ECFD
European Confederation of Fuel Distributors

ECFD information

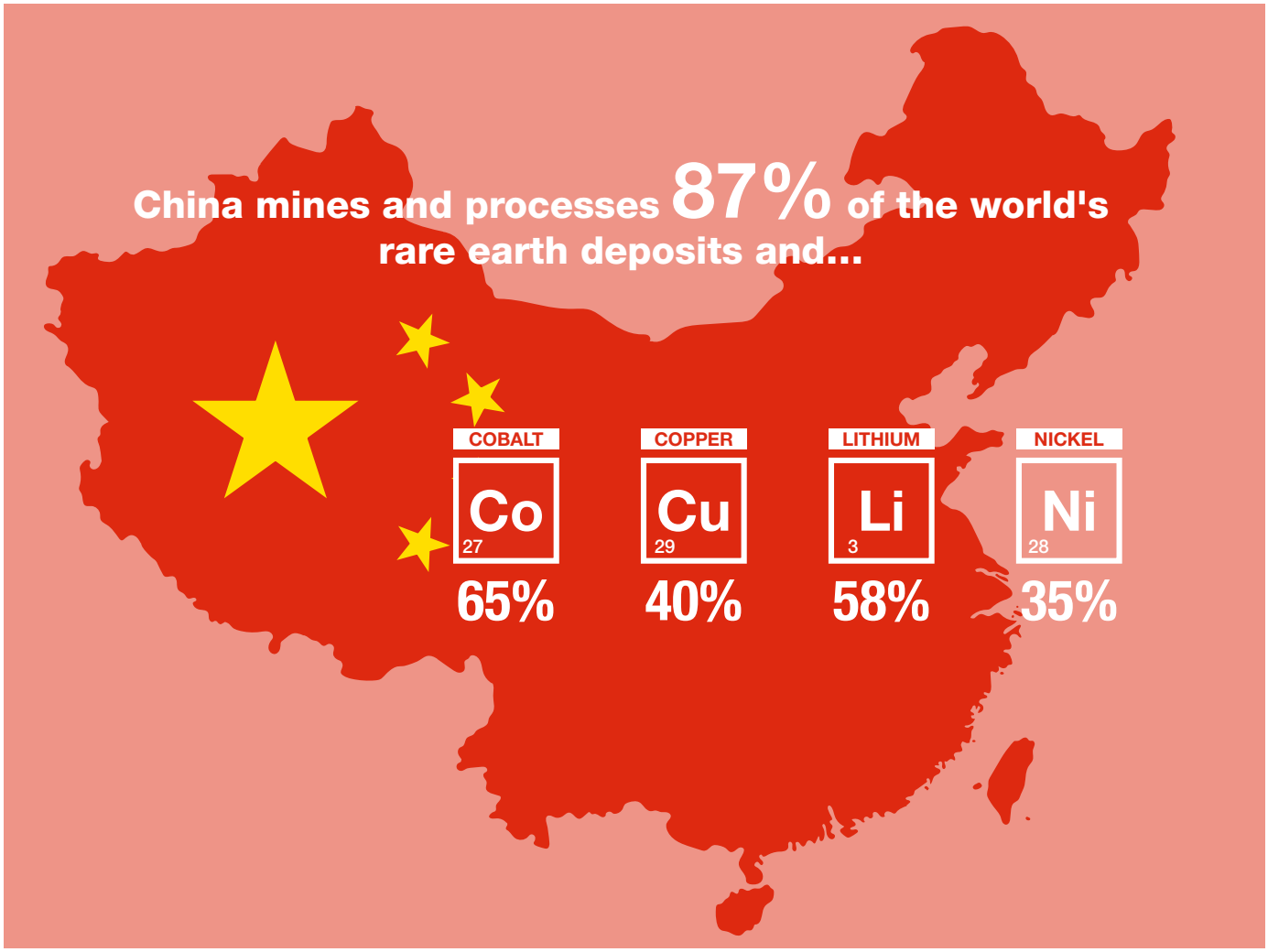
How electromobility increases Germany's and Europe's dependence on China for raw materials: Example Germany

Electromobility has a great hunger for raw materials

Lithium-ion batteries, like those installed in electric cars, contain lithium, nickel, manganese, cobalt and graphite. Rare earth elements such as neodymium, praseodymium and dysprosium are needed for the drive train. The demand for these metals for the construction of electric cars is enormous, especially due to the batteries. For example, depending on the battery size, up to 70 kg of cobalt, 13.5 kg of lithium and 80 kg of copper can be found in electric vehicles. Further quantities of copper are also required for the charging infrastructure.

Raw materials for electromobility can only be sourced from a few countries

Since lithium, nickel and copper, for example, are hardly found in Germany, if at all, German car producers have to import these metals, which are so important for e-mobility. These are only offered by a few countries: More than half of all raw materials needed for electric motors come from China. 45 percent of the rare earth elements that Germany imports come from the Chinese market. There are also major dependencies on Russia. For example, about 40 percent of all German nickel imports came from there. Germany's dependence on China in particular threatens to increase further as a result of the expansion of electromobility, because China mines and processes around 87 percent of the world's deposits of rare earths and metals such as cobalt, copper, lithium and nickel.



Graphic 1

China dominates all production stages for e-car batteries

China dominates not only the raw material markets relevant to electromobility, but also production at every stage of the supply chain for e-car batteries. Three quarters of battery cell production capacity is in China, and for the indispensable components of cathode and anode material production, it accounts for 70% and 85% of global production capacity respectively. More than half of the world's raw material processing for lithium, cobalt and graphite also takes place in China. With 80% of the world's graphite mining, China dominates the entire graphite anode supply chain.

Raw material recycling of e-car batteries still unclear

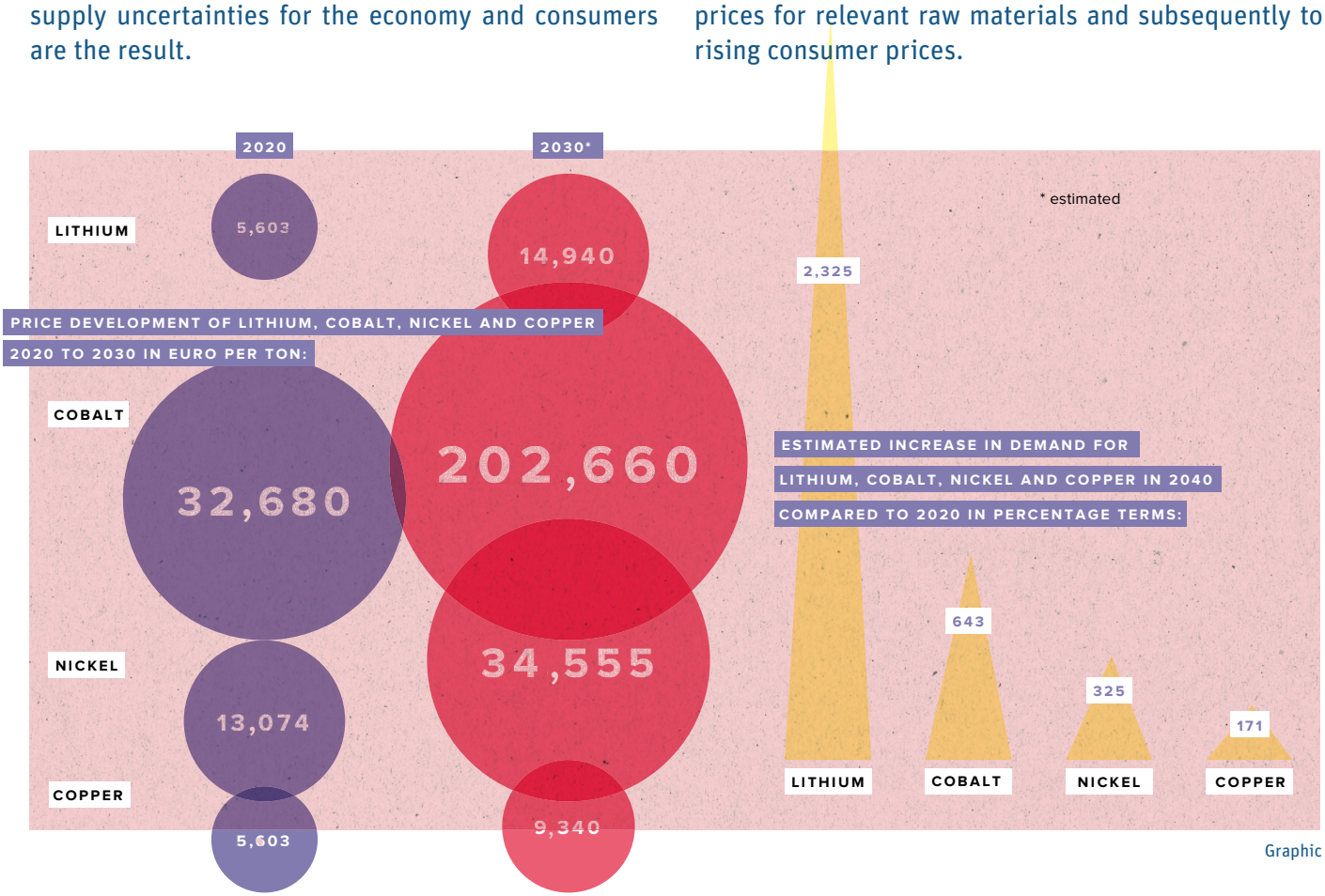
To date, there are no recycling possibilities for raw materials used in e-car batteries on an industrial scale. Whether raw material recycling can take place on a large scale in Europe in the future, despite the high energy input required for it, is questionable and not foreseeable.

Dependence on raw materials from a few suppliers is detrimental to security of supply and affordability

The negative consequences of excessive dependence on a few states for raw materials are currently evident in the case of natural gas, where Germany and other European states have become highly dependent on Russia in recent years and decades. High costs and supply uncertainties for the economy and consumers are the result.

The German and European automotive industry is becoming dependent on new raw materials for electromobility - especially from China!

And: The high demand has already led to sharply rising prices for relevant raw materials and subsequently to rising consumer prices.



Graphic 2

Recommendations for policymakers

1. Unilateral technology pathways in climate protection, which are also **raw material-intensive**, carry the risk of once again becoming dependent on a few supplier countries. This can lead to **disruptions** and more difficult enforcement of **social and environmental standards** in supply chains and to the shifting of **value added**.

2. It makes sense to focus on **different solutions** with regards to climate protection in order to avoid unilateral dependencies.

3. This can also avoid **raw material competition** between electric cars and the expansion of renewable energies.

Source:
Graphic 1: IEA – 'The Role of Critical Minerals in Clean Energy Transitions by International Energy Agency'; Graphic 2: DIW Weekly Report 4/2022; Graphic 3: UNITI representation according to UBS/FuW

IEA Global Electric Vehicle Outlook 2022
German Raw Materials Agency
www.enex.me
www.efahrer.chip.de

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