PRESS RELEASE

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New summary study highlights the role of circular economy approaches in EU's energy transition to alleviate materials supply risks

- *New summary study highlights need for circular economy strategies at scale to ensure resilience of EU's clean energy transition in context of ongoing geopolitical crises*
- *EU raw materials policy must complement the focus on supply and domestic production with policies that will increase reuse and recycling rates, "flatten the curve" of demand for critical raw materials, and increase EU autonomy*
- *Study provides guidance for demand-side reduction measures for eight critical raw materials, and recommendations for policy makers*

London-Munich, 14th November 2022. The European Union needs a reliable and responsible supply of raw materials such as Cobalt, Rare Earths, Copper, Nickel or Lithium to achieve its clean energy transition ambitions. A new summary study by system change company Systemiq calls on policy makers and industry to implement circular economy strategies at scale to ensure secure and sustainable access to these critical raw materials. It highlights that the EU's current focus on diversifying supply, strengthening domestic production, and promoting recycling is vital but currently insufficient for safeguarding resilience. More research is needed to understand and achieve the potential of demand-side reduction measures to curtail the growing need for these critical materials.

Titled *'Critical raw materials for the energy transition in the EU: How circular economy approaches can increase supply security for critical raw materials'*, the study was created with funding from the European Climate Foundation. It analyses international value chain dependencies of the EU, including current and future supply and demand, main sourcing countries and applications, as well as risks and opportunities for the EU. The authors focused on raw and processed materials that are especially crucial for the green energy transition: Lithium, Nickel, Cobalt, Copper, Graphite, Silicon, Platinum Group Metals, Rare Earth Elements.

The study highlights that, while the global geological availability of raw materials is sufficient to cover the cumulative material demand until 2050, the EU currently imports over 98% of its Lithium, Platinum, Graphite, and Rare Earth Elements. [1, 2, 3] To reduce materials supply risks, supply chains within the EU need to be expanded, become more resilient, diversified and robust to geopolitical pressures and other global disruptions.

In the context of reducing the overall demand growth, risks, and sustainability challenges for these materials, the new report calls on policy makers and industry to consider introducing and supporting circular economy principles more rigorously along the **4-R circular economy framework** that is aligned with UN International Resource Panel principles:

- **Rethink: Promote access over ownership** through systemic change of critical infrastructure, utility delivery, design of business models and supply chains, ownership models and product use to make the product redundant or use it more intensively. Dynamic road pricing has been found to reduce traffic by up to ~10%. [4]
- **Reduce: Substitute and optimise** resources and material need in manufacturing or use through, e.g., redesign, substitution, material efficiency. If demand for new car sales were curtailed by 1.4% per year, this could halve total material consumption of the automotive sector by 2050. [5]

- **Reuse: Extend product life** to keep materials in longer circulation, e.g. through product design, repairing and maintenance, refurbishment, remanufacture or repurposing. Up to ~20% of end-of-life batteries could be re-used in stationary applications, at up to ~1/3 cost savings compared to new batteries. [6]
- **Recycle: Invest in comprehensive recollection and high-quality recycling** to bring the material back into circulation with as good as possible quality through reprocessing materials / waste; energy recovery. All key battery metals can be recycled to up to 95%, which could supply ~ 10% of material demand by 2030 and ~ 80% by 2050. [7]

Janez Potočnik, Systemiq Partner and Co-Chair of the International Resource Panel, said: "We urgently need to decouple our well-being from greenhouse gas emissions and resource consumption. Metals and minerals are critically needed for the energy transition, but science is also clear that without a deep system change of the current economy leading to an important reduction in overall resource consumption, in particular in high-income countries, the Paris Climate Goals are out of reach. We need to move from an economy considering humans as external and superior to nature to an economy acknowledging that we are embedded with nature. As this study describes, Circular Economy strategies can help us achieve the mentioned goals and make our economy more resilient."

Joss Blériot, Head of Institutions & Governments, Ellen MacArthur Foundation, said: "The urgent and necessary move to a low carbon economy is as much a hardware story as it is an energy source one. Given the material impact of revamping power generation and mobility systems, it is imperative to include a broad set of circular economy strategies in the transition plan, to reduce demand pressure and decrease supply risks."

Mathias Miedreich, CEO, Umicore, said "Metals play a key role in climate protection technologies. Their efficient use is a prerequisite for a successful energy transition. Closed metal cycles secure the necessary supply of materials within the EU, while also reducing CO_2 emissions from their production. As highlighted in the study, the industry's circularity strategies should include both supply- and demand-side measures, including the development of sustainable advanced materials, innovative circular business models and high-tech recycling processes. We commend this study which underlines the crucial role of expanding a circular economy in the EU."

To this end, the study provides specific examples of the opportunities presented by four circular economy approaches for each of the eight critical raw materials essential to the EU's zero-carbon transition, alongside case examples from the mobility and solar PV sectors, and recommendations for policy makers. All materials are available at https://bit.ly/CE_resilience.

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NOTES TO EDITORS

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[4] Vandyck T., Rutherford T.F. 2018. Regional labour markets, commuting, and the economic impact of road pricing. Regional Science and Urban Economics, 73, 217-236.
[5] Systemiq analysis based on IEA, IPCC 1.5°C scenario
[6] Circular Economy Initiative, 2020
[7] Energy Transition Commission, forthcoming; based on IEA and others

About Systemiq

Systemiq, the system-change company, was founded in 2016 to drive the achievement of the Sustainable Development Goals and the Paris Agreement, by transforming markets and business models in five key systems: nature and food, materials and circularity, energy, urban areas, and sustainable finance. A certified B Corp, Systemiq combines strategic advisory with high-impact, on-the-ground work, and partners with business, finance, policy makers and civil society to deliver system change. Systemiq has offices in Brazil, France, Germany, Indonesia, the Netherlands and the UK. Find out more at www.systemiq.earth