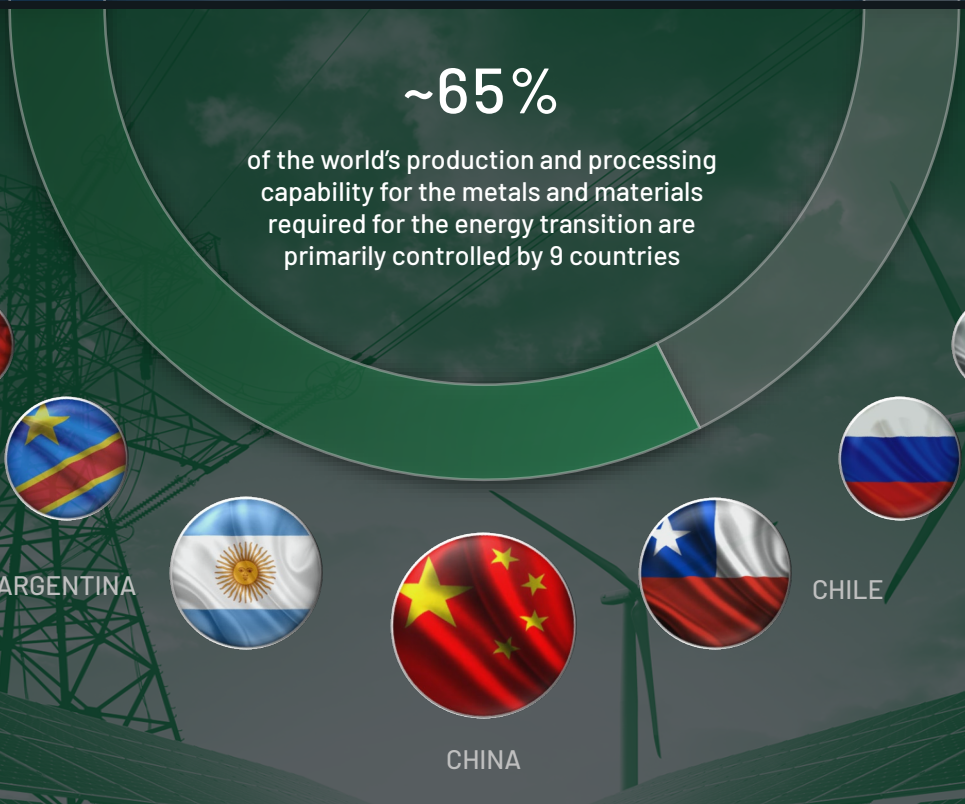


# Could the transition to renewables give rise to a new OPEC?

## OPEC

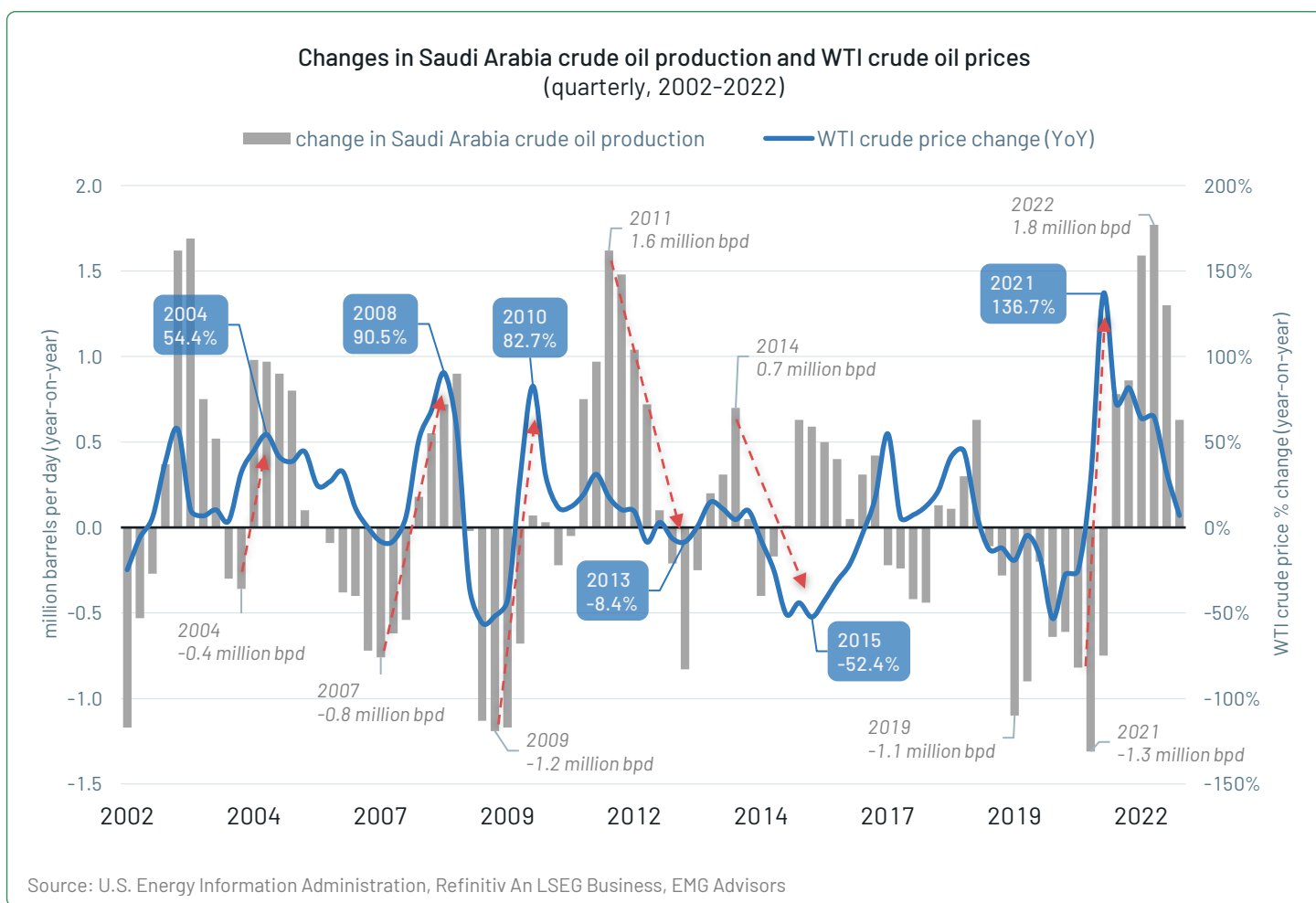


## OMECE

## OPEC and its affect on crude oil prices.

The Organization of the Petroleum Exporting Countries, OPEC, was established in 1960, with five founding members: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. OPEC's primary objective was to unify petroleum policies and secure fair prices for its member countries, which has since expanded to include 13 core members. According to current estimates, 80.4% of the world's proven oil reserves are located in OPEC Member Countries, with the bulk of OPEC oil reserves in the Middle east, amounting to 67.1% of the OPEC total.<sup>1</sup> Central to OPEC's power is its ability to leverage its collective influence to manipulate global supply and demand dynamics, thereby influencing prices. Reductions in production create market scarcity, driving prices upward, while increases result in a surplus, leading to price decreases. Decisions on production quotas are made during OPEC meetings, where member nations negotiate and coordinate their strategies.

According to the US Energy Information Administration, OPEC's oil exports represent about 60% of the total petroleum traded internationally (see graphic on cover page).<sup>2</sup> This market share allows the cartel to influence international oil prices; the chart below demonstrates how its largest producer, Saudi Arabia, frequently affects oil prices.



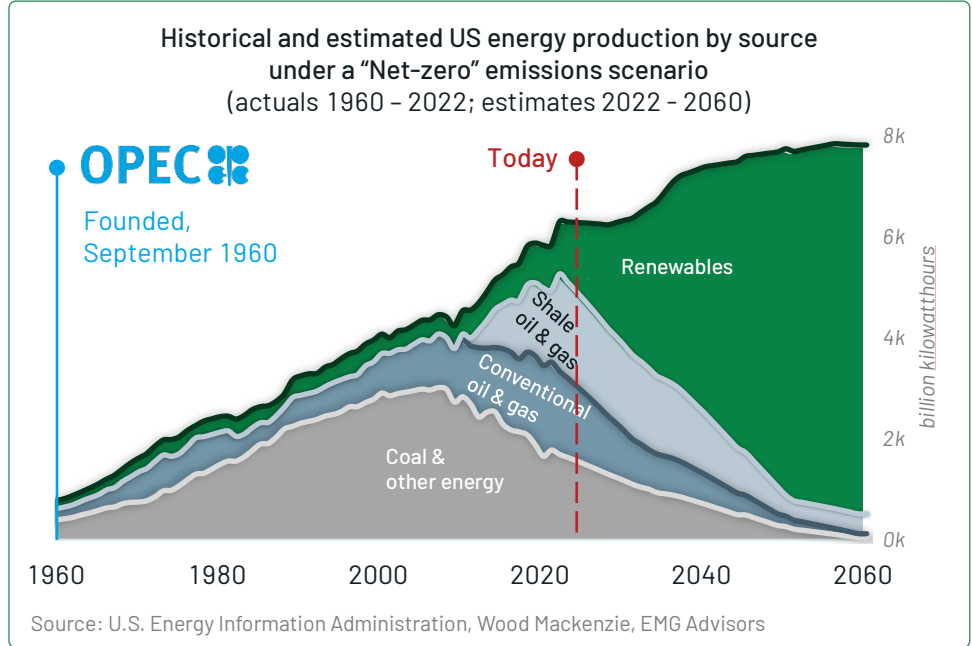
The oil markets respond to changing supply and demand expectations; forecast reduced production and price goes up, forecast increased production and price goes down.

This is just one example of the strength of OPEC's influence on international oil prices. Each member also calculates and monitors its spare production capacity to be able to respond to potential crises that reduce oil supplies; as a result, oil prices tend to incorporate a rising risk premium when OPEC spare capacity reaches low levels.

The United States is on the cliff of its third energy revolution in 100 years.

The chart to the right is a timeline of energy production in the US by source since 1960, when OPEC was established. Coal and conventional oil & gas have been the primary source of energy production for the past 60 years, with shale oil & gas gaining popularity in the last decade. Up to this point, renewables have only played a minor role in US power generation; in order to fulfill the promises of a net-zero emissions scenario by 2030, 2040, or 2050...wherever the target is now!

The shift from a fuel-intensive to a material-intensive energy system powered by renewables will rely on a supply chain for critical minerals and rare earth metals controlled by only a handful of countries.



What will fuel our green future?

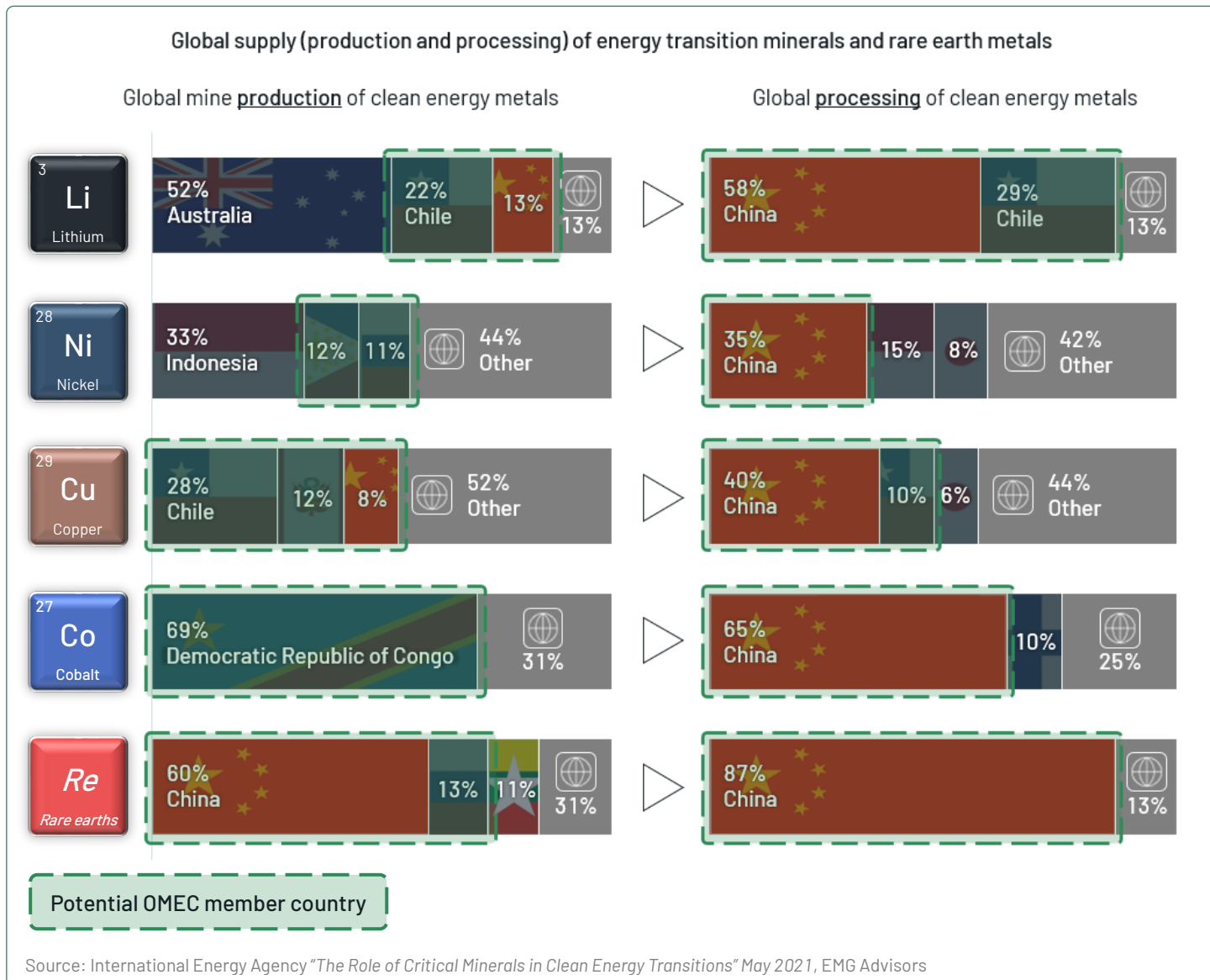
Energy type (across top of chart) Metals (down left side of chart)		Electric motors	Electric vehicles	Nuclear power	Wind turbines	Solar PV	Battery energy storage	Carbon capture & storage
Aluminum	Al	+	+		+	+	+	+
Copper	Cu	+	+	+	+	+	+	+
Iron	Fe	+			+		+	
Lead	Pb			+	+	+		
Nickel	Ni		+	+	+	+	+	+
Lithium	Li		+				+	
Cobalt	Co		+	+			+	+
Manganese	Mg		+		+		+	+
Titanium	Ti				+			
Rare earth elements <sup>1</sup>	Re		+	+	+	+	+	+

1. Rare earth elements are a group of elements critical to high technology; mineable concentrations are uncommon, making reserves valuable

Source: EMG Advisors

## Where is this fuel coming from?

The materials necessary for our smart phones, high technology devices, consumer and industrial batteries, electric vehicles, renewable energy infrastructure, all require the metals and rare earth elements whose supply is currently controlled by a small group of countries, led by China.



China has emerged as a dominant force in the processing of these raw materials into usable forms, driven by domestic resource availability, cost-effective labor, and advanced processing technologies. An underlying reason for China's preeminence is the hesitation of many countries to engage in environmentally impactful processing activities associated with critical minerals. The processing journey from raw materials to refined forms involves extraction, beneficiation, smelting, and refining; processes that generate waste, release pollutants, and have adverse ecological effects on the environment. China's willingness to engage in processing activities, albeit with varying environmental standards, has allowed it to become a global bottleneck in the green-energy metal supply chain.

This bottleneck extends to both processed raw materials and finished goods (wind turbines, electric vehicle batteries, and battery energy storage systems) contributing to China's dominance in the sector. As the world strives for renewable energy solutions, the reliance on China for processing and manufacturing introduces potential vulnerabilities in supply chains, affecting availability and affordability.



**It's not just a China problem...the risk of a new OPEC is real.**

Argentina and Chile has the world's second- and third-largest reserves of Lithium, respectively. Those countries, along with their neighbor Bolivia, make up the "Lithium Triangle". The US imports roughly 91% of its lithium from the Lithium Triangle, primarily Chile.

At the end of April 2023, Chile's President announced the nationalization of its lithium reserves, which could signal the imminent rise of protectionist measures on a global scale, with a focus on these core green energy metals and rare earths. Our reliance on lithium is set to grow even further. Recently, MIT scientists created a solid-state lithium battery that surpasses the performance of current battery technologies<sup>5</sup>. As newer technologies demand even greater quantities of lithium, the US is likely to accept the nationalization of, and its short- to medium-term dependence on, Chilean lithium, while exploring alternative sources in countries with more favorable business environments.

As the world accelerates its shift towards renewable energy, the concentration of green-energy metal reserves and processing capabilities in a limited group of countries raises concerns about pricing power and supply chain resilience; this could give rise to a new cartel of metal exporting countries, OMEC.

The United States, Europe, and other developed nations, as major consumers of these materials, will have to deal with this group...but it's likely that China will be setting the price for now.

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The screenshot shows a CNBC news article. At the top, the CNBC logo is on the left and a 'WATCH LIVE' button with a magnifying glass icon is on the right. Below the logo, the text 'CLEAN ENERGY' is displayed. The main headline reads 'Chile plans to nationalize its vast lithium industry'. Underneath the headline, it says 'PUBLISHED FRI, APR 21 2023-12:43 PM EDT' and 'UPDATED FRI, APR 21 2023-3:37 PM EDT'. A 'REUTERS' logo is visible on the left, and another 'WATCH LIVE' button is on the right. The central image is an aerial view of the Rockwood lithium plant, showing a grid of rectangular processing areas and brine pools in the Atacama desert. Below the image, a caption reads: 'An aerial view of the brine pools and processing areas of the Rockwood lithium plant on the Atacama salt flat, in the Atacama desert of northern Chile.' The credit 'Ivan Alvarado | Reuters' is below the caption. At the bottom of the article, the text states: 'Chile's President Gabriel Boric said on Thursday he would nationalize the country's lithium industry, the world's second largest producer of the metal essential in electric vehicle batteries, to boost its economy and protect its environment.'

## Sources

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1. [https://www.opec.org/opec\\_web/en/data\\_graphs/330.htm](https://www.opec.org/opec_web/en/data_graphs/330.htm)
2. <https://www.eia.gov/finance/markets/crudeoil/supply-opec.php>
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