely to own and operate the assets they purchase; typically use debt instruments to fund the projects
Reasons for Investing in Energy Transition Assets	Financial returns; portfolio diversification	Energy independence (or security); regulatory compliance
Most Common Strategies	Public-private partnerships and private (or growth) equity investments	Partnerships with financial investors and power purchase agreements
Most Important Partners or Collaborators	Energy companies and asset managers	Energy companies and consultants
Top three barriers to investing	1) Regulatory or policy risks 2) Market volatility or uncertainty 3) Technology performance uncertainty	1) Regulatory or policy risks 2) Technology performance uncertainty 3) Market volatility or uncertainty
Most Attractive Areas for Investment in Energy Transition Assets over the Next Two Years	1) Energy efficiency (including electrification) 2) Critical minerals and materials 3) Transportation and related infrastructure 4) Renewable and low-carbon energy	1) Renewable and low-carbon energy 2) Energy efficiency (including electrification) 3) Transportation and related infrastructure 4) Energy storage and grid infrastructure

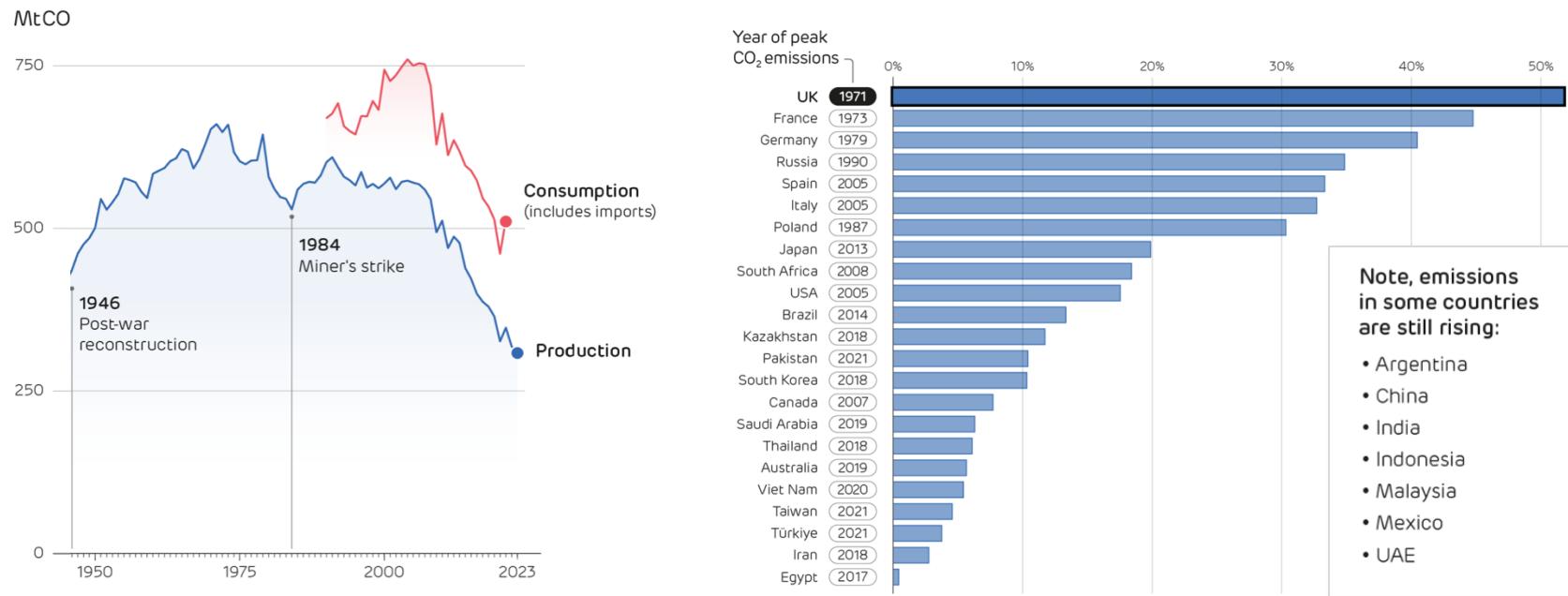
Investors Look for Sound Government Policy and Support

Regulatory or policy risks represent the top barrier to investing in energy transition assets.



UK's Decarbonisation Performance

The UK is the leader in decarbonisation among major economies having achieved more than 50% reduction (on a production basis) from peak carbon emissions.



UK Spending on Clean Energy Investment and Affordability

While the UK has been a champion of decarbonisation, there are realities to deal with.

2020-2024 Policies

- 69 clean energy investment and affordability policy plans totalling \$77.8bn in commitments.
- \$42.1bn allocated towards energy affordability.

Current

- The International Energy Transition Fund (IETF) launched in 2020 with £500 million of funding available up until 2028.
- Over £1 billion in funding via the Net Zero Innovation Portfolio to accelerate clean technology development in energy, industry, and transport.
- £100 million for clean energy project development to be delivered by the National Wealth Fund (while GB Energy is set up).
- £8.3 billion of funding (from increase windfall tax and through responsible borrowing) into Great British Energy, which will be a publicly owned company, and will be 'operationally independent, with an independent board'.
- £21.7bn in funding for the first CCUS projects in the UK over the next 25 years.

Going Forward

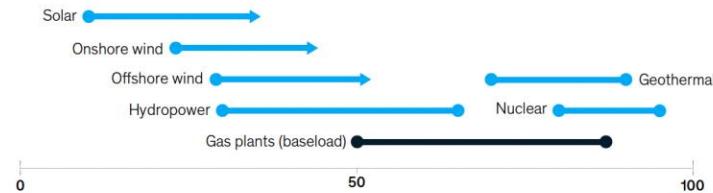
- **How much can the UK government afford to allocate to decarbonisation?**
- **How much voter support is there for prioritisation of decarbonisation, given the UK progress to date?**



How About National Energy Security?

The power system needs to oversize capacity and maintain diversity of supply to manage supply risks.

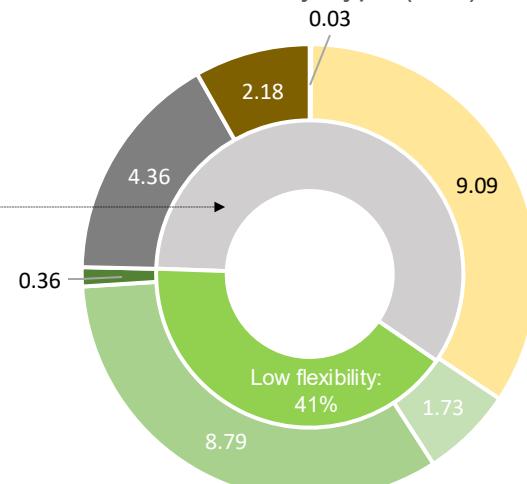
Average Capacity Factor Across Geographies
(% of Time Generating Energy)



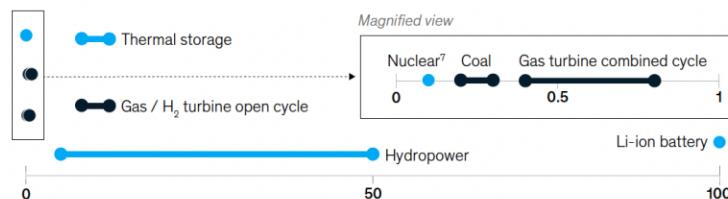
UK Electricity Demand and Supply (LTM)

$$\text{Demand} = \text{Generation} + \text{Transfers}$$
$$30.2\text{GW} = 26.5\text{GW} + 3.7\text{GW}$$

Generation by Type (GW)



Speed of Power Ramp Up
(% Increase of Total Generation Capacity per Minute)



- A gas turbine power plant can move from full shutdown to generating power at full capacity in less than ten minutes.



Source: McKinsey Global Institute, National Grid.

Meanwhile in the US...

The new administration in the US initiated a swift and substantial reversal of decarbonisation incentives.

Republican tax cut plan would gut US clean energy

Congressional committee publishes draft law scrapping subsidies for renewables and electric vehicles

The legislation's assault on green energy tax credits — aimed at unpicking former president Joe Biden's flagship climate legislation, the [Inflation Reduction Act](#) — drew the ire of Democrats and renewable energy bosses, who said it would hammer workers.

US House targets big climate, clean energy rollbacks in budget proposal

The proposed cuts from the House tax panel include a rapid phase-out of the "technology neutral" 45Y tax credits for wind, solar and other clean energy sources that include Republican-favored technologies like nuclear and geothermal.

The credits, which had no expiration previously, would phase down from 80% for a facility placed in service during calendar year 2029, to 60% by 2030, 40% by 2031 and zero after 2031.

Key Recommendations

The UK's decarbonisation momentum requires a concerted effort between project developers, financial investors, strategic investors and the UK government.

Project Developers

- Do not get carried away with big IRRs and NPVs that depend on an ocean of factors coming together.
- Have the right capital sequence and focus on project bankability.
- Work with capable advisors to structure projects.
- Work with the right investor/operator for each risk category. Investors don't experiment outside their remits.

Strategic Investors

- Don't wait until offtake stage to get involved with decarbonisation, methanol or SAF projects.
- Create specialised pockets for innovative and complex decarbonisation projects and hire specialised teams. Your existing teams won't gamble their jobs for unusual new projects.
- Take meaningful risks outside your shareholders' and boards' comfort zone but contained in ringfenced 'decarbonisation investment pockets'.
- Cooperate with project developers to access projects beyond one's own doorstep.

UK Government

- Be accessible to a wide range of investors and entrepreneurs (follow the IRA example).
- Do not focus only on post-FID support but be a holistic enabler.
- Be a proactive agent and cooperate with project developers, investors and lenders to explore creative projects.
- Encourage risk-taking commensurate with the complexity of underlying projects, especially among lenders.
- Deploy tax-payer capital in the right proportion together with project developers, financial and strategic investors.
- Ensure each unit of investment drives maximum units of energy transition investment.

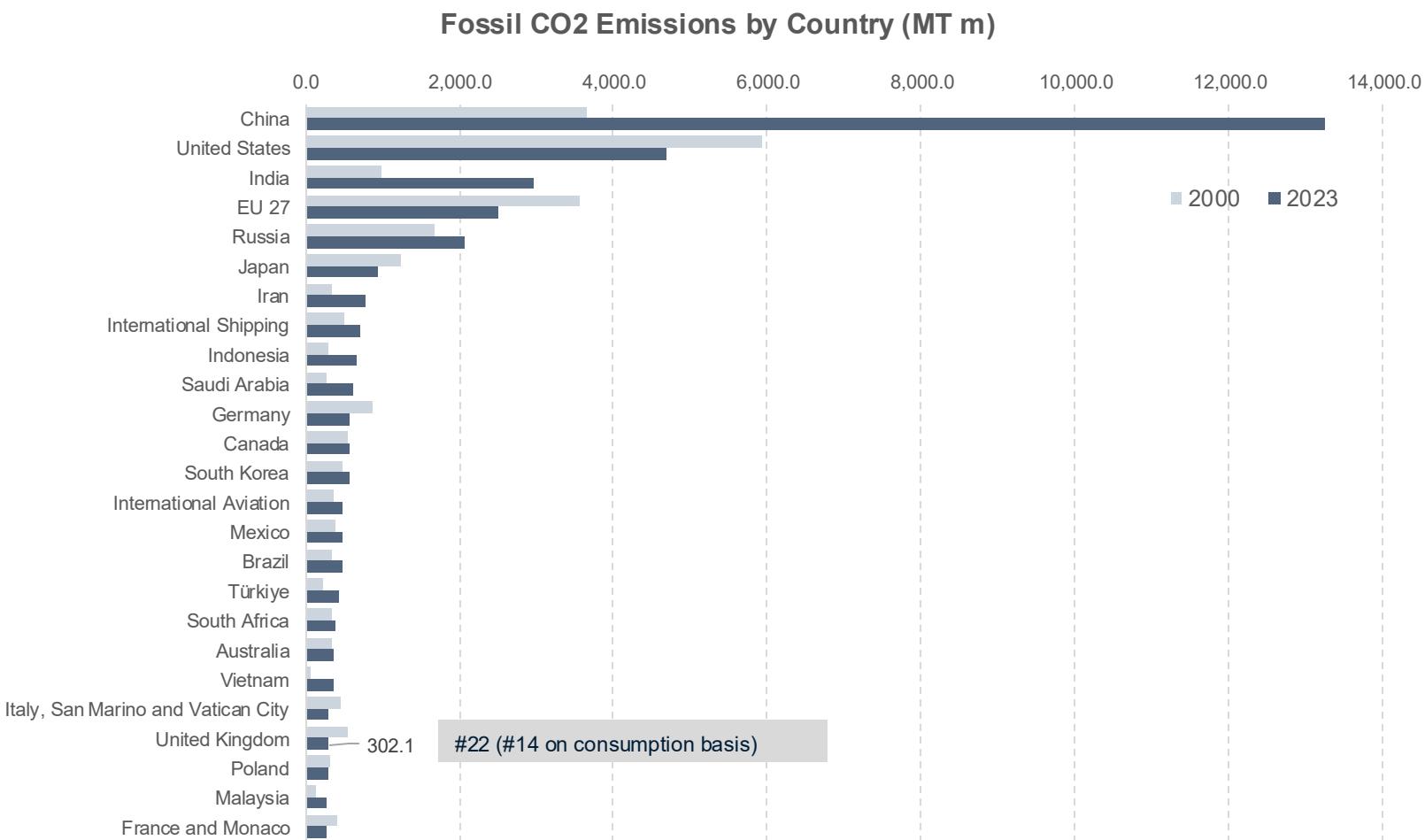
Annex

UK GHG Emissions by Sector, 2023

Domestic transport remains the largest emitting sector in the UK, followed by buildings and product uses, industry, agriculture, electricity supply and others.



CO2 Emissions by Country



Source: Crippa, M., Guizzardi, D., Pagani, F., Banja, M., Muntean, M., Schaaf, E., Monforti-Ferrario, F., Becker, W., Quadrelli, R., Risquez Martin, A., Taghavi-Moharamli, P., Köykkä, J., Grassi, G., Rossi, S., Melo, J., Oom, D., Branco, A., San-Miguel, J., Manca, G., Pisoni, E., Vignati, E. and Pekar, F., GHG emissions of all world countries, Publications; Drax.

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