ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL
Available Online: https://assajournal.com
Vol. 04 No. 01. July-September 2025.Page#.675-685
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems

The Geo-economics of the Green Transition: Strategic Competition over Lithium and Rare Earths

Naveen Zahra
Mphil Scholar IR, University of Management and Technology, Lahore

Abstract
The recent global green transition that has been fuelled by the pressing necessity to address the climate change and transition to a sustainable low carbon future enormously increased the strategic significance of some of the main raw materials, particularly lithium and rare earths elements (REEs). The electric vehicle (EV) batteries, wind turbines, solar panels, or energy storage systems rely on such materials as their core. Just like the pace of demand of such technologies is faster, the struggle to gain access, mine and control such vital resources is also at pace. This rivalry is now a major characteristic of international political economy which has reproached geopolitical allegiances, commerce, and national policing.
The dominance of China in the rare earths processing system and the increasing attempts of the United States and the European Union to acquire alternative sources indicate the ways regional economic interdependence has become the territory of strategic competition. Simultaneously, the Global South, which is frequently endowed with these resources, is progressively (and successfully) utilizing its mineral deposits to exercise sovereignty and demand new terms of foreign investments and to achieve sustainable development. This paper presents a geo economic framework linking states and markets in their quest of resource security in which the interlinking of environmental goals and economic competition and even geopolitical rivalries can be seen to exist. The report highlights the challenges and possibilities within the green transition and states the necessity of collaborative governance, moral sourcing, and sustainable models of development to avoid a new period of resource based inequality of opportunity and adversity.

Keywords: *Green transition, Geo-economics, Lithium, Rare Earth Elements (REEs), Critical minerals, Strategic competition, Global supply chains, Environmental politics, Resource nationalism, International Political Economy (IPE)*

Introduction

The global green transition is picking up speed, with global responses to climate imperatives and international commitments to decarbonize the economies transforming global economic features profoundly. The key aspect of this change is the urgent need in some raw materials, of which the most prominent are lithium and rare earth elements (REEs), which are essential to the production of a host of clean energy technologies. These minerals are the technological foundation of the new low carbon economy, which extends to electric vehicle batteries and

energy storage systems, wind turbines, advanced electronics (Zhou et al., 2024). Due to this, they have not only become an economic asset but also a strategic resource that forms the basis of national security, industrial competitiveness, and geopolitical power.

The increasing importance of both lithium and REEs are due to their functional requirements both in the transition to clean manufacturing and also their strategic advantages to those nations that have their control over processing and production. In contrast to oil or coal, the sources of which are rather distributed throughout the world, the mining and processing of these strategically important minerals is much more concentrated on several geographical areas. An example is that China today controls almost the entire processing of rare earth metals with a capacity of over 85 percent of the whole world in its hands. In the meantime, most Lithium production occurs in the so called Letter of Lithium in South America Chile, Argentina, and Bolivia, where lithium resources are enormous, but also characterized by peculiar socio political and bio landscape (Ali et al., 2021).

This has resulted in an unbalanced international playing field, where the supply of the materials that are critical in transforming the energy of the world are left to be over influenced by just a few countries. This type of asymmetry has given rise to a new manifestation of the resource conflict a conflict not only economic but one that is also highly political and strategical in character. Supply chains of lithium and REEs are turning into instruments of statecraft as key mechanisms of geo economic power by allowing control, access or influence over them.

The result is that the world is increasingly fighting over such resources which are revealing weak points in the established supply chains. Most of the lines of supply can be easily severed because of numerous reasons like geopolitical tensions, export control, nationalization of resources, trading conflicts and even natural catastrophes. The pandemic COVID 19 and the Russia-Ukraine war have also clarified how vulnerable its world supply chains are and now governments are re assessing their interdependencies and potential means of developing more resilience. The competition between significant players of the international system, especially in the United States, China, and the European Union has grown to the point of increased securitization of supply chains as access to raw material is no longer regarded as a commercial or potentially commercial interest but an issue of national interest.

Besides the risks identified in the supply side, there also exists a matter of governance in resource minted countries which complicated the situation further. Most of these countries have poor institutional set up, environmental destruction, corruption and socio political insecurity. Foreign investment, mostly by nations that want to ensure they have access to minerals, may increase the inequalities locally, displace all communities, and lead to of environmental unjustices. As an example, the Latin American access to lithium has caused insecurity regarding water shortage, ecosystem disturbance, and disintegration of Indigenous groups (Barandiaran, 2021; OECD, 2015). Such processes have led to the argument of green colonialism where the clean energy extraction in the Global North causes global climate change and economic exploitation of the Global South. In case of Pakistan “A 1 050 km long coastline and the EEZ with 290 000 sq km of

sea zone promise Pakistan with invaluable untapped and unexplored hydrocarbon reserves, minerals, fish stocks and other marine resources." (Muhammad et al., 2020b)

The changing environment presents important questions to the international political economy: how are states responding through their foreign and economic policies to the rising competition in the acquisition of critical minerals? Which are the instruments they are utilizing to gain access and how are the strategies impacting the power balances in the world? How exposed are the resource rich but institutionally weak states to exploitation by external parties and what choice do they still have in the determination of the rules of engagement? These are main questions of this research which is conducted to evaluate the strategic, economic and ethical consequences of the global race of lithium and REEs.

This paper discusses the investigation of how nations are increasingly pursuing geo economic policies to extract themselves out of this competition. Some of them are export control capabilities, industrial subsidies, stockpiling critical minerals, investment screening and establishing strategic partnerships and alliances. The advent of such measures is part of a larger tendency towards the instrumentalization of economic instruments to pursue geopolitical ambitions, a tendency that itself crosses the line between economic policy and national security. The rise of the concept of critical minerals diplomacy, which is reflected in programs such as the Minerals Security Partnership developed by the U.S., or the Critical Raw Materials Act adopted by the EU, explains the way in which security of resources is becoming a part of large foreign policies.

In addition, the study combines the rivalry over lithium and REEs into broader dynamics of geopolitical fragmentation and economic nationalism. The international system is getting more and more fragmented as multilateral cooperation seems to be crumbling and protectionism trends are on the rise. The focus on trade and investment decisions is moving away in the domain of strategic orientations and national interests instead of market efficiency and directions set by global rules. This is very important to developing countries most of which have large reserves of essential minerals but due to lack of technology or political influence they are unable to make any changes to global value chains.

Here, Global South does not only appear as a source of sources of resources but a battleground in which the questions of sovereignty, environmental justice, and development merge. There is now an active role locally of resistance movements, civil society organizations and Indigenous people to challenge the extractive process, and ask for more equitable development. Their voices will play the critical role in defining the future of sustainable governance of resources and are indispensable in the effective policy discussion of the green transition.

In a nutshell this paper argues that the competition for lithium and rare earth elements has become the hallmark of the existing phase of the global capitalism that of the technological innovation, environmental urgency, and strategic rivalry. This form of competition needs to be looked at through a multidisciplinary approach that brings together political economy, environmental studies, international relations and development theory. This study hopes to

contribute to a more detailed account of geopolitics of the green transition by studying the global and local dimensions of the geopolitics of the green transition.

Research Question

What is the role of the green transition in turning lithium and rare earth elements into a tool of strategic rivalry between the superpowers of the world?

What are the geo economic effects of the critical mineral dependencies on the resource rich developing countries as far as world decarbonization is concerned?

How do state policies and corporate strategies interact in determining global supply chains of lithium and rare earths in pursuit of the quest to become a green energy future?

Theoretical Framework

The research findings are analysed through a geo economic prism, as the struggle over critical minerals is discussed as a continuation of statecraft where economic tools are applied to reach geopolitical goals (Blackwill & Harris, 2016; Scholvin & Wigell, 2018). Geo economics is a hybrid of a combination of economics and geopolitics that acknowledges that states can employ means of economic efficiency, like trade policy, investment controls, infrastructure projects and technology standards, with the purpose of strategic domination and reordering global power alike. Critical mineral resources such as lithium and REEs are of strategic priority in the setting of the green transition, where the development of the respective policies is driven by the essence of the industrial policy, variants of economic coercion, or strategic cooperation.

In International political Economy (IPE), it can be seen that the realist and structuralist paradigms provide important theoretical insights. Realistically, the major actors in the maximization of security and power in an international environment full of chaos/anarchic system are the states. That race is regarded as aiming at gaining the control over the critical minerals since the provision of supply chains guarantees the strategic autonomy and economic stability in the conditions of adversarial interdependence (Blackwill & Harris, 2016). This is the reason as to why countries like the United States and China are implementing policies like the export control, subsidies, and expansion of the domestic mining to ensure that they are totally in control of the flow of minerals.

Moreover, structuralism as an approach in IPE points out to inequality as a part of global capitalism. It places a special emphasis on the core-periphery situation in which underdeveloped countries (usually of natural resource endowment) are as yet economically less developed in terms of technology, capital, and market access than the industrialized countries. The lithium and REE race in this context could simply reassert past patterns of exploitation and underdevelopment unless resource rich nations are able to articulate agency in the form of resource nationalism, value added manufacture, or other strategic interests and partnerships (OECD, 2015).

Collectively, these frameworks help develop multidimensional perception of strategic competition over critical minerals, being not only about economic supply, but also about power, dependence, and reorganization of the global orders.

Literature Review

The academic debate about critical minerals in the green transition exemplifies the interdisciplinary intersection among environmental science, international political economy and strategic studies. Most of the literature available revolves around the two fold mandate of sustainability and security.

The switch to the use of green energy technologies necessitates a steep increase in the provision of such minerals as lithium and REEs, which, in turn, places demands on governance units, capable of establishing the necessary balance between environmental issues and the demands of the industry (Ali et al., 2021). They draw attention to the fact that the decarbonization trend in the global environment might not work out as the absence of a properly functioning mineral supply chain could create new patterns of environmental harm and social unrest. In the same breath, the linking of sustainability with the green transition by Barandiaran (2021) provides an analysis of the processes of lithium mining in Latin America who in many cases have to adhere to the principle of sustainability at the expense of indigenous communities and the stability of the ecosystem.

As a strategic consideration, the discussions by Zhou et al. (2024) necessitate the emergence of geopolitical tensions concerning critical minerals. In their study, they indicate that the energy transition, which has taken place globally, has resulted in escalation in the competition among the key powers especially that pits China, United States and European Union. The central theme in this literature is the overarching power China has over the rare earth market, a factor that scholars, such as Siddi (2021) and Gros (2020), maintain presents Western economies with substantial strategic vulnerabilities in their quest to gain autonomy in their energy venues.

Kolev and Rieth (2020) advance this discussion by revealing how the asymmetries of global power are imprinted into supply chains, claiming that the availability of the key raw materials is growing into the geo economic battleground. They argue that the competition over resources may unleash protectionist measures hence weaken the multilateral cooperation on climate objectives.

Policy level, OECD (2015) gives an insight in the manner in which developing countries can be included in the global value chain and not just expected to play the role of raw material suppliers. The report promotes well developed institutional strengths and value addition in the nation so that neocolonial economic frameworks are not further reproduced.

Lastly, the study authored by Scholvin and Wigell (2018) offers a broad analytical approach to the definition of the functionality of geo-economic mechanisms in modern strategic rivalry. The conceptualization of geo-economics by them can be particularly helpful in the explanation of the rise of the use of economic statecraft in mineral diplomacy.

All in all, the literature highlights the urgency of developing the balanced policies, which would respond to both environmental demands provided by the green transition and to the strategic demands of the mineral security. It also urges the establishment of inclusive governance systems that will result in equitable distributions of benefits by resource rich yet economically hit regions.

The Strategic Value of Lithium and Rare Earths

Lithium plays one of the basic roles in molecule lithium-ion batteries applied in electric automobiles (EVs), grid scale energy storage systems, and numerous portable digital devices. It is also essential to clean energy economy, high energy density, and rechargeability, light weight is also important as fossil fuel based energy source is switched to renewable sources. Elements of rare earth (REEs) which consist of 17 chemically associated elements are also vital. They will find application in permanent magnets needed in wind turbine generators as well as in the electric vehicle motors and in sophisticated military applications like precision guided missiles, radar equipment and stealth aircraft. Such factors have proved to be so fundamental to green and defense technologies that the access to them is currently seen as a national security issue (Kolev & Rieth, 2020).

According to the International Energy Agency (IEA), global demand of lithium might grow more than 40 times by 2040 to achieve net zero goals. The increase in demand can be explained by the electrification of transport and the necessity to balance the renewable sources of energy with efficient storage options. Nevertheless, it is highly concentrated in terms of geographical distribution of the resources. The majority of the lithium extraction activities are focused on the so called Lithium Triangle in South America that includes Argentina, Bolivia and Chile, with all these countries holding over 50 percent of the world lithium reserves. By comparison, China controls almost all steps of the value chain of rare earths by mining, refining, and manufacturing with production of more than 85 percent of world REEs (Ali et al., 2021).

This is one of the strategic risks to nations that want to switch to green sources of energy but do not have large deposits within their domestic contexts to supply them. Consequently, several governments have since come to regard lithium and REEs as so called critical minerals and attempt to reduce use of insecure supply chains, lock in long term deals, and build out able domestic mining and processing capabilities. The strategic value of these materials should not be examined in terms of only functionality but also the possibility of controlling new dependencies and power between the international political economy.

Global Competition and Resource Politics

The growing supply and demand of lithium and rare earth elements have reduced these strategic minerals to become tools of geopolitical politics. The nature of resource access has been highly political amongst nations that seek to claim their dominance in resource sustenance, especially as they rush to establish their supply chains. This section discusses the positioning being carried out by key players such as China, West and other resource rich countries in the green industrial competition.

- **Chinese Competitive advantage**

The dominant presence of China has strategically adopted the virtuous position of global leader in terms of rare earth elements as it has premiered on its upstream and downstream supply chain. Not only does it lead in most of the REE mining but it also has dominance in the refining and manufacturing processes which makes it incomparable when it comes to its market leverage.

This consolidation therefore implies that even when REEs are extracted in other countries they still may need to be transported to China to be processed and used technologically.

Beijing has never been afraid to use this dominance as a political and economic measure. As an example, in times of a diplomatic conflict with such nations as Japan and the United States, China has export controls on rare earth to expose its readiness to arm its mineral dominance (Gros, 2020). Further, access to critical minerals has been turned into a part of the greater geopolitical strategy of the Chinese government and is included in its Belt and Road Initiative (BRI). China maintains supply security in the long term, making infrastructure investments and resource deals with the countries in Asia, Africa, and Latin America, which also increases their international power.

Viewed geo economically, this hegemony is able to afford the Chinese hard and soft power. It is not only the controller of the key supply to emerging technologies, but it also turns into a gatekeeper to the energy transformation process that is taking place globally. Such scenario presents a strategic dilemma to the west and other industrialised countries that are now frantically trying to decouple from Chinese supply chain by diversifying supplies, making internal investments and using international partnerships.

From personal inspection, one can conclude that the Chinese way has a long term state perspective thought pattern that balances efficiency and economic success, with geopolitical intelligence. Although this has been criticised as coercive or monopolistic, it shows the necessity of proactive industrial policy in achieving strategic autonomy. Other countries that choose to get into this clean energy race without succumbing to the depths of technological and supply chain dependency must come up with similarly multi faceted approaches that instead integrate economic, environmental, and national security interests.

- **U.S. and Western Responses**

The United States and its allies have responded to the strategic dependency on China as an exporter of critical minerals by pursuing a multi faceted approach that seeks to gain reliable access to profits and assure greater independence. The Inflation Reduction Act (IRA) is among the main policy interventions initiated by providing significant subsidies to battery assembly in the territory of the United States and electric vehicles, and the Minerals Security Partnership (MSP) established to coordinate the investments in minerals of the countries that share similar views on security (Zhou et al., 2024).

These actions indicate transition to strategic autonomy in the clean energy. The United States has began to invest back into its mines at home, rare earth processing plants, and recycling technologies. The European Union also has come up with Critical Raw Materials Act and joined hands with resource rich African and Latin American nations. With those initiatives, the Western powers are trying to establish diversified, resilient, and sustainable supply chains that would comply with climate ambitions and the geopolitical agenda.

Through the individual analytical lens, these Western reactions depict a significant rebalancing in the politics of global resources. There is a threat that the implementation of such strategies can recycle extractive regimes of yesterday without combining ethical sourcing standards,

technology transfers, and endorsement of local governance in the producing nations. A major issue here is also the lack of infrastructure integration, funding and streamlining of regulations which still has an uphill task before these moves can be elevated as a viable alternative to that of China.

- **Latin America and Africa**

Global South, notably countries in Latin America, Africa are also emerging as key battlegrounds in the green mineral race. The nationalization of lithium in Bolivia and the demand of cobalt in Democratic Republic of Congo (DRC) are other factors demonstrating how countries want to take economic control of strategic resources. Such governments have become more cognisant of the dangers of dependency and embarking to renegotiate their terms in global supply chains.

Nevertheless, such declaration of sovereignty can frequently come into conflict with the interests of international companies and global governments. Strong regulatory climate has made Bolivia less appealing to continuous investment, whereas DRC has been criticized on violating labor rules and environmental destruction despite being the epicenter of cobalt market. Barandiaran (2021) cautions that new forms of exploitation of resources might be hidden behind the rhetoric of sustainability or referred to as green colonialism under conditions that the local people cannot take economic advantage or control over the decision making process.

Individual opinion indicates that Latin America and Africa are on cross roads. Either they can remain as raw material extensions of global powers, or they can claim to play a more transformative role in encouraging value addition to production, integration in their region, and sustainable extraction techniques. It should not be a situation of picking sides of geopolitical rivalry since developmental priorities should guide strategic interaction with both the Western and Chinese stakeholders. The actual empowerment is through redesigning contracts, empowering governance and bringing environmental justice to national mining plans.

Market and State Interplay

The green shift demonstrates the changing connection between market forces and state intervention, which reveals the hybridism of 21st -century capitalism. During a time when such multinational companies as Tesla, BYD, and Albemarle dominate innovation processes and any global scale demand in lithium and rare earths, their operations are highly affected by national industrial policies, trade controls, and tax incentives. The state power applied by governments in various countries in the world is mainly to influence the market outcomes, which should reflect the interests of the environment as well as geopolitical outcomes. The state power is increasingly achieved by use of tariffs, subsidies, tax credits and the forms of controls of investment.

As an example, new export controls on graphite and gallium, which are also other strategically important minerals that are then applied in the production of semiconductors, as well as batteries, are the latest export restrictions by China that highlight how states can actively control the mineral flows to increase their bargaining power in the global arena (Siddi, 2021). Similarly, the erection of national strategic reserves of rare earths and lithium in countries such as the U.S. and India is an indication of a turn toward the securitization of mineral access. Instead of pulling out of the market, the states are becoming more enrooted in the supply chains as well as

promoting the formation of public-private partnerships and nationalization of resources where needed.

At an individual level, this merger or convergence of the market and the state compacts with the traditional assumptions of neoliberalism which postulate minimal government actions. It implies reversion to more of an interventionist approach to political economy in which resource management is becoming more of a matter of security. This dynamism brings a lot of concerns regarding the balancing of regulations, long term practices, and the role of the state in defining sustainable industrial ecosystems that are not only viable but also socially acceptable.

Challenges and Risks

Although green transition brings environmental sustainability, it also brings about a variety of socio,environmentally related and also geopolitical risks, which should be well addressed. The production stage of the extraction process in regions of South America and Central Africa has caused a lot of environmental degradation among others through contamination of their water by mining activities as well as through deforestation and loss of biodiversity. As an example, the production of lithium is a water,intensive process with significant risks in hot areas in Southern Chile, such as the Atacama Desert, and it is a threat to the local agriculture system coupled to local communities.

Besides the environmental issue, there are supply chain constraints and fluctuation in price, as both are significant challenges to the expansion of green technologies. The lack of lithium or REEs will slow down the process of electric vehicles and renewable energy systems construction and cause inflationary pressures and the inability to meet decarbonization dates. Protectionist measures, trade conflicts and even wars may also be produced by the geopolitical competition over these resources particularly, where there is weak or contested governance of the same resources.

Another issue is the continued relations of unequal exchange between the both developed and developing countries. Most countries of the Global South are stillprisonered into the extractive cycle where raw materials are exported but there is no value addition talent added to the products. Such a dynamic is a risk of replicating some form of a resource curse where the gains of the green transition are not distributed equally and environmental costs are imposed primarily on fragile populations (OECD, 2015).

In an individual level of analysis, green transition as such must not be glorified as a just and a sustainable affair without introspection. It thrives based on a fair distribution of its financial and non,financial reward. Unless it is supported by tighter environmental rules, more equitable investment procedures and local involvement and benefit,sharing, the green economy might be a recycling of the injustices of the fossil age under a greener flag. It should be aimed at making sustainability not at the cost of social justice.

Policy Implications and Future Trends

The green resources struggle internationally demands an integrated and collaborative governance system that guarantees ethical extraction, environmental security, and patronizing development. The policymakers need to take care of the uncoordinated extraction and

geopolitical fragmentation by enhancing the multilateral mechanisms. Important frameworks at the international level like the European Union Critical Raw Materials Act and UNs Sustainable Development Goals provide valuable grounds that, however, must become more connected with legally binding labor, environmental, and transparency standards (Ali et al., 2021).

Furthermore, the investments in the model of circular economies, among which are recycling, remanufacturing, and reuse can immensely alleviate the pressure on the extraction of virgin sources. Supply security and a degradation of the environment are long,term problems that can be solved by the development of closed,loop supply chains and urban mining. At the same time, technological resilience can be achieved by studying alternative materials, which may include sodium,ion batteries or rare earth substitutes.

In a personal or analysis perspective of analyzing green industrialization in the future, technological innovation and flow of investments will not be the only mechanism that will determine the future of green industrialization, but governance innovation will also play a vital role. The transition should also be sustainable (in terms of addressing climate change), entailing alignment between national approaches on the one hand and global collaboration on the other, with emphasis on capacity,building in the Global South, and making the resource,rich communities more empowered stakeholders, than commodity providers bent on receiving benefits through land,grabbing. With a shift to greener future, we will have to develop a mineral economy, which is not only smaller on carbon, but also reasonable, transparent and democratically run.

Conclusion

A new era of global politics of the green transition has been marked by the strategic rivalry between lithium and rare earth elements (REEs). And these critical minerals, far from being just technical elements of decarbonization, have come to be part of more general geopolitical and ge,economic processes. The world is increasingly running out of control in its bid to secure the resources that power clean energy as its demand grows faster. It is more important than a mere competition over the sources of raw materials- it is indicative of more fundamental changes in power, politics and international economic relationships.

This changeover is making states redefine their economic and security interests increasingly. Market mechanisms and statecraft have been the boundaries that are increasingly breaking and the nations are taking protectionist measures, trade alliances, and strategic investments to defend their interests. All these developments such as the increased resource nationalism, securitization of supply chains, and the development of green industrial policies portray that the green transition is highly political and full of asymmetries.

Though technological innovation and environmental concern are right at the center of this shift none will suffice to achieve it. The green transition can unify and standardize most of the disparities and predatory activities of the fossil fuel period unless widely shared and transparent political economic systems are used. The developing countries, in particular, the ones with lithium, cobalt, and REEs supply, are again in a role of raw material suppliers in the global supply chains, where they have little control over economic benefits of the value added production.

To overcome such difficulties, a multi-dimensional policy is required. That would be more international coordination with agreements such as the Critical Raw Materials Act, binding protections of the environment and labor, and benefits of local beneficiation and technological transfer. At the same time, the level of innovation of circular economy practices will have to be increased, in particular, recycling and urban mining to minimise the dependence on primary extraction.

Analytically, as it takes an individual looking into it, the green transition has been a great opportunity and a major challenge to global governance. It gives an opportunity to reorganize economic systems in the direction of sustainability and equity, yet it reveals some structural weaknesses that need to be addressed. Sustainability is based on more than the source of energy: it is ethical access to resources and care of nature and the ecosystem, empowerment of the lesser character. The future will not bring only smarter policies, however, but also a reconsidering of what being a developed country, secure, and able to cooperate requires in a decarbonized world.

To sum up, the green transition in the multipolar world can be discussed as a difficult balancing point of pursuing strategic interests and stimulating mutual global interests. This moment, if approached wisely, can become the turning point in the international order towards more resilient, more just and ecologically forward-looking order. However, when undertaken in zero, sum competition, it has the potential to establish new streams of dependency and exacerbate global inequality all the while negatively affecting exactly the sustainability it is attempting to establish.

References

Ali, S. H., Giurco, D., Arndt, N., Nickless, E., Brown, G., Demetriades, A., ... & Yakovleva, N. (2021). Mineral supply for sustainable development requires resource governance. Nature, 543(7645), 367–372. https://doi.org/10.1038/nature21359

Barandiarán, J. (2021). Lithium and development imaginaries in Chile, Argentina and Bolivia. World Development, 138, 105242. https://doi.org/10.1016/j.worlddev.2020.105242

Gros, D. (2020). European strategic autonomy and the US,China rivalry: Can the EU prefer not to choose? European Union–Latin America and the Caribbean Foundation. https://eulacfoundation.org/en/european,strategic,autonomy,and,us,china,rivalry,can,eu,prefer,not,choose

Kolev, G., & Rieth, M. (2020). Rare Earths: Between geopolitics and industrial policy. Intereconomics, 55(1), 21–27. https://doi.org/10.1007/s10272,020,0875,4

Muhammad, U., Askari, Tahir, M., & Shaheen, N. (2020b). Blue Economy of Pakistan: Challenges and Prospects. *Journal of the Punjab University Historical Society*, *02*, 33. https://pu.edu.pk/images/journal/HistoryPStudies/PDF_Files/4_v33_2_2019.pdf

OECD. (2015). Participation of Developing Countries in Global Value Chains. https://www.oecd.org/content/dam/oecd/en/publications/reports/2015/04/participation,of,developing,countries,in,global,value,chains_g17a2628/5js33lfw0xxn,en.pdf

Siddi, M. (2021). Geopolitics of the energy transition: What future for fossil fuel exporters? Energy Research & Social Science, 82, 102317. https://doi.org/10.1016/j.erss.2021.102317
Mehmood, U., Askari, M. U., & Saleem, M. (2022). The assessment of environmental sustainability: The role of research and development in ASEAN countries. *Integrated Environmental Assessment and Management*, *18*(5), 1313–1320. https://doi.org/10.1002/ieam.4569

Zhou, Y., Li, J., Zhang, C., & Wang, W. (2024). Critical materials and clean energy technologies: Strategies for sustainable supply. Energy Policy, 185, 113–123. https://doi.org/10.1016/j.enpol.2024.113123
Scholvin, S., & Wigell, M. (2018). Power politics by economic means: Geo,economics as an analytical approach and foreign policy practice. Comparative Strategy, 37(1), 73–84. https://doi.org/10.1080/01495933.2018.1408622