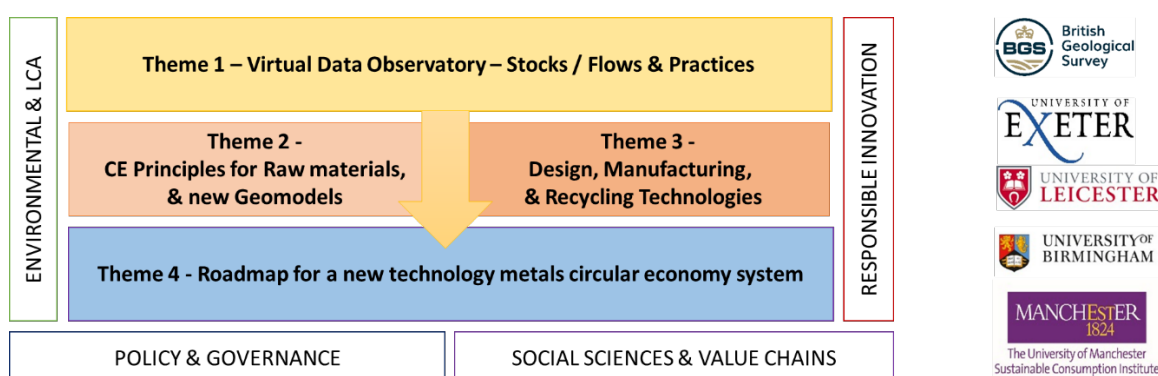


UKRI – Interdisciplinary Circular Economy Centre for Technology Metals. Joint initiative of the Universities of Exeter, Birmingham, Leicester, Manchester & the British Geological Survey, in collaboration with major UK industry companies and international organisations.

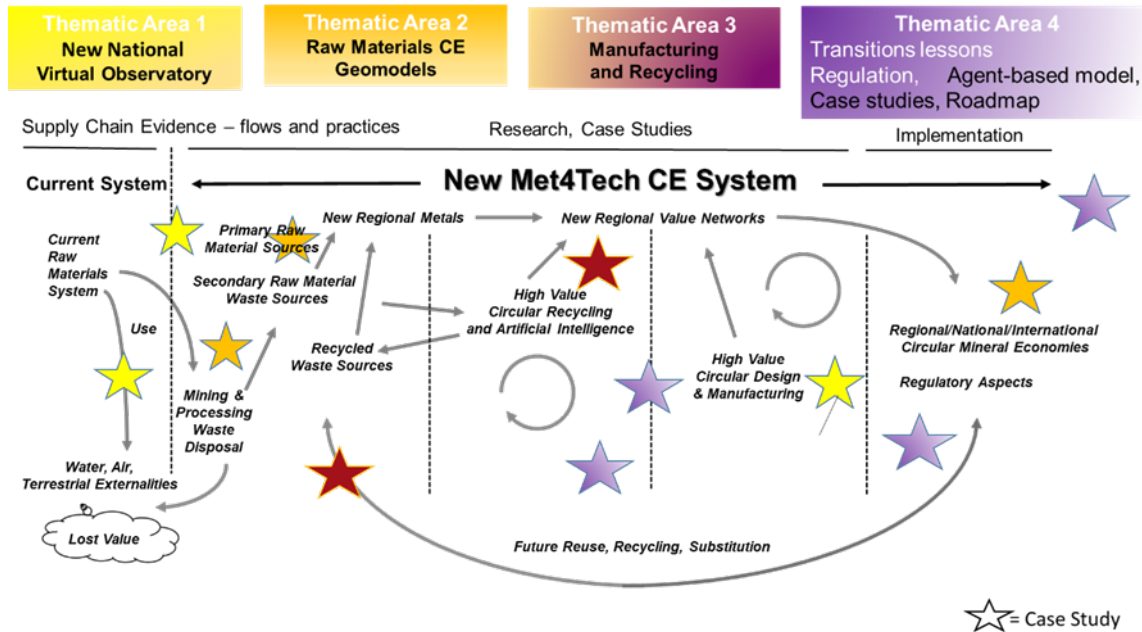
Technology metals are an essential distinct subset of specialist, often ‘critical’ metals, and each has its own specific properties. They are fundamental enablers of most major applications throughout all industry and especially in clean energy and digital technologies, and they are essential for the world to decarbonise. The demand for technology metals is growing, and a wider range of materials and a circular economy approach are needed for the emerging technologies that will enable the energy transition and net zero aims.

## Our Research vision & challenge to transform the current linear system for supply/use into a new Technology Metals Circular Economy system and network.



The UK currently has no single point of reference for technology metals. We are close to 100% import-reliant on technology metals but have world-leading expertise in R&D and technologies. The Met4Tech Circular Economy Centre brings together UK research teams already working on how to improve and assure the supply of raw materials, how to manufacture goods to be re-used and recycled, and how to recycle complex goods such as batteries. We will work with leading international academic and industry collaborators. One of the first things we need to do to enable the identification of circularity interventions is track the current flows of technology metals through the UK economy, which although fundamental, is poorly known. The Centre will conduct new interdisciplinary research on key interventions to improve each stage in the cycle and join the different stages of the value chain together such that raw materials can be newly mined and recycled, and manufacturing technology can be linked directly to re-use and recycling. Business and social experts will research how best the UK can put all these stages together to make a new technology metals circular economy roadmap. The industry partners and key stakeholders will be invited to ‘test drive’ the new model.

Metals (priority 1)	Major Applications	Metals (priority 2)	Major Applications
Cobalt	Batteries, superalloys, catalysts, magnets	Gallium	Electronics (circuit boards and optoelectronics)
Indium	Photovoltaics, LCD, batteries	Selenium	Electronics, alloys
Lithium - UK	Batteries	Germanium	Electronics (IF detectors and thermal imaging)
Rare Earth Elements (REE) Nd,Pr,Dy	Magnets (wind turbines, EVs), catalysts, phosphors (low energy lighting), alloys, smartphones	Tin - UK, 3TG	Solder in all electronics
		Tungsten - UK, 3TG	Wear-resistant materials, superalloys, electrical and electronics, catalysts
		Tantalum, 3TG	Electronics, superalloys
Tellurium	Alloys, solar cells	Niobium	Super conductor, electronics
Platinum Group Metals	Auto catalysts, fuel cells, electronics	Antimony	Alloys, batteries, semi-conductors



## Key aims and deliverables for the new Met4Tech Circular Economy Centre:

1. **New interdisciplinary research community** (Business, Engineering, Chemistry, Social Science, Geology, Law), with industry, government, policymakers, and international partners, making key interventions for a technology metals circular economy.
2. **International & national research and policy leadership** in support of future policy decisions and industrial strategy for clean growth and increasing digitisation of the economy (all reliant on technology metals).
3. **Increasing domestic resource efficiency** of secondary materials and wastes containing technology metals for increasing recovery, reducing environmental burden, and improving security of supply.
4. **International dimension** is important for the UK because many more raw materials must enter the UK supply chain from global sources to meet growing demand. Some countries (China) have near monopolies in raw materials supply for many technology metals.
5. **Aim to identify new sources of primary and secondary supply** of technology metals thus reducing dependence on imports and the 'criticality' of these essential raw materials.
6. **Testing and validation of new product designs, business models, techniques and processes** to revalorise material / product flows; make major improvements in productivity; allow for reduced costs; and to develop new capabilities and adoption of technology innovations.
7. **Gateway between the UK and international circular economy / technology metal research communities**, as well as the UK innovation infrastructure and existing UK research activities. Collaborate and build on national initiatives, e.g. Faraday, Catapults, Global Challenges and link up with international leading research initiatives.
8. **Community engagement strategy** will include Circular Economy Roundtables and Deep Dive workshops for experts, new Roadmap users, and Champions and influencer groups, including ambassadors and early career researcher training, as well as public science events.

## How the industry and international partners are involved in Met4Tech

Collaboration and contributions from our many industry and international partners are essential for this new Centre. We can shape the research to match partner interests and welcome enquiries and discussions. The scheme does not give direct funding to industry or overseas partners, however SME companies (UK-based) will be able to bid to UKRI for separate funds to take part in the Centre activities. Participation could involve funding a PhD studentship or other research project, providing logistic support, study sites and data on stocks/flows, information about wastes and recycling, results from complementary research projects, hosting study visits and/or secondments, facilitation of events (venue), hosting/organising conferences, attending meetings and workshops, and promoting our work.

Please contact us to discuss: [F.Wall@exeter.ac.uk](mailto:F.Wall@exeter.ac.uk) ; [C.Pettit@exeter.ac.uk](mailto:C.Pettit@exeter.ac.uk) ; [A.M.W.Sweeney@exeter.ac.uk](mailto:A.M.W.Sweeney@exeter.ac.uk)