

# Climate Action, Geopolitical Risks and Strategic Policy: The Western Race to Secure Critical Raw Materials

by Salvatore Finizio

Climate action, economic competition and geopolitical shifts are more intertwined than ever. In the wake of the skyrocketing inflation and deteriorating China relations, United States President Joe Biden signed the Inflation Reduction Act (IRA) into law on 16 August 2022. Conceived as the foundation of the new US industrial policy, the IRA aims to rebuild the country's industrial capacity, including 500 billion US dollars in new spending and tax breaks, among which almost 400 billion aimed at boosting clean energy.<sup>1</sup>

Across the Atlantic, the European Union expressed concerns about the potential loss of industrial competitiveness resulting from the IRA. In response,

<sup>1</sup> Justin Badlam et al., "The Inflation Reduction Act: Here's What's in It", in *McKinsey Public Sector Insights*, 24 October 2022, <https://www.mckinsey.com/industries/public-sector/our-insights/the-inflation-reduction-act-heres-whats-in-it>.

the EU unveiled its own Green Deal Industrial Plan (GDIP) in February 2023.<sup>2</sup> The objective of this plan is to promote the enhancement of net-zero manufacturing capacities in order to meet the EU's climate targets.

Both the IRA and the GDIP have a common goal of reducing dependence on China, especially in clean technology, although through different approaches. The US focuses on bringing high-value production back to its shores, while the EU aims to develop and diversify supply chains.<sup>3</sup> This divergence is also reflected in the debate between "decoupling" and "derisking", with the latter recently

<sup>2</sup> European Commission, *A Green Deal Industrial Plan for the Net-Zero Age* (COM/2023/62), 1 February 2023, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52023DC0062>.

<sup>3</sup> Loyle Campbell and Alexandra Gritz, "Europe's Green Industrial Policy and the United States' IRA. Reducing Dependence on China", in *DGAP Memos*, 21 March 2023, <https://dgap.org/en/node/38543>.

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This is a winning article (1st place) submitted to the 2023 edition of the IAI Prize contest.*



gaining prominence as policymakers recognise the challenges of completely reshoring supply chains domestically.<sup>4</sup>

The US and the EU share industrial and geoeconomic objectives, but will also encounter similar challenges, in particular concerning the first stages of green supply chains. Despite their heterogeneous approaches, Western policymakers will in fact have to secure critical raw materials for clean technology manufacturing, with the aim of resourcing the energy transition.

### *The green transition and its critical materials*

Critical raw materials (CRMs) encompass various minerals and metals, such as lithium, cobalt, magnesium and rare earths, that are indispensable for numerous applications. Within the framework of the European Green Deal, the EU has identified and listed its CRMs in the dedicated Critical Raw Materials Act, setting clear targets in terms of domestic extraction, processing, recycling and import diversification. Particular attention is paid to the materials employed to produce permanent magnets used in wind turbines and energy storage systems. In a similar vein, the IRA provides subsidies for electric vehicles (EVs) manufactured using at least 40 per cent of domestically sourced CRMs. These measures highlight the US' and the EU's efforts to secure a stable supply of CRMs as part of their respective

<sup>4</sup> Henry Sanderson, "What Counts as De-Risking? The Geopolitics of Energy and China", in *Oxford Energy Forum*, No. 137 (August 2023), p. 14-16, <https://www.oxfordenergy.org/?p=46438>.

industrial plans. Sourcing these materials, however, entails significant challenges in the current international landscape.

### *China's dominance in CRMs supply chains*

Indeed, the People's Republic of China (PRC) stands as the principal player in the extraction, processing and export of CRMs. Its leading position derives from a state capitalist model combining economic, security and strategic interests.<sup>5</sup> This prominence is striking in the rare earths (REs) market. Indeed, China controls 65 per cent of global RE production and 90 per cent of processing operations.<sup>6</sup> From a European perspective, the EU imports up to 98 per cent of its REs from the PRC (depending on the specific mineral).<sup>7</sup>

Apart from rare earths, China has also enhanced its position in the supply chains of other CRMs by investing abroad. Notably, Beijing has made significant investments in the Democratic Republic of Congo, which possesses 70 per cent of the world's reserves of cobalt, thereby gaining control over mining operations. This is particularly concerning considering

<sup>5</sup> Sophia Kalantzakos, "The Race for Critical Minerals in an Era of Geopolitical Realignments", in *The International Spectator*, Vol. 55, No. 3 (September 2020), p. 1-16, DOI 10.1080/03932729.2020.1786926.

<sup>6</sup> Philip Andrews-Speed and Anders Hove, "China's Rare Earths Dominance and Policy Responses", in *OIES Papers*, No. CE7 (June 2023), <https://www.oxfordenergy.org/?p=46247>.

<sup>7</sup> Kjeld van Wieringen with Marcos Fernández Álvarez, "Securing the EU's Supply of Critical Raw Materials", in *EPRS At a Glance*, July 2022, [https://www.europarl.europa.eu/thinktank/en/document/EPRS\\_ATA\(2022\)733586](https://www.europarl.europa.eu/thinktank/en/document/EPRS_ATA(2022)733586).



that China also holds 72 per cent of the global cobalt refining capacity.<sup>8</sup> A similar picture emerges regarding lithium. The Chinese company Tianqi Lithium has the second-largest stake in Sociedad Química y Minera (SQM) and owns 51 per cent of the world's largest lithium mine located in Greenbushes, Western Australia Downstream.<sup>9</sup> Moreover, the PRC dominates roughly 60 per cent of the global lithium refining capacity<sup>10</sup> and is the primary global producer and exporter of lithium-ion batteries and RE permanent magnets, which are high-value-added products.<sup>11</sup>

Considering the role of China and the projected increase in CRM demand of over 450 per cent by 2050 in order to meet the Paris Climate Agreement goals,<sup>12</sup> this situation is far from rosy. There is a real risk that Western countries, while promoting clean energy deployment, might see an increasing reliance on CRM-exporting countries, with China at the forefront. Supply shortages may emerge as a potential threat, especially given

China's growing domestic demand for CRMs, which has consistently surpassed its domestic supply over the past five years, resulting in a surge in imports.<sup>13</sup>

### *The risk of political weaponisation...*

In parallel, Western-decision makers must consider the potential political weaponisation of the PRC's control over CRMs. Already in 2010, Beijing unofficially restricted the export of REs to Japan as a retaliatory measure following a dispute over territorial waters in the East China Sea.<sup>14</sup> Two years later, the EU, Japan and the US brought a case to the World Trade Organisation (WTO), seeking its intervention regarding the export quotas imposed by China on REs. The WTO only reached a decision in 2014, compelling China to remove its export restrictions.<sup>15</sup>

Between 2009 and 2020, according to the OECD, export restrictions on CRMs have increased fivefold, with China implementing the highest number in 2020.<sup>16</sup> These restrictions mainly take

<sup>8</sup> Jane Nakano, "The Geopolitics of Critical Minerals Supply Chains", in *CSIS Reports*, March 2021, p. 4, <https://www.csis.org/analysis/geopolitics-critical-minerals-supply-chains>.

<sup>9</sup> Sophia Kalantzakos, "The Race for Critical Minerals", cit.

<sup>10</sup> Jane Nakano, "The Geopolitics of Critical Minerals Supply Chains", cit., p. 4.

<sup>11</sup> Suleyman Orhun Altiparmak, "China and Lithium Geopolitics in a Changing Global Market", in *Chinese Political Science Review*, Vol. 8, No. 3 (September 2023), p. 487-506, <https://doi.org/10.1007/s41111-022-00227-3>.

<sup>12</sup> Kirsten Hund et al., *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*, Washington, World Bank, July 2020, p. 11, <https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition>.

<sup>13</sup> Dolf Gielen and Martina Lyons, "Critical Materials for the Energy Transition: Rare Earth Elements", in *IRENA Technical Papers*, No. 2/2022 (May 2022), p. 24, <https://www.irena.org/Technical-Papers/Critical-Materials-For-The-Energy-Transition-Rare-Earth-elements>.

<sup>14</sup> Rajive Ganguli and Douglas R. Cook, "Rare Earths: A Review of the Landscape", in *MRS Energy & Sustainability*, Vol. 5, No. 1 (December 2018), Article 6, DOI 10.1557/mre.2018.7.

<sup>15</sup> WTO website: *Dispute Settlement: DS431: China – Measures Related to the Exportation of Rare Earths, Tungsten and Molybdenum*, [https://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds431\\_e.htm](https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds431_e.htm).

<sup>16</sup> Przemyslaw Kowalski and Clarisse Legendre, "Raw Materials Critical for the Green Transition."



the form of export taxes, which are not prohibited under WTO rules, unlike quantitative export restrictions. More recently, however, China decided to impose stringent export controls on two critical rare earth materials – gallium and germanium – from August 2023, in what may arguably be a retaliation against the US’s 2022 restrictions on chip exports.

### *...and how to address it*

To reduce dependence on CRMs imports, Western policymakers may focus on three different kinds of measures: improving their circular economy, expanding their domestic production and diversifying their import sources. Improving the circular economy of CRMs is crucial: by promoting the recovery and recycling of these materials, policymakers can sustain the domestic demand while reducing reliance on imports. However, there are significant challenges, particularly in the case of RE recovery from permanent magnets. In the EU, for example, the recycling of permanent magnets is not yet well developed due to a combination of regulatory, financial, supply chain and technological obstacles.<sup>17</sup>

Expanding the domestic production of CRMs is another avenue to reduce

Production, International Trade and Export Restrictions”, in *OECD Trade Policy Papers*, No. 269 (April 2023), p. 37 and 41, <https://doi.org/10.1787/c6bb598b-en>.

<sup>17</sup> Vasileios Rizos, Edoardo Righetti and Amin Kassab, “Developing a Supply Chain for Recycled Rare Earth Permanent Magnets in the EU”, in *CEPS In-Depth-Analysis*, No. 2022-07 (December 2022), <https://www.ceps.eu/?p=38613>.

dependence on imports. However, this approach faces socio-economic and ecological barriers. The establishment of new mining activities often encounters resistance from local populations, and resource exploitation can lead to pollution and have profound impacts on the environment of mining areas.<sup>18</sup> Additionally, the process of making a new mine operational and productive typically takes more than ten years.<sup>19</sup>

In the short to mid-term, supply chain diversification is likely to be the key factor in reducing risks. This aspect is explicitly addressed by the European Critical Raw Materials Act,<sup>20</sup> which envisages the establishment of new trade agreements to secure and diversify the supply of CRMs. Diversification assumes a significant role as it provides an external and diplomatic dimension to the new EU green industrial policy, given the necessity of enlarging the network of CRMs suppliers, especially in Africa and South America. However, supply chain diversification must deal with China’s international action vis-à-vis developing countries rich in CRMs through its Belt and Road Initiative.

<sup>18</sup> Jingjing Bai et al., “Evaluation of Resource and Environmental Carrying Capacity in Rare Earth Mining Areas in China”, in *Scientific Reports*, Vol. 12 (2022), Article 6105, <https://doi.org/10.1038/s41598-022-10105-2>.

<sup>19</sup> Arthur Sullivan, “Rare Earths Find in Sweden: A Game Changer?”, in *Deutsche Welle*, 1 December 2023, <https://www.dw.com/en/a-64375644>.

<sup>20</sup> European Commission, *Proposal for a Regulation Establishing a Framework for Ensuring a Secure and Sustainable Supply of Critical Raw Materials* (COM/2023/160), 16 March 2023, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52023PC0160>.





Strategic and collaborative endeavour between the EU, the US and their closest allies is therefore key. Notably, the US and the EU have recently initiated negotiations aimed at enabling CRMs extracted or processed within the EU to be considered for subsidies granted for electric vehicles by the IRA.<sup>21</sup> Moreover, a cooperative approach emerges as the paradigm for enhanced security and resilience within supply chains against the Chinese centralisation of CRMs. In this regard, the US-led Minerals Security Partnership, aimed at investing in secure CRM supply chains and cooperating on recycling technology development, appears to be a promising step forward.<sup>22</sup>

To conclude, the transition towards a “green” industrial structure entails numerous challenges that extend beyond purely economic and environmental considerations. Critical raw materials, one of the pillars of this transformation, are currently entangled in critical geopolitical issues, primarily related to China’s dominance over their supply chains. Amidst mounting tensions between China and the US, the geoeconomic leverage wielded by the PRC poses a number of tangible risks – above all, the potential slowdown of the decarbonisation process, jeopardising the efforts against climate change.

12 October 2023

<sup>21</sup> European Commission, *Joint Statement by President Biden and President von der Leyen*, Washington, 10 March 2023, [https://ec.europa.eu/commission/presscorner/detail/en/statement\\_23\\_1613](https://ec.europa.eu/commission/presscorner/detail/en/statement_23_1613).

<sup>22</sup> Website of the US Department of State: *Minerals Security Partnership*, <https://www.state.gov/minerals-security-partnership>.

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