Will the EU help build a cobalt refinery in the Democratic Republic of the Congo?

Most of the world's cobalt, a strategic raw material for the EU, is mined in the Democratic Republic of the Congo (DRC). It is then shipped to China for processing before being used, for instance, in batteries and electric vehicles (EVs). This creates inefficiencies, extra emissions and, above all, crucial critical raw material and green sector dependencies on China. The DRC wants to move up the battery supply chain. A 2021 Bloomberg study shows that building a Congolese processing plant to produce lithium-ion battery precursors would be vastly cheaper than constructing one in the US, China or Europe. A Global Gateway partnership framework with the DRC is in place to help develop its critical raw material value chains. Could EU partners reduce critical raw material and green transition dependencies on China by building a Global Gateway cobalt processing plant in the DRC?

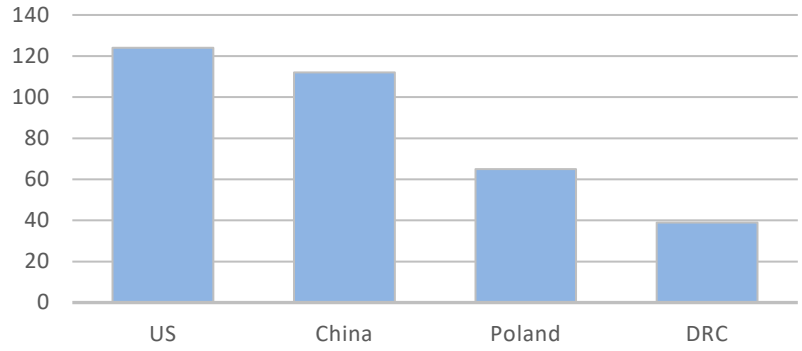
The DRC's cobalt in China's hands

The Democratic Republic of the Congo is among the world's richest countries in natural resources. An estimated US$24 trillion worth of mineral deposits remain untapped, including the world's largest coltan and cobalt reserves; 74 % of the world's cobalt comes from Congolese mines. This silvery blue metal is used inter alia to produce lithium-ion batteries that power electric cars, smartphones, computers, and other devices. As countries pivot toward renewable energy, demand for these batteries is growing, with global demand for cobalt expected to grow fourfold by 2030.

While the DRC is the world's main source of cobalt, China refined 77 % of the world's cobalt in 2022. Almost all cobalt mined in the DRC heads to China for refining and processing. China has come to depend almost exclusively on the DRC for its raw cobalt imports. The West's continued dependence on China in battery supply chains is caused at least as much by its dependence on Chinese cobalt and lithium refining capacity as on Chinese battery manufacturing. Despite efforts to reduce the use of cobalt in EV batteries, cobalt will remain the main limiting factor in meeting demand for lithium-ion batteries.

DRC President Felix Tshisekedi has expressed frustration with the 2008 Sino-Congolese cobalt and copper extraction deal, referred to as the Sicomines pact, saying that 'the contract was badly drawn up'. The deal gives Chinese signatories mining rights to the DRC's copper and cobalt in exchange for Chinese investment in Congolese infrastructure. In February 2023, DRC's state auditor, the Inspectorate General of Finances, released a report stating that the mine had been undervalued. The report called for US$20 billion in Chinese infrastructure investments, up from the original US$3 billion, of which only US$822 million had been spent since 2008. President Tshisekedi renegotiated the deal to arrive at US$7 billion in investments, which experts still called highly unfavourable.

Figure 1 – Cost of a 10 000 tonne battery precursor plant, in US$ million



Source: BloombergNEF, The Cost of Producing Battery Precursors in the DRC, 2021.

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A Global Gateway cobalt refining plant in the Democratic Republic of the Congo?

The DRC has ambitions to process its own cobalt and move up the battery supply chain. While the DRC will remain the main cobalt supplier beyond 2030, it captures only about 3 % of the battery and EV supply chain. A 2021 study by Bloomberg identified the DRC as a favourable location for the production of battery precursor materials (i.e. refined cobalt). Building a battery precursor plant of the same capacity would cost three times less in the DRC than in the US or China (Figure 1). The DRC's cost competitiveness comes from its relatively cheap land and construction costs. Producing the precursor materials in the DRC would also lower supply-chain emissions and add value to the country's cobalt. Moving battery precursor production from China to the DRC would cut the emissions associated with battery production by 30 %. The DRC could make use of its hydroelectric power to run the plant, again cutting emissions compared with production in China. Refining directly in the DRC, compared with shipping raw materials to China and processed products from China to Europe, would vastly reduce transport-related emissions. Poland would handle battery cell production and Germany the final assembly, thus avoiding China in the supply chain.

The DRC and Zambia intend to create a special economic zone where cobalt would be processed and turned into the precursor material used for batteries. One Congolese company already plans to build a US$350 million copper and cobalt smelter with the support of the government. In October 2023, Luxembourg-based Eurasian Resources Group began building a metallurgical plant at one of its mines in the DRC, aiming to produce copper and cobalt from 2025. The DRC seeks to become a major battery producer itself. In December 2022, the US, the DRC and Zambia signed a Memorandum of Understanding to develop 'an integrated value chain for the production of EV batteries in the DRC and Zambia, ranging from raw material extraction, to processing, manufacturing, and assembly'. This requires roads, electricity and skilled workers, which the Global Gateway strategy could help provide, given its focus on transport connectivity, sustainable energy and education. In October 2023, the EU signed strategic partnerships on critical raw material value chains with the DRC and Zambia under the strategy. The partnerships set out to develop critical raw material chains while creating quality local jobs. These developments point to the feasibility of developing a cobalt processing plant in the DRC as part of the Global Gateway strategy, thereby reducing Europe's dependence on Chinese refining and making the value chain both more secure and sustainable. This could be done in partnership with Congolese, European and US companies.

However, local complications arising from political instability, conflict, corruption, irregular artisanal mining and Chinese ownership of mines also need to be considered. Politically, major deficits persist in the DRC's democratic system, as it is marred by irregularities in elections, severe restrictions on freedom of the press and media and the lack of an independent judiciary. The eastern DRC has been ravaged by violence perpetrated by various armed groups for decades, resulting in approximately 6 million deaths since 1996. As of early 2024, the M23 and Allied Democratic Forces, among over a hundred armed groups active in the region, were involved in heavy clashes with the military. Corruption pervades every level of government in the DRC, which ranks among the 18 most corrupt countries in the world according to Transparency International's Corruption Perceptions Index. Between 15 % and 30 % of Congolese cobalt comes from irregular artisanal mines with hazardous working conditions, low pay, and high levels of soil and water pollution. China owns 15 of the country's 19 primary copper-cobalt mines, which may be determined to keep feeding cobalt to Chinese refineries rather than local plants. If so, government regulations to promote local refining of minerals may be needed to curb this. Together, these complications could pose formidable challenges to operating a potential EU-supported cobalt refinery in the DRC and should be explored further. According to the 2021 Bloomberg study (the costs have since likely risen), it would take 2 years and US$39 million to develop and build such a plant and 12 years to recoup the investment.

The DRC has made known its ambitions to move up the cobalt value chain. A Global Gateway critical raw material partnership with the EU is in place to further the development of such local value chains, and research has shown the potential viability of a cobalt processing plant in DRC. Successful operation of a cobalt processing plant in the DRC would reduce crucial dependencies on China in green and critical raw material supply chains, make supply chains more secure and more sustainable and advance the EU's de-risking ambitions. If deemed feasible, such a project could be a valuable flagship project and a tangible win for the Global Gateway, as it advances the EU's geopolitical, economic and environmental interests in the world while also aiding the development of a partner country by helping it move up the value chain.