

# Environmental Governance

## Amidst the Climate Crisis and Energy Transition in the 21st Century

Jewellord Nem Singh



Fig. 1 (left): Taganito Open Pit Nickel and Iron Mine, Surigao del Norte, Mindanao, Philippines (Source: Author from Fieldwork, August 2016).

The first quarter of the 21st century is a remarkable period of significant political change for the world. Firstly, our world experienced a unique pandemic brought forth by the novel COVID-19 virus, which yielded to a rethinking on health and well-being as a central responsibility of the national state. The pandemic likewise raised serious debates regarding the merits of unfettered economic globalization, leaving questions about the sustainability of integrated supply chains. Since 2020 disruptions in global production networks have remained a formidable challenge for securing access to basic goods. This, in turn, reframed political debates, including the significance of reshoring manufacturing processes by way of establishing regional production networks to effectively respond to local demands for personal protective gear, food supplies, and COVID-19 vaccines.

Secondly, at the beginning of 2022, inter-state conflict escalated in the European continent as Russian President Vladimir Putin decisively occupied Ukraine. This has inadvertently produced a cascade of political pressures on the European Union (EU) to respond to a geo-political crisis at its borders. Less conspicuous in mainstream debates involves the degree of complexity of the geopolitical crisis. While leaders hastily declared Europe's desire for independence from other powers, the region's perpetual dependence on vital natural resources supplied by Russia and Ukraine is often marginalized in political discussions. Of course, alarms were raised in asserting European "strategic autonomy" – a discourse that shaped political decision-making in Brussels. Within national parliaments, European governments also responded swiftly. For instance, the German Parliament passed a historic bill to approve €100 billion to modernize the country's armed forces.<sup>1</sup> In Sweden, strong pro-environmental discourses which refuse further opening of the mining sector are now being challenged. Armed with advanced mining processing technology, new arguments are being crafted in support of Sweden taking a larger, geo-economic role within Europe to develop a regional supply chain of critical minerals. As Russian pressure for Swedish neutrality increases amidst its advances in Ukraine, the role of Sweden in critical minerals supply chain is tilting in favour of a pro-mining stance. Consequently, the project to decarbonize steel through the establishment of their first plant in northern Sweden has

been given the green light, despite strong public opposition in the past.<sup>2</sup> To put it differently, critical raw materials and the mining industry more generally are gaining traction as a potential winner in Europe's attempt to influence the reconfiguration of the emerging geopolitical order.

Finally, the global reordering as a consequence of the rise of China as an economic powerhouse has several compounding effects. For one, the US government has begun to change its own perceptions regarding hegemonic rivalry and the viability of China "peacefully rising" in a liberal international order. China's growing economic influence also altered perspectives among political elites in the developing world. Searching for an alternative to the Washington Consensus, China has increasingly become a counterweight and an important source of financing, investment, and diplomatic cooperation for the global South, especially through bilateral arrangements via state-owned banks and the Belt and Road Initiative.<sup>3</sup>

These changes within the macro-political and economic realms are not insulated from the crisis of climate governance. Faced with uncertainty and crisis, Western governments promote the unprecedented drive to reduce carbon emissions during the Anthropocene. While global emissions still require slowing down, the global governance architecture overseeing climate policies falls short in securing a pathway towards energy transition – that is, away from fossil fuels-intensive growth – for many countries. In this context, environmental governance is a focal

point to understand how moments of crisis can yield transformative political action. Through such critical junctures, we may witness the alteration of the course of human history as we respond to the challenges of climate change.

### Climate crisis as a critical juncture

The International Climate Change Conference in Glasgow, known as COP26, has set the pace and direction of the worldwide transition to clean energy. Climate commitments have entrenched a net-zero target of reducing carbon emissions, preventing the release of planet-warming gases, and capping temperature rise at 1.5° C. Yet, as a McKinsey Report<sup>4</sup> notes, the current structures of finance, investments, and energy infrastructures are outdated, with supply chains incapable of meeting the rapidly growing demands for primary materials for clean technology. Thus, another reality becomes more apparent: As we build bigger wind turbines, offer solar panels in more households, and assemble new energy vehicle (NEV) cars across cities worldwide, our demand for critical minerals increases, inadvertently putting pressure on our environment.

The European Union (EU) and its New Green Deal is an important case to examine the success of climate change adaptation and mitigation policies. The transformation of the EU into a carbon-neutral economy – along with its accompanying industrial

strategy supporting the expansion of clean energy technology – will require up to a ten-fold increase of raw materials consumption to meet the 2050 climate neutrality scenario.<sup>5</sup> In addition, industrialization taking place in middle- and low-income countries likewise increases demand for material intensity and resource efficiency. With the global population projected to reach more than 10 billion by 2060, material resources are required to support the demographic change. The OECD Report outlines this very clearly: "Global primary materials use is projected to almost double from 89 gigatonnes (Gt) in 2017 to 167 Gt in 2060. Non-metallic minerals – such as sand, gravel, and limestone – represent the largest share of total materials use, projected to grow from 44 Gt to 86 Gt between 2017 and 2060. While metal extraction and processing are smaller when measured in weight, its growth is projected to be more rapid, not to mention their association with large environmental impacts."<sup>6</sup>

We can also think about the pressures of energy transition in terms of the range of minerals required to secure the seismic shift towards renewables. In Figure 2, we compare both the amount and type of minerals for which demand is projected to grow as governments – from the national all the way to the municipal levels – seek to achieve their net-zero targets. The rapid deployment of clean technologies would mean constructing electric vehicles, which consume more than four times the minerals compared to conventional cars. Wind power and solar energy – two of the most favoured renewables – will require between 4,000 and 16,000 kg/megawatts of a range of base metals and rare earth elements (REEs). Put crudely, we expect the intensive and extensive exploitation of natural resources to meet global demands.

### Sacrifice zones and the quest for new models of resource governance

The global race for natural resources reinforces existing forms of socio-ecological inequalities, top-down modes of governance, and ecological debt by the industrialized world towards the developing world. Traditionally, we think about "environmental governance" through the lens of problem-solving approaches, in which dominant narratives coalesce around how to achieve resource efficiency and how to secure access to critical raw materials for the energy transition. Those in developing countries that bear enormous natural capital, especially communities living in close proximity to sites of extraction, are often considered

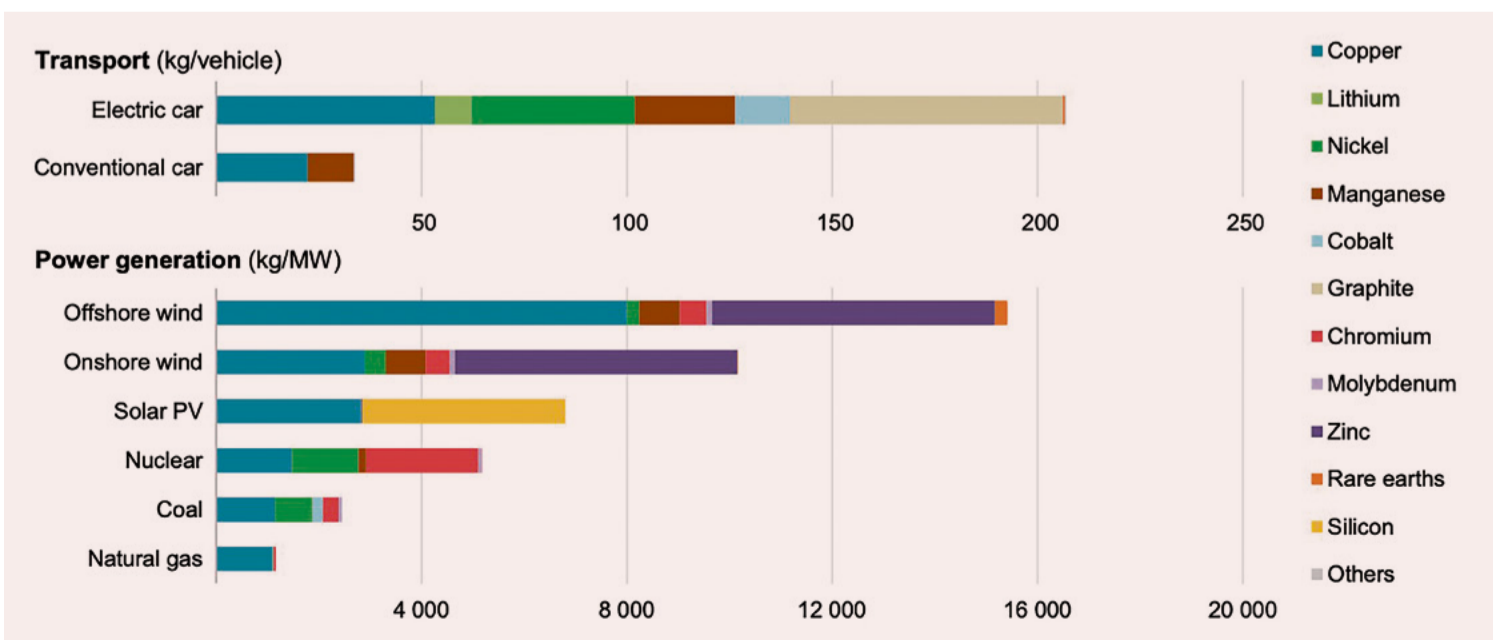


Fig. 2 (above): Critical minerals for clean energy transition (Source: International Energy Agency, "The Role of Critical Minerals in Clean Energy Transitions" [2021, p. 26]: <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>)

as “sacrifice zones.” Areas of sacrifice are by-products of global capitalism, whereby the excesses of profit-seeking inadvertently yield to depopulation, impoverishment, and health hazards. Market environmentalism reproduces asymmetric exposures of citizens toward global environmental changes. Indeed, state-sanctioned policies on conservation and industrial tree harvesting aim at writing off environmental destruction in the name of national interest.<sup>7</sup> For mining producers, political leaders have constructed a discourse of economic development and the collective race against climate change to justify – worse, to further expand – carbon-intensive mining operations in exchange of a political project emphasizing health, education, poverty reduction, and ironically, sometimes even in the banner of the “rights for nature.”<sup>8</sup>

As the clean energy revolution accelerates the demand for cobalt in the Democratic Republic of Congo, lithium in Argentina, Brazil, and Chile, and nickel in the Philippines and Indonesia, multinational capital, sometimes at work with national champions, is anticipated to leave these mountains barren, to excavate open-pit mining sites, and to displace local communities to meet the extra-ordinary demand for critical resources. Reinforced and sustained through imperials of pillage, colonial conquests, and imperialist territorial expansion, thus the extractivist logic of capital accumulation is taking its new form in the 21st century.

Anthropologists and political ecology scholars have called for incorporating concepts of fairness, environmental justice, and recently “climate justice” when examining who pays the costs of natural resource exploitation to meet the clean energy needs of industrialized countries. As this Focus section demonstrates, the authors agree with the need to think about environmental governance in terms of what Klinger<sup>9</sup> calls “the politics of sacrifice”: whenever we demand critical materials to meet our growing clean energy targets, someone from somewhere must pay for the ecological damage. Given the finite reserves of exploitable commodities under current market conditions, political decisions to extract minerals are consequential for the success of energy transition. Whenever European governments decide against new mining projects within their own borders, minerals extracted from overseas leave social impacts and ecological footprints elsewhere, albeit farther from citizens demanding clean energy. To meet the demand for renewables – i.e., the growing consumption of electric vehicles, wind turbines, and photovoltaic panels – requires extracting minerals in the developing world. Notwithstanding the inequality over ecological costs, the problem is further compounded. Ironically, communities in the advanced industrialized world are not only resisting against new mining projects, but relatively privileged residents also fight proposed energy projects such as wind turbines for their adverse health effects and solar farms for their concerns over loss of arable land and food justice. Such resistances are often framed around generalized claims, which might be referred to as the “right to landscape.”<sup>10</sup> Thus, “not in my backyard” attitudes (NIMBYISM), intentionally or otherwise, put enormous pressure on poorer, resource-rich countries to intensify their extractive activities for windfall profits and investments.

Hence, the worldwide shift to clean energy appears to be a double-edged sword. On the one hand, resource producers are likely to witness a new resource bonanza, not only in terms of the return of higher commodity prices but also more sustained demand in a longer horizon. Perhaps unsurprisingly, ambitions for national industrialization have become compatible with novel demand for transition minerals from the developed world. For example, as early as 2016, Chile created a National Commission on Lithium to oversee the process of increasing strategic control over lithium, a critical material for battery production needed in EV and hybrid cars.<sup>11</sup> On the other hand, pent up demand for clean energy can exacerbate existing inequalities within the developing world. Notwithstanding the potential benefits of

increased resource extraction, national governments might want to push for greater scope for extraction while neglecting societal compensation and ecological damage, especially in “frontier communities.” Mining communities who face threats of social dislocations are likely to bear the disproportionate costs of energy transition.

Meeting the sustainable development goals (SDGs) can ironically reproduce new forms of social injustice and ecological damage at the local sites of extraction. In an important OECD report,<sup>12</sup> this trade-off was put in starkly clear terms. While embracing renewable energy can support SDG 7 – which encourages universal access to affordable, reliable, sustainable, and modern energy – surging demands to produce clean energy technologies will impact natural resource use, especially the increasingly scarce metals for wind and solar power. On one hand, the clean energy transition is opening new pathways for economic development in the developing world in terms of investment, infrastructure, and construction for inclusive industrialization and innovation related to SDG 9. Yet, on other hand, these governments are wrestling over how to strengthen their weak institutional capabilities and to design industrial policy instruments to maximize developmental spill-overs from the mining industry. Thus, mining producers face difficulties in sustaining economic growth and limiting the environmental impacts caused not just by metal mining operations, but even those relying on the use of non-metallic minerals in construction.

The politics of sacrifice plays out in a multi-scalar way, connecting the individual choices of citizens and households living in the advanced industrialized world on one hand, and the winners and losers in the developing world on other hand, whether we speak of their national champions, communities living in the frontiers of extraction, or ordinary citizens in resource-rich countries. Clean energy transition, although presented as a panacea to the climate crisis, has uneven effects that become enmeshed with existing inequalities and structures of power imbalances within nations, classes, and social groups.

## Multiple pathways towards energy transition

In this edition of The Focus, our authors build on the basic idea that climate change – although a collective experience shaping societies across the world – is shaping domestic political and economic contexts in ways that produce multiple pathways of (re)constructing environmental governance across distinctive geographical and spatial politics. The aim of each piece is to shed light on how the shared enterprise of keeping the worldwide temperature increase to 1.5 degrees Celsius interacts with distinctive contexts and challenges on the ground. The collection contains five essays, each contributing to a new understanding of environmental governance in the context of our ecological crisis and uncertainty.

In the first two papers, Hao Zhang and Nuerjiazzi Akeerbieke examine the challenge of meeting the climate change commitments in China and Kazakhstan. China, like the United States, is responsible for intensive energy consumption thanks to its steady ascent as the second most powerful economy in the world. Given its reliance on a coal-powered industrial strategy, China’s energy matrix requires a coordinated energy reform program. Such a program must simultaneously increase the participation share of renewable energy in its complex development planning while also signaling strong convergence towards COP26 targets. Zhang emphasizes the difficult balancing act necessary to achieve domestic growth targets and international climate commitments, showing the importance of strategic choices of the national government in pursuing a well-coordinated climate-energy-industrial strategy. To further problematize the multiple pathways for energy transition, Akeerbieke shows the unique set of policy challenges faced by resource-rich countries in Central

Asia, notably Kazakhstan, to meet ambitious climate targets. As an oil exporter and raw materials producer, the Kazakh state must deal with similar pressures facing other countries in Latin America, the Middle East, and Sub-Saharan Africa. With export earnings from oil, gas, and minerals driving the country’s catch-up strategy, Kazakhstan has pursued a gradualist approach in phasing down oil dependency while investing in renewable energy. Here, we can draw some parallel experiences between Kazakhstan and oil-rich Gulf states. Although oil exporters in the Gulf region have long recognized the vital role of economic diversification for long-term sustainability, the details of policy and the contentious nature of the social contract between the Gulf rentier state and their citizens render their policy strategy highly complicated, if not always infeasible.

To further analyze the distinctive challenge for raw materials extraction in a wider context, Erika Weinthal’s essay carefully examines the path dependence of Central Asian states in managing their natural resources, from the Cold War politics of the 20th century to the contemporary climate crisis. As she points out, Central Asia has been an exporter of raw materials since the Soviet years. State sovereignty was enshrined in the post-Cold War days, though by no means did such process resulted in stronger state capacity to pursue natural resource sovereignty and to enjoy the wealth from their endowments. And, as market transitions exacerbate income inequality and social conflicts, the uneven distribution of socio-economic benefits and costs will remain a formidable challenge in the 21st century. In regions where oil and gas exploration and production occur, communities have seen their environments and health deteriorate. Hence, meeting the climate change goals not only requires Central Asian policymakers to address redistributive politics, but also to address the socio-technical challenges that come together with resource dependence in the context of clean energy transition.

Continuing with the theme of natural resource governance, Jin Sato takes us to Southeast Asia, where natural resources, notably fisheries, are considered quintessential for livelihood strategies. But while high rent sectors like mining and hydrocarbons attract the national government towards renationalization and centralization of state power to assert control over resources, Cambodia experienced an unusual process of decentralization of state power. On the one hand, delegation of powers to local communities have often been advised as a solution to top-down governance, leading to more sustainable and localized solutions for resource conservation. On the other hand, revenue imperatives – especially the need to tax to sustain the fiscal health of a low-income country – do not always explain the political decision of governments. To explain why states often adopt highly contradictory policies, Sato returns to politics – specifically, different incentives as a result of political competition – as the overarching motivation for the decision to control natural resources, despite weak revenues to be acquired from the resource sector.

In the final essay, Richard Griffiths moves away from local and national contests over extraction toward an even broader challenge: how to secure strategic critical raw materials needed for the clean energy revolution beyond national borders and into the ultra-deep sea. Griffiths outlines the need for a framework for inter-governmental cooperation as embedded in the foundations of international law. Importantly, even with a global governance architecture that could allow us to realize the benefits of deep-sea mining, he cautions on the immense technological challenges associated with offshore extraction, particularly the potentially immense environmental hazards that are projected once we move from prospecting and exploration towards extraction and production of mineral resources.

Overall, the following articles provide a better diagnosis of the resource race towards clean energy transition. As each country finds their pathway towards meeting our global climate targets, the

public must become part of a wider political discussion to avoid the general tendencies of decision-makers to gloss over the damages associated with natural resource extraction. Crucially, inequality between and within societies, hierarchy in global production networks, and power differences among countries are continually shaping the future. To put it differently, political actions in the present are now profoundly affecting the trajectory of energy transition, and they are instrumental in crafting the diverse pathways for many developing countries towards meeting our common vision of reducing carbon emissions. As we recognize the significance of the present, contemporary struggles for social justice and fair distribution of environmental damages across societies are likely to determine the overall success of human endeavours to solve the ecological crisis in the Anthropocene.

**Jewellord Nem Singh** is an Assistant Professor in International Development at the International Institute of Social Studies (ISS), The Netherlands. He is the Principal Investigator of a five-year research programme *Green Industrial Policy in the Age of Rare Metals* (GRIP-ARM), funded by the European Research Council under Grant No. 950056 (2021-2026). He is author of *Business of the State: Why State Ownership Matters for Resource Governance* and is co-editor of several books and special issues. Email: [nem Singh@iss.nl](mailto:nem Singh@iss.nl)

## Notes

- 1 Chazan, Guy, “Germany approves €100 billion fund to modernise its armed forces”, *Financial Times*, Berlin, June 03, 2022, accessed on August 01, 2022, <https://www.ft.com/content/d24a5196-fa4e-415c-a9d5-bc19fad93197>.
- 2 Paulsson, Lars & Rafaela Lindeberg, “Swedish Green Steel Firm Gets Permit to Build First Plant”, *Bloomberg*, July 01, 2022, accessed on August 01, 2022, <https://www.bloomberg.com/news/articles/2022-07-01/swedish-fossil-fuel-free-steelmaker-gets-plant-building-permit>.
- 3 Kevin G. Cai, “The One Belt One Road and the Asian Infrastructure Investment Bank: Beijing’s New Strategy of Geoeconomics and Geopolitics”, *Journal of Contemporary China* 27, no. 114 (2 November 2018): 831–47, <https://doi.org/10.1080/10670564.2018.1488101>; Rhys Jenkins, *How China Is Reshaping the Global Economy: Development Impacts in Africa and Latin America* (Oxford: Oxford University Press, 2018).
- 4 <https://www.mckinsey.com/industries/metals-and-mining/our-insights/the-raw-materials-challenge-how-the-metals-and-mining-sector-will-be-at-the-core-of-enabling-the-energy-transition#>
- 5 European Commission, “Critical Materials for Strategic Technologies and Sectors in the EU - A Foresight Study” (Luxembourg: Publication Office of the European Union, 2020).
- 6 *Global Material Resources Outlook to 2060*, 2019, 15, <https://doi.org/10.1787/9789264307452-en>.
- 7 Adrian Nel, “The Choreography of Sacrifice: Market Environmentalism, Biopolitics and Environmental Damage”, *Geoforum* 65 (1 October 2015): 247, <https://doi.org/10.1016/j.geoforum.2015.08.011>.
- 8 Lindsay Shade, “Sustainable Development or Sacrifice Zone? Politics below the Surface in Post-Neoliberal Ecuador”, *The Extractive Industries and Society* 2, no. 4 (1 December 2015): 775–84, <https://doi.org/10.1016/j.exis.2015.07.004>.
- 9 *Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes* (Ithaca: Cornell University Press, 2017).
- 10 Dayna Scott and Adrian Smith, “‘Sacrifice Zones’ in the Green Energy Economy: Toward an Environmental Justice Framework”, *McGill Law Journal/Revue de Droit de McGill* 62, no. 3 (2017): 864–65, <https://doi.org/10.7202/1042776ar>.
- 11 Jewellord Nem Singh, “Mining Our Way out of the Climate Change Conundrum? The Power of a Social Justice Perspective”, *Latin America’s Environmental Policies in Global Perspective* (Washington, D.C.: The Wilson Center, October 2021).
- 12 *Global Material Resources Outlook to 2060*, 25.