The Changing Geopolitics of Extractivism(s) and the Clean Energy Transition

Jewellord T. Nem Singh
International Institute of Social Studies, The Hague
nemsingh@iss.nl

Context

Though it failed to resolve several contentious issues, the COP26 meeting in Glasgow solidified a consensus around the need for a global transition towards clean energy. Implicated in this transition is the widescale adoption of renewables—we must build larger wind turbines, produce more electric vehicles, and phase down coal factories in electrifying rapidly urbanizing cities. Climate negotiations often refer to "common but differentiated responsibilities" among countries in dealing with the coming planetary crisis (UN FCCC 2013). In this narrative, the climate crisis is framed as a global challenge for both developed and developing countries, and in so doing, there is shared responsibility for the energy transition. The other side of this narrative is unspoken: the protagonists of such a transformation are European governments and high-tech manufacturing companies involved in spearheading the green project, which consists of expanding production of wind turbines, scaling up the usage of hybrid and electric vehicles, fuel cells, and Li-ion batteries, and decarbonizing steel, power, and other carbon-intensive industries for the green transition. And their policies have a cost—if the world meets the targets of the Paris Agreement, demand is likely to increase by 40% for copper and rare earth elements (REES), 60-70% for cobalt and nickel, and almost 90% for lithium in the next two decades (International Energy Agency 2021, 5).

As the clean energy transition accelerates in this decade, mineral states in Latin America and Africa—but also Australia—are increasingly positioned to become the new sources of critical raw materials needed for the worldwide shift towards green capitalism. Lithium, graphite, and niobium are key inputs for batteries powering electric vehicle cars and for storage systems for photovoltaic panels and wind generators. Beyond new demands for rare metals to power the energy transition, demand for copper, nickel, manganese, aluminum, and other base metals are increasing in response to the need for new infrastructures for clean energy. However, the global politics of mining has an intrinsically complex and historically problematic record with only a few exceptional cases of success. For instance, primary commodities served to insert Latin America in the global international economy. Between 1500s and 1800s, the region was relegated in the periphery partly a function of the colonial project but also due to the immutable force of extractivist institutions after independence. It was only during the 20th century when import substitution industrialization (ISI) models were implemented that concerted efforts to change the position of Latin America in the international political economy.

The China Question – Dominant Narratives in response to China's Economic Ascent

The clean energy transition is a historically significant moment for resource producers. It involves the intensive and extensive extraction of "rare metals"—metal minerals produced in low quantities and utilized as intermediate inputs in the manufacturing of digital, renewable, and energy technologies. These have also been identified by the U.S. and EU as "critical raw materials" (CRMs), which are simultaneously important for industrial competitiveness and generate serious concern due to supply vulnerabilities. The United States lists 35 critical minerals in order of their importance for national security and wider supply chain vulnerabilities (U.S. White House, 2017). The EU Commission report identifies 30 critical raw materials, found in Table 1 (European Commission, 2020b; European Commission, 2020a). In this ordering, critical minerals are grouped into three major categories: heavy rare earths (HREEs), light rare earths (LREEs), platinum group metals (PGMS). The list also includes various ferrous and non-ferrous metals.

Table 1 Current Global Share of Production and Processing of Critical Minerals

	Material	Stage	Main global supplier	Share		Material	Stage	Main global supplier	Share
1	Antimony	E	China	74%	23	Magnesium	P	China	89%
2	Baryte	E	China	38%	24	Natural graphite	E	China	69%
3	Bauxite	E	Australia	28%	25	Natural rubber	E	Thailand	33%
4	Beryllium	E	USA	88%	26	Neodymium	E	China	86%
5	Bismuth	P	China	80%	27	Niobium	P	Brazil	92%
6	Borate	E	Turkey	42%	28	Palladium	P	Russia	40%
7	Cerium	E	China	86%	29	Phosphate rock	E	China	48%
8	Cobalt	E	Congo,DR	59%	30	Phosphorus	P	China	74%
9	Coking coal	E	China	55%	31	Platinum	P	S. Africa	71%
10	Dysprosium	E	China	86%	32	Praseodymium	E	China	86%
11	Erbium	E	China	86%	33	Rhodium	P	S. Africa	80%
12	Europium	E	China	86%	34	Ruthenium	P	S. Africa	93%
13	Fluorspar	E	China	65%	35	Samarium	E	China	86%
14	Gadolinium	E	China	86%	36	Scandium	P	China	66%
15	Gallium	P	China	80%	37	Silicon metal	P	China	66%
16	Germanium	P	China	80%	38	Tantalum	E	Congo,DR	33%
17	Hafnium	P	France	49%	39	Terbium	E	China	86%
18	Ho,Tm,Lu,Yb	E	China	86%	40	Titanium	P	China	45%
19	Indium	P	China	48%	41	Tungsten	P	China	69%
20	Iridium	P	S. Africa	92%	42	Vanadium	E	China	39%
21	Lanthanum	E	China	86%	43	Yttrium	E	China	86%
22	Lithium	P	Chile	44%	44	Strontium	E	Spain	31%

Source: European Commission (2020b, 5)

Legend

Stage	E = Extraction stage P = Processing stage
HREEs	Dysprosium, erbium, europium, gadolinium, holmium, lutetium, terbium, thulium,ytterbium, yttrium
LREEs	Cerium, lanthanum, neodymium, praseodymium and samarium
PGMs	Iridium, palladium, platinum, rhodium, ruthenium

Apart from rare metals, the expansion of renewable energy will require significant investments in clean energy infrastructure, which also adds pressure towards primary mineral production of base metals like nickel, iron, and copper. Drawing from recent data on raw materials and assembly of components (Figures 1 & 2) collected by the European Commission, it is patently clear that developing countries are being repositioned—or more accurately, re-embedded—in the international division of labour as sources of primary raw materials not only to supply current needs for high-tech manufacturing but also to fuel the green energy transition. If there is one major difference between the past centuries, it is the fact that China has now joined Latin America and Africa as the sources of critical minerals.

Figure 1 Regional Shares in Raw Materials Stages in High Technology Sectors

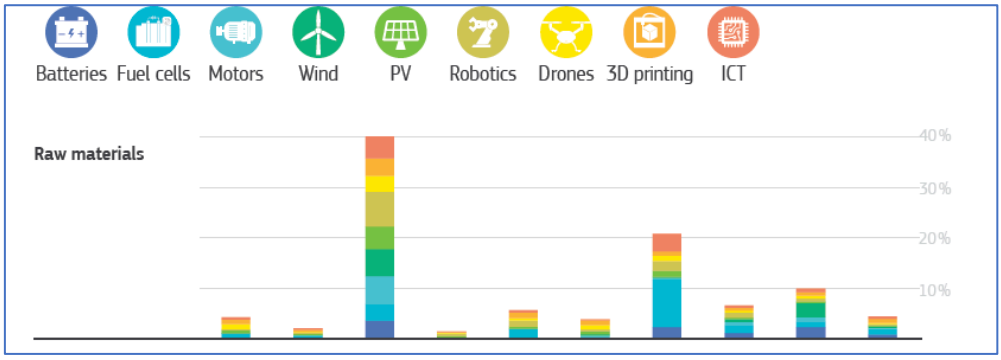
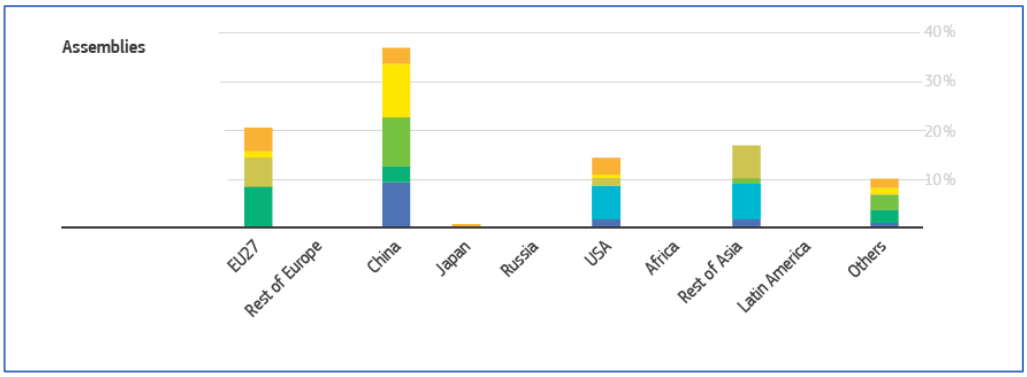


Figure 2 Regional Shares in Assemblies Stages of High-Tech Manufacturing



Source: European Commission (adapted) (2020a, 82).

In this context, China's rise as the second largest economy in the world combined with its ambitious grand strategy to place itself at the centre of global trade, finance, and investments has caused concerns and reactions from the West. Two dominant narratives became consolidated around critical minerals discourses. On one hand, there appears to be no issues about Africa and Latin America retaining themselves as producers of raw materials. In fact, in the European Raw Materials Conference held in Brussels, the Commission set a special session on Europe-Africa relations, emphasizing the significance of the region as a source of minerals for renewable energy

technologies.[1] This announcement took place at the backdrop of the publication of EU's *Critical Raw Materials Plan*[2], which emphasises secured access to minerals as a security question, and thus, charts the regional strategy on how access and sustainability are envisaged by the European Union (EU). In this roadmap, critical minerals are framed as commodities that ought to be traded and sold in world markets as if they are 'normal commodities' in which markets set the prices, and as a consequence, should be readily available for consumers.

On other hand, and as a contrast to these two regions, China's strategic control over minerals has been framed as a security problem for the EU. In this instance, China's large-scale acquisition of natural resources, strategic ports and infrastructure projects, and even technological and firm-level mergers and acquisitions (M&As) have been perceived as a "security threat" for Europe. In a high-profile case in Greece, the sale of the centuries-old port of Piraeus has been heavily politicized as an issue of European security and a test of transatlantic alliances. When the Greek state was bankrupt and was compelled to privatize important state assets, including the Port of Piraeus, to finance the IMF bailout, European companies failed to offer a competitive bid against Chinese company COSCO. Since 2016, the sales of the port, then, became subject to intense geopolitical tensions between the EU, US, and China with Greek politicians being required to navigate an increasingly complex political terrain.[3] In other words, state assets and natural resources are perceived as *geopolitical tools*, which are utilized by mercantilist states and hegemonic powers – i.e. China and Russia – as weapons for security.

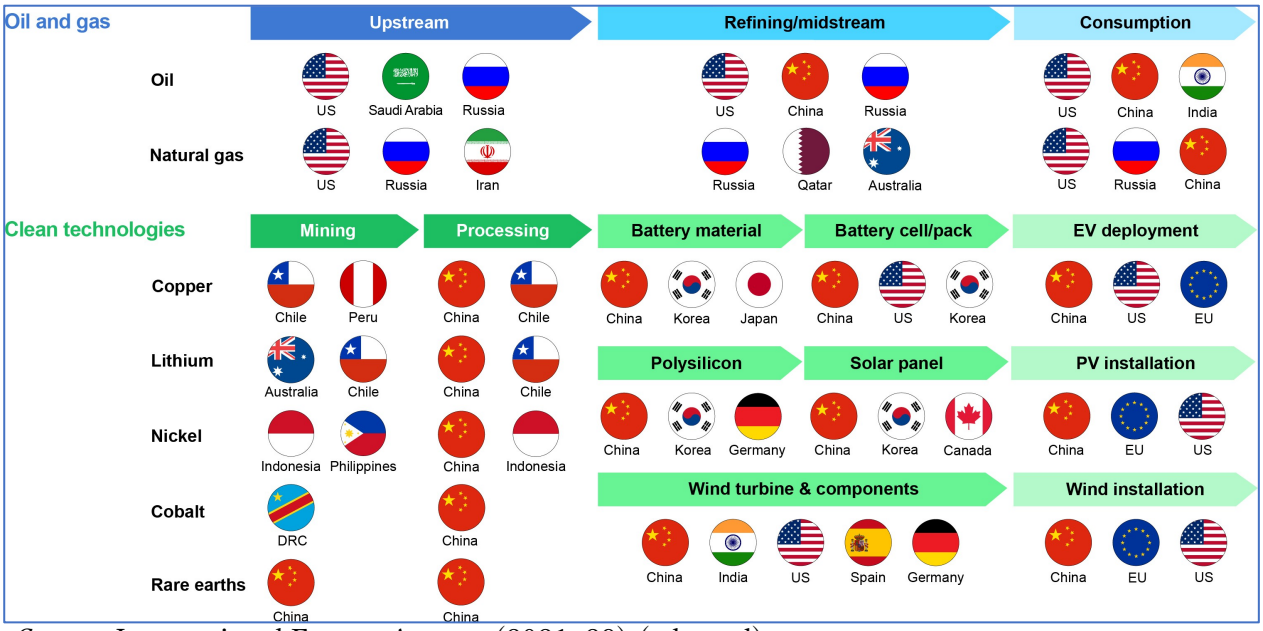
Yet, these competing narratives are, in fact, two sides of the same coin. Critical minerals are simultaneously commodities produced, traded, and sold in world markets; yet minerals should not be treated simply as ordinary commodities. Natural resources, in particular, are non-renewable, are geographically concentrated, and have been historically subject to claims of state sovereignty (Nem Singh 2012; 2018; 2019). That China has claimed the right to limit resource exports for its own developmental needs is, of course, paramount to similar claims of Latin America in the 19th and 20th century over their right to development, and therefore, was often used to justify resource nationalization for industrialization. Perhaps more controversially, the discourse on green transition as a public good seems to mirror historical claims over how the West had practically exercised sovereignty over their right to extract natural resources in the colonial world, especially in Africa. The historical scholarship is plentiful in showing the consequences of colonization in terms of institution-building, but also its deleterious effects over how resources were transferred for centuries (Mahoney 2010; Reno 1996). What is, of course, new is that the energy transition is framed as a collective action problem, whereby burden sharing is increasingly expected towards developing countries even if historical carbon emissions are disproportionately caused by the industrialization of the West in the 18th and 19th centuries.

Emerging Supply Chains on Clean Energy

[1] Author participation, *EU Raw Materials Week,* Brussels, November 15-19, 2021.
[2] See https://ec.europa.eu/docsroom/documents/42849.
[3] Author interview with Former Senior Official, Ministry of Economy, xxx.

Mineral extraction for renewable energy has already generated new patterns of trade in the energy sector. In the absence of domestic mineral reserves, resource-poor, industrialized East Asian countries—Japan, Korea, and Taiwan—compete directly with Western capital in various high-end manufacturing sectors notably automobile, digital and ICT, but also in producing intermediate inputs like permanent magnets and semi-conductors, which are important components in advanced manufacturing and clean energy technologies. To secure access to minerals, East Asia remains committed to engage with China in very pragmatic ways, for example through regional forums and with the global South through bilateral investment agreements aimed at facilitating trade, investment, and production. In the absence of strategic diplomatic ties, interconnectedness between Asia and Latin America is often conducted at the firm-to-firm level. For example, new lithium projects in Brazil are financed through agreements for secured markets in Asia, whereby Chinese and Japanese firms buy concentrated lithium to be processed in refining facilities in East Asia.[4] By contrast, growing concerns of the EU and US governments over the fact that non-democratic regimes like China and Russia hold excessive market power in controlling CRM reserves and production have led to newer initiatives, such as the building a new supply chain linking critical minerals with battery components and final product assembly. The success of an ambitious strategy to decouple from Chinese-led supply chain of minerals and clean energy, however, remains entirely dependent on the capacities of the West to secure access to critical minerals elsewhere. As Figure 3 shows, Latin America and Africa are the primary sources for raw materials, with East Asian countries and the West dominating the higher value-added activities in the supply chain.

Figure 3 Indicative Supply Chain of Clean Energy Technologies



Source: International Energy Agency (2021, 29) (adapted).

[4] Author interview with Manager, Sigma Lithium Resources, Online interview, March 18, 2022.

Notes: DRC = Democratic Republic of the Congo; EU = European Union; US = United States; Russia = Russian Federation; China = People's Republic of China. Largest producers and consumers are noted in each case to provide an indication, rather than a complete account.

What the Future Might Look Like

The tide is shifting away from fossil fuel dependency in favour of clean technologies. However, an uncritical embrace of clean technology may also lead to greater inequalities and uneven development. Latin America and Africa will be the new battlefield for resource extraction between China and the West. But these regions can also become a source of new political ideas on how to strike a balance between our insatiable demands for critical minerals and a new resource governance model.

To deal with the complex challenges associated with the transition to green technology, growing demands for critical minerals, and unequal burdens placed on the developing world, we need to incorporate a social justice perspective. To some, blame goes to the industrialized world which owes an ecological debt, thereby justifying carbon-based growth in middle and low-income countries. Other radical calls seek for degrowth, a reversal of humanity's pursuit of unfettered consumption and production (Kallis, 2018; Kallis et al., 2020). A nuanced position demands *common but differentiated responsibilities*. The basic principle is that because industrialized countries had decades to develop with unrestrained carbon emissions, they are now obligated to reduce emissions and contribute more financial assistance for developing nations to support their energy growth and transition to clean technologies (Gallagher and Xiaowei, 2018, 6).

These debates on how to deal with the uneven costs and burdens of the green transition pose difficult but fundamental questions. Are industrialized countries now more willing to accept the costs of climate change and do more on behalf of the developing world? To what extent can the rapid deployment of clean technologies achieve global targets, given how China's economic development model is based on high energy consumption, much of it with coal (Lewis, 2013, 10–11)? If China does move towards a renewable energy strategy, will the country merely shift the costs and externalities of the transition from the national government and urban China to rural China, Latin America, and other resource-rich regions, making them even more vulnerable to the negative effects of mineral extraction?

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Biographical Note:

Jewellord T. Nem Singh is an Assistant Professor in International Development at the International Institute of Social Studies, The Hague and an Affiliate Research Fellow at the International Institute of Asian Studies, Leiden. This paper has received funding from the European Research Council (ERC) Starting Grant No. 950056 and is part of a five-year research programme *Green Industrial Policy in the Age of Rare Metals: A Trans-regional Comparison of Growth Strategies in Rare Earths Mining (GRIP-ARM).* Details of the project can be found at @GRIP_ARM and @JNemSingh. Nem Singh is the author of *Business of the State: Why State Ownership Matters for Resource Governance* (Forthcoming, Oxford University Press) and editor of a new special issue entitled *The Politics of Designing and Negotiating Industrial Policy in the 21st Century* (Forthcoming, *Third World Quarterly).*