Will growth in low-carbon technologies lead to metals scarcity?

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Demand for 'critical' metals used to manufacture low-carbon energy technologies is rising rapidly and requires serious attention from industry and policymakers, but scaremongering about scarcity is misguided. This is the conclusion of new research by the UK Energy Research Centre (UKERC) and the Energy Research Partnership (ERP).

Recent economic, social and geopolitical events have contributed to concern over the supply of critical metals. These metals are increasingly being used in a wide range of low-carbon energy technologies. For example, lithium and cobalt are commonly used in electric vehicle batteries, while indium and tellurium are used in the manufacture of thin-film solar panels.

New evidence suggests that recent bottlenecks in the supply of critical metals have largely been overcome and, in most cases, production is capable of growing to meet demand in the short to medium term. However, there remains significant uncertainty over what impact the availability of critical metals will have on the cost of some low-carbon energy technologies.

Anticipated growth in the low-carbon energy market will significantly increase demand for many critical metals. For example, demand for tellurium is predicted to increase by 360 per cent by 2030 and, under high demand estimates, could put pressure on supply chains.

"Rising demand and the complexities of bringing on new metal

production has led to increasing concerns about the future availability of metals critical to decarbonisation," says Jamie Speirs from Imperial College London, who led the research for UKERC.

"The supply of critical metals has increased over the last few years from a number of countries. However, future availability remains uncertain and this could have serious ramifications for the UK's decarbonisation strategy," he adds.

The research indicates that options for material substitution are limited but recommends that the UK continues to pursue technology substitutes to better protect the industry against price volatility. For example, while some thin-film photovoltaics rely on critical metals, other thin-film technologies, such as amorphous silicon, do not. In addition, more must be done to encourage recycling of metals from end-of-life products by offering sufficient price incentives and better regulation.

Creating secondary sources will help relieve supply pressures, but it is also vital to the growth of the low-carbon economy that we further develop primary sources of metal minerals. Greater support for mining, strategic stockpiling of selected materials, international diplomacy, financial support and bilateral agreements with foreign exporters may all play a part in meeting primary supply needs. However, the UK will have to collaborate with wider international governments and industrial partners to achieve many of these measures.

"The UK is particularly sensitive to the availability of critical metals for energy technologies because of our reliance on imports and the affordability debate around attaining a low-carbon energy system by 2050," says Mark Workman of the Energy Research Partnership.

"We must urgently develop better tools, greater capacity and oversight mechanisms for understanding metal mineral supply chains and exposure

of the supply chains to non-availability," he adds.

More information: A report by the UK Energy Research Centre "Materials availability for low-carbon technologies: An assessment of the evidence" summarises the research discussed in this press release and can be downloaded from the UKERC website: www.ukerc.ac.uk/support/tiki-d … file.php?fileId=3711.

A report by the Energy Research Partnership "The Potential Impact of Resource Constraints on UK Energy Innovation and System Development to 2050 – Minerals: Policy Summary" which accompanies this press release can be downloaded from the ERP website: www.energyresearchpartnership. … ource+Use+Efficiency.

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