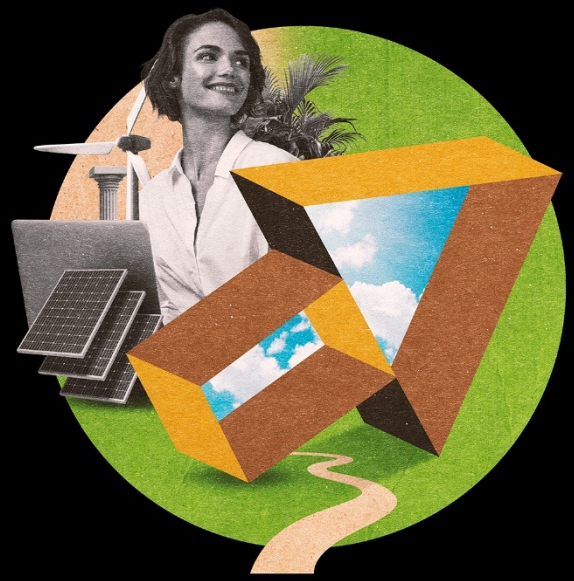
Deloitte.

Turbocharging the UK's Economy in Pursuit of Net Zero

An exclusive, interactive day of learning and debate, where the UK's leaders in business, the public sector, academia and politics will collaborate to drive UK economic growth through sustainability and climate action.

Breakout group conversations are focused on tangible growth opportunities for the UK. This document provides a briefing on the growth opportunity you will be exploring in the breakout out group you have been assigned to during the 13:30 to 15:15 slot.



Driving investment into the circular economy for metals and minerals

- Digitalisation and the energy transition is predicted to **increase global demand for metals and minerals six-fold by 2050**. UK demand for battery minerals alone will increase between 6 and 12-fold by 2040.
- Achieving this requires **300 new mines to be built by 2035 and approximately 2 trillion dollars of investment across the supply chain.**
- This has stimulated a doubling in market size for metals and minerals over the past five years, **reaching $320 billion in 2022.** By 2040, it is predicted that the total value of metals production would increase **four-fold in a net-zero emissions scenario, potentially rivalling the value of crude oil.**
- However, current supply chains are complex, monopolised, and susceptible to disruption and ESG issues. In addition, as nations pursue their net zero goals, **it is likely that demand will far outstrip supply.**
- **By investing in a circular economy for metals and minerals** – a system designed to get the most out of materials, keep products and materials in use and design them to be cycled back into the economy and eliminate waste – **the UK can capitalise on a rapidly emerging market while protecting its manufacturing sector by securing its supply of metals and minerals.**
- For example, Green Alliance suggests **the UK could meet nearly all its metals and minerals demand from wind, solar and EV technologies** with secondary materials generated from end-of-life products by 2050.
- By 2040, **if the UK invested significantly in battery recycling plants** (a global market predicted to reach **£27 billion by 2030**) it could provide sufficient metals and minerals for **600,000 new EV batteries.**
- Investment in the supply chain needed to support a circular economy (e.g. processing, recycling, sustainable mining) **would also boost the City of London's position as a centre for metals and minerals finance – a title currently declining.**
- The UK has the opportunity now to **develop a fiscal strategy to support this and encourage investment from industry.** Tax breaks and incentives, loans and grants, and direct investment will be key to driving investment in a UK circular economy for metals and minerals.

In your breakout group you will...

- **Discuss the size of this opportunity** for the UK with a cross-industry group of leaders
- **Consider the barriers** that are currently getting in the way of the UK realising this opportunity
- **Explore the levers that** breakout group participants could pull to overcome these barriers
- **Identify opportunities** to work together with other breakout group participants to accelerate progress

Sources: The Role of Critical Minerals in Clean Energy Transitions, IEA; Benchmark Source; Green Alliance; IRENA; Material Focus; Advance Propulsion Centre UK; The lithium-ion battery end-of-life market, WEF; London: Mining's Finance Capital, Deloitte

The significance of metals and minerals to net zero increases the importance of developing a circular economy. This will help keep metals and minerals here in the UK, increase the sustainability of their use and create new industries and jobs.

Achieving this requires significant investment in new technology, infrastructure and supply chains, however, there are barriers to this which must be overcome.

Together we can address these challenges and unlock the potential of a circular economy for metals and minerals.

Barriers to investing in a circular economy for metals and minerals.

Supply chain

The supply chain of metals and minerals – particularly those required to reach net zero – often have **complex, fragmented and opaque supply chains**. Parts of the supply chain are also controlled by a handful of countries and therefore exposed to geopolitical tensions. There is also a lack of global, ESG-wide mining-related standards creating uncertainty around best practice – although work is underway to address this through the Consolidated Mining Standards Initiative. Together, this makes establishing a circular economy difficult due to the **challenges around identifying and tracing the origin of metals and minerals, coordinating stakeholders along the supply chain and creating a level global playing field.**

The UK has been at the forefront of developing technologies – such as traceability tools – to help address supply chain challenges, however, they are not widely used which hinders the availability of reliable data. **Driving investment into addressing these complex supply chain challenges will promote circularity and help develop functioning markets which the UK can compete.**

Infrastructure

Currently, **we lack the infrastructure across the country to support a circular economy.** Technologies containing metals and minerals – for example solar panels – are typically exported to Europe because there is little structure in place to repair, remanufacture or recycle them. In addition, at a local level capacity does not exist to store and transport recovered technologies and resources – for example, the 51,500 wind turbines due to be decommissioned by 2050.

While growing, there is limited mid-stream processing capacity for key energy transition metals – this is where mined materials are transformed into a product. Processing facilities can be used to reintroduce offcuts from the manufacturing process or recycled materials (for example, recovered battery metals) back into the supply chain as a secondary feedstock.

Driving investment into building UK infrastructure can be challenging due to **operational costs compared to other countries, current low-volumes of material, and a complex and lengthy planning and permitting process.**

Cost

While circular supply chains provide a valuable business opportunity, it also **requires capital investment in both people and technology** – for example, to optimise the extraction and refining process, recover tailings and minimise water consumption. Moreover, sustainable upstream practices increases operational costs, which can make it difficult to stay competitive in a landscape where many metals and minerals are extracted at low costs. For example, Indonesia's coal-fired nickel has been pricing out greener metals.

In addition, **recycling and reprocessing metals and minerals from end-of-life products can be complex, energy intensive and in many cases requires further innovation to recover quantities at an economical level**. Many products also contain small amounts of metals and minerals which means that they can be impractical to access, and **large feedstock volumes may be needed to make facilities economically viable.**

While costs can deter investment, the right strategy and business models can create new revenue streams while delivering sustainable products.

Market

There is limited legislative and policy support to incentivise investment in circularity. For example, the EU introduced legislation that requires 15% of strategic metals and minerals consumed to come from recycled sources – this sends powerful market signals which currently lacks in the UK. Moreover, clear and consistent waste classification and regulation, an effective Extended Producer Responsibility programme, and procurement policies to incentivise circular supply chains are needed. **Limited financial and regulatory incentives are also available – such as tax breaks and circularity requirements in government energy contracts – to encourage investment in circularity across the supply chain**.

Lastly, a lack of consumer awareness and demand is creating little motivation for manufacturers to introduce circular practices, which has an impact on the rest of the supply chain and supresses market traction.

Increasing consumer awareness and creating an effective policy and regulatory landscape will help build a market and stimulate investment.

In room facilitators:

Sponsor: Stacey Toder Feldman, Partner - *UK Mining & Metals Sector Lead*

SME: James Hilburn, Partner - *Financial Advisory, Sustainability and Climate M&A*

SME: David Rakowski, Partner, - *Risk Advisory, Circular Economy Lead*

SME: Anthony Massey, Director - *Tax, ER&I, Critical Minerals Financing*

Insights Lead: Ben Reeves, *Growth, ER&I*

Additional Resources:

A circular economy for critical minerals is fundamental for our future, Deloitte 2023

Funding critical minerals projects, Deloitte 2024

The Task & Finish Group Report on Industry Resilience for Critical Minerals, Deloitte 2024