

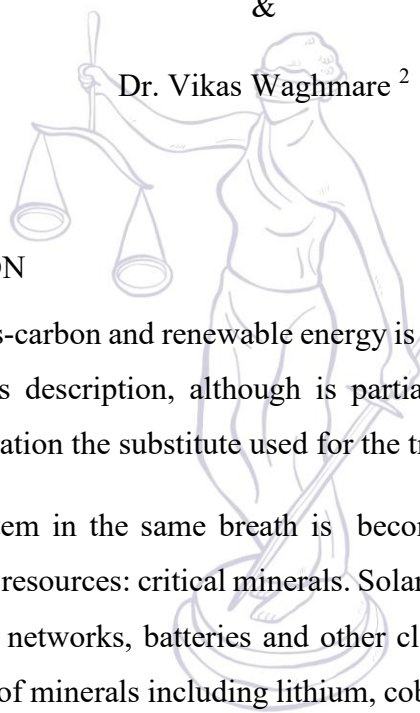
CRITICAL MINERALS AND THE RULE OF LAW: GOVERNING RESOURCE CONFLICTS IN THE GLOBAL ENERGY TRANSITION

by

Dr. Savita S. Mundewadi¹

&

Dr. Vikas Waghmare²



I. INTRODUCTION

The global shift towards less-carbon and renewable energy is customarily distinguished as a change away from fossil fuel. This description, although partially correct but remains incomplete without taking into consideration the substitute used for the transition.

The embryonic energy system in the same breath is becoming progressively dependent upon different categories of natural resources: critical minerals. Solar photovoltaic systems, wind turbines, electric vehicles, electricity networks, batteries and other clean-energy technologies requiring a considerable size and value of minerals including lithium, cobalt, nickel, graphite, copper and rare earth elements.[1]

The International Energy Agency (IEA) has described this sense of change as a movement from a relatively fuel-intensive energy system towards a more material-intensive one. An electric vehicle, demand significantly huge amount of mineral inputs than conventional vehicles, and renewable electricity technologies also insist for substantial quantities of minerals.[2] In the expanded clean-energy situations, request for several minerals is projected to increase dramatically. Lithium, nickel, cobalt, graphite and rare earth elements therefore have gained significant extend over traditional

¹ Asst. Prof DES Navalmal Firodia Law College Pune

² Asst. Prof MIT world Peace university , Pune

mining and commodity markets. They are continuously linked with national security, industrial policy, sovereignty in technology and geopolitical contest.[3]

This alteration creates a contradiction. The energy shift is proposed to produce a cleaner and more stable and enduring global economy, even now the minerals required for this alteration are themselves generating environmental degradation, distress concerns, community displacement, resource nationalism, trade disputes and geopolitical disputes. Critical minerals may necessarily become the new field of natural-resource competition.

The problem is enhanced by the geographical absorption of mineral extraction and processing. The IEA has specially presented that the production and supply of several energy-transmission minerals are considerably more concentrated than conventional fossil-fuel supply. It also focusses on the complex nature of supply chain, geographical accumulation, restriction on trade, political insecurity and lack of investment as potential threats to mineral security.[4]

The legal and institutional acknowledgment to these developments remains shivered. Critical-mineral governance contemporary includes domestic mining legislation, environmental regulation, investment law, trade law, bilateral agreements, international organizations and corporate due-diligence technique. The absence of no single comprehensive rule and international legal principals governing the entire critical-mineral value system.

The question of rule of law arises out of this fragmented development. If critical minerals are becoming deliberately inseparable to the global energy transformation, can their extraction, processing and trade be conducted through arrangements that are transparent, predictable, accountable and equitable.

The paper focus on the idea that the growing concern of critical minerals must be moved over the traditional concepts of mineral security and supply chain system and must incorporate the principal of rule of law as an independent analytical framework

The central proposition of the paper is that:

The progressively fragmentation of critical-mineral governance creates institutional instability that can weaken legality, transparency, predictability, accountability and equity; therefore, the legitimacy and sustainability of the global

energy transition require a coordinated governance framework grounded in Rule of Law principles.

The paper makes three principal contributions. First, it reframes critical-mineral governance as a Rule of Law problem rather than merely a question of energy security. Second, it examines the relationship between institutional fragmentation and emerging resource conflicts. Third, it proposes a six-pillar Rule-of-Law framework for critical-mineral governance.

II. METHODOLOGY

This paper adopts both the methodology of doctrinal and interdisciplinary. the doctrinal part of paper focus upon the examination of all international legal instruments, WTO rules, Principles governing perpetual sovereignty over natural resources, obligation in terms of environment, laws on investments and all relevant disputes- settlement development. The institutional materials related to United nations, IEA, OECD, WTO are been studied.

International relations, political economy, energy policy, sustainability and natural resource governance all incorporate the interdisciplinary components of literature. The vital part of critical minerals covers under the boarder area of international relation and interdisciplinary approach along with it also emphasise on legal commodities, strategic resources, environmental assets and instruments of geopolitical influence.

The comparative case study approach is applied to study the increasing use of the rare earth elements involving lithium, cobalt, and nickel. This will help us to illustrate the distinct governance problems concerning to resource, sovereignty, trade restriction, supply- chain accumulation and participation of global south.

The paper studies how the changing global mineral order is examined through the emerging economy and major energy consumer making India as an illustrative case study.

III. A SHIFT FROM ENERGY SECURITY TO MINERAL SECURITY

3.1 The Foundation of the Energy Transition

The replacing use of coal, oil and natural gas with solar, wind, electric mobility and other less carbon technologies is generally termed or misunderstood as the energy transition but in actual renewable technologies requires more mineral inputs.

It has been noted by IEA that electric vehical (EV) needs approximately 6 times the more mineral inputs than of a traditional car. The gas fired plant requires substantially more mineral resource than onshore wind plant. [5]

Decarbonisation does not eradicate the dependency on resources it only shifts the nature of resource dependence. this brings to the new changing equitation from who controls the fossil-fuel reserves to who controls the associated things with critical minerals such as extraction, processing, refining, manufacturing and technological value chains.

Hence this changing approach has the impacting effect on international law and global governance.

3.2 Defining Critical minerals

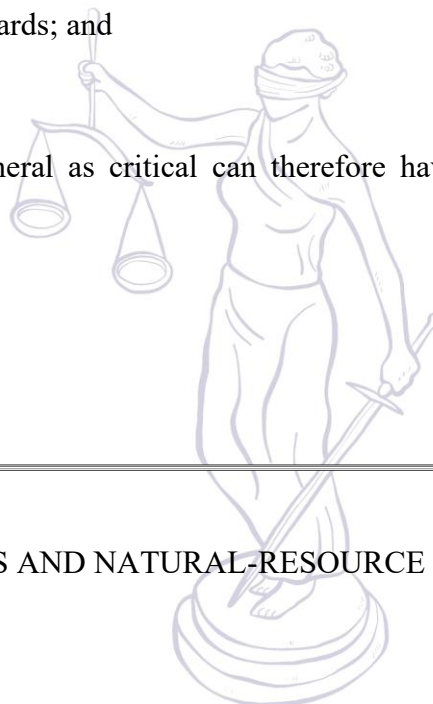
The word “critical Minerals” has no universally accepted or recognised definition. the general meaning which has evolved by applying the various methodologies by different states those are based upon economic importance, supply risk, strategic importance, technological reliance and substitution possibilities. Due to this there is lack of uniformity and its significance.

The non uniformity in definition has resulted into many complexities for example one country may consider one mineral to be critical by one jurisdiction but not by another. Hence this is totally not depended on the geological character alone but also a product of economic priorities, technological need and assessment on basis of geopolitical.

This observation is important for the Rule of Law debate because the determination of what is “critical” can influence:

- investment decisions;
- export controls;
- strategic stockpiling;
- government subsidies;
- international partnerships;
- environmental standards; and
- trade restrictions.

The classification of a mineral as critical can therefore have substantial legal and economic consequences.



IV. CRITICAL MINERALS AND NATURAL-RESOURCE CONFLICTS

4.1 Resource Sovereignty

International law recognizes the principle of permanent sovereignty above natural resources. Nations have substantial hold through the exploration, exploitation and resource management inside their territories. Hence sovereignty does not account for the unrestricted governmental discretion power.

The modern governance of the natural resource take place through the meeting of various fields such as state sovereignty, obligation towards the environment, human rights, trade at international level, protection of the investors, development that will fulfill the sustainable principle. This all makes the tension more visible in economy of critical- mineral.

To encourage the domestic processing and industrialization mineral producing state may wish to restrict exports. But in some circumstances such restrictions may seem to threaten the supply

security or the violation of international trade policies and commitments. This worry can be clearly seen and enumerated by the WTO dispute concerning Indonesia's nickel export restrictions.[7]

4.2 The Indonesia–Nickel Dispute

In *European Union v. Indonesia — Measures Relating to Raw Materials* (DS592) the prohibition on export of Nickel Ore and local requirements by Indonesia was challenged by the European Union. This dispute illustrates the fundamental war in critical mineral governance. Under Article XI of GATT 1994 the European Union has challenged the prohibition. [8]

The WTO has found that the export ban and domestic requirements to be inconsistent with Article XI:1 and Indonesia dependency upon Article XI:2 (a) and Article XX(d) on the facts presented were rejected.[9]. This dispute extended beyond the significance of nickel. This situation just draws the attention towards the resource sovereignty and industrialization on one side and on other side the international trade principles and regulations

When we consider the principal of Rule of Law the issue is whether competing interests are reconciled through predictable, clear and constant applied legal rules

4.3 Cobalt and the Global South

The other dimension of the problem can be studied from the point of Cobalt .

a dominant position in global cobalt production has been historically occupied by The Democratic Republic of Congo. This mineral is used for several technologies in making battery resulting into strategically significant to the energy transition. Even though mineral wealth is not the only way for equitable development. The major concern of extraction of critical minerals is closely associated with environment degradation, labour issues ,social displacement uneven distribution of economic benefit [10]. Hence due to this Rule of Law is challenged as formal legality is not alone is sufficient. It might happen for example a Mining policy may comply with the local legislation but still have questions concerning such as

- meaningful community participation;
- environmental justice;
- labour rights;

- benefit-sharing;
- access to remedies; and
- transparency of contracts.

Consequently, Rule of Law in critical-mineral governance must be understood substantively rather than merely procedurally.

V. THE INTERNATIONAL LEGAL ARCHITECTURE OF CRITICAL-MINERAL GOVERNANCE

5.1 Permanent hold of Sovereignty over Natural Resources

Mineral governance forms the most important normative foundation when there is Permanent sovereignty over natural resources. The UN General Assembly Resolution 1830 (XVII) states that the rights of people and nations permanent sovereignty over their natural wealth and resources.[11]. this principal is of vital importance for the mineral rich developing countries so to protects their ability to utilise mineral resources for economic development. The current situation of mineral governance requires the balancing sovereignty with international obligations. The real challenge is not to weaken resource sovereignty but to embed it within a framework of:

responsible sovereignty. Responsible sovereignty would consider that mineral-rich States maintain control hold over their resources while operating that control persistant with applicable of sustainable environment, human rights, trade obligations.

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VI. CRITICAL MINERALS AND INTERNATIONAL TRADE LAW

The expanding importance of critical minerals has increased the use of trade measures directed to secure domestic supply.

These measures include:

- export restrictions;

- import tariffs;
- domestic-processing requirements;
- subsidies;
- local-content requirements;
- strategic stockpiling;
- investment screening; and
- government procurement preferences.

The resulting tension is particularly significant because critical-mineral-producing States frequently seek to move beyond raw-material exports towards domestic value addition.

The global chain can get disturb due to the exporting raw minerals while importing immense-value manufactured technologies resulting to perpetuate structural inequalities in global value chains. This leads to creation of international disputes. The WTO's Indonesia–Raw Materials dispute illustrates this tension. GATT panel has examined Indonesia's export ban and domestic processing requirements with reference to the GATT framework.[12]

The vast policy question is therefore:

Should international trade law allow mineral-producing developing countries higher regulatory area to undertake value addition and industrialization?

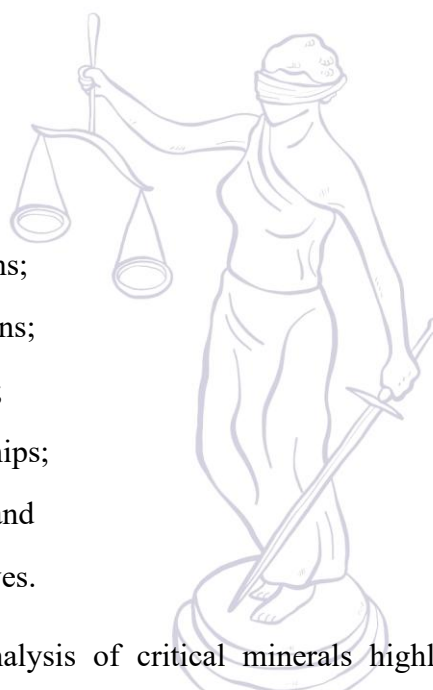
This question attracts particular attention in reference of the Rule of Law because predictability must work in both directions. Importing States require predictable access to resources, while producing States require predictable policy space for economic development. A legitimate system A legitimate system cannot treat one form of predictability as intricately more important than the other.

VII. INSTITUTIONAL FRAGMENTATION AND RULE OF LAW

7.1 The Fragmented Governance Architecture

No single institution is responsible for global critical-mineral governance at present. Instead, governance is distributed among:

- national governments;
- WTO;
- UN agencies;
- IEA;
- OECD;
- regional organisations;
- investment institutions;
- bilateral agreements;
- plurilateral partnerships;
- mining companies; and
- civil-society initiatives.



The British Academy's analysis of critical minerals highlights how mineral governance is increasingly intertwined with changes in global trade rules and geopolitical competition.[13] this is described as institutional Fragmentation. this very concept itself is not unlawful or undesirable. Various institutions express various approach for this complex problem.

Fragmentation itself is not necessarily unlawful or undesirable. Different institutions can address different aspects of a complex problem.

The difficulty accelerates when fragmentation produces:

- contradictory standards;
- overlapping obligations;
- regulatory uncertainty;

- unequal enforcement;
- competing definitions;
- institutional gaps; and
- unclear accountability.

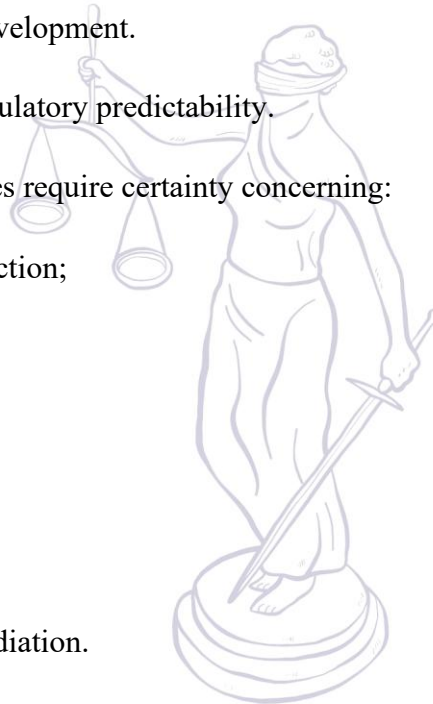
7.2 Institutional Uncertainty

The uncertainty of institution is particularly problematic for critical minerals because mineral projects typically involve long investment cycles. A mining project can require substantial capital expenditure and years of development.

Investors therefore need regulatory predictability.

simultaneously, communities require certainty concerning:

- environmental protection;
- land rights;
- consultation;
- compensation;
- employment;
- health; and
- environmental remediation.



Governments also need flexibility to respond to changing national circumstances.

The challenge is consequently to create **predictability without eliminating legitimate regulatory flexibility**. This is a central Rule of Law dilemma.

VIII. THE RULE OF LAW AS A FRAMEWORK FOR CRITICAL-MINERAL GOVERNANCE

The Rule of Law is generally connected with legality, equality before law, accountability, procedural fairness, predictability and access to justice. These principles must extend to the entire mineral value chain in the context of critical minerals.

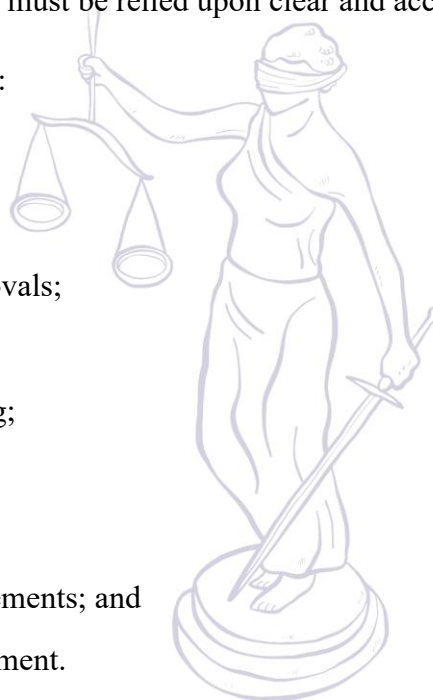
Six interconnected pillars are proposed by this paper.

8.1 Pillar I — Legality

Critical-mineral governance must be relied upon clear and accessible legal rules.

This includes and applies to:

- mining licenses;
- exploration rights;
- environmental approvals;
- export restrictions;
- investment screening;
- taxation;
- subsidies;
- local-content requirements; and
- government procurement.



Governmental intervention in mineral markets may be legitimate, particularly where national security or environmental interests are involved. Hence, such interference should have a fair legal basis and should not be arbitrary.

Rule-of-Law principle:

No strategic-mineral policy should operate merely through uncertain administrative discretion.

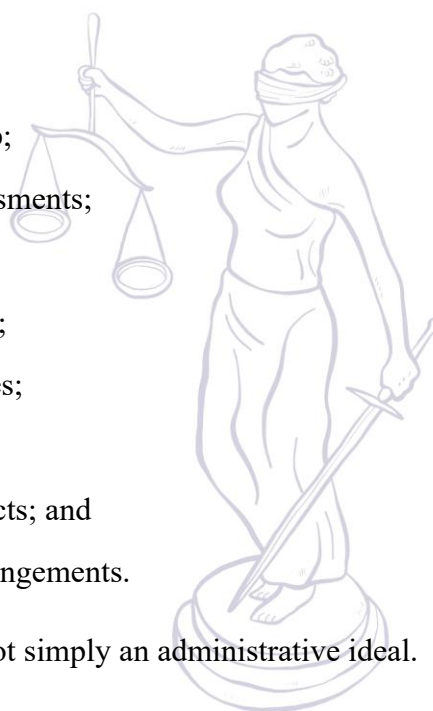
8.2 Pillar II — Transparency

Transparency is essential because critical-mineral value chains are frequently complex and geographically dispersed.

The OECD and IEA have increasingly emphasised traceability and due diligence as mechanisms for identifying environmental, social and governance risks throughout mineral supply chains.[14]

Transparency should extend to:

- mining contracts;
- licensing;
- beneficial ownership;
- environmental assessments;
- production data;
- export arrangements;
- government subsidies;
- supply-chain origin;
- environmental impacts; and
- revenue-sharing arrangements.



Transparency is therefore not simply an administrative ideal.

It is an essential condition for accountability.

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8.3 Pillar III — Predictability

Predictability requires stable and intelligible legal frameworks.

However, predictability should not be confused with regulatory rigidity.

Governments must retain the ability to respond to:

- environmental emergencies;

- geopolitical shocks;
- technological change;
- resource depletion;
- climate impacts; and
- public-interest concerns.

The appropriate approach is therefore **predictable flexibility**.

Rules should specify:

1. when government intervention may occur;
2. which authority may intervene;
3. what procedures must be followed;
4. what evidence is required; and
5. what remedies are available.

This would enable States to retain regulatory autonomy while reducing arbitrary decision-making.

8.4 Pillar IV — Accountability

Critical-mineral governance involves both public and private actors.

Accountability should therefore extend to:

- governments;
- mining corporations;
- traders;
- processors;
- technology companies;
- investors; and
- supply-chain intermediaries.

The OECD Due Diligence Guidance provides an important foundation for identifying and addressing risks of human-rights abuses, conflict financing and other adverse impacts in mineral supply chains.[15]

Accountability should include:

- environmental liability;
- disclosure requirements;
- corporate due diligence;
- anti-corruption mechanisms;
- labour protections; and
- effective enforcement.

8.5 Pillar V — Equity

Equity is arguably the most important contribution of a Global South perspective.

Critical minerals are often extracted in developing countries but processed, refined and incorporated into high-value technologies elsewhere.

This can create an unequal value chain:

Resource extraction



Low-value export



Foreign processing



High-value manufacturing



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Technology ownership



Disproportionate economic gains

A Rule-of-Law framework should therefore ask not merely:

Is extraction lawful?

but also:

Does the governance system distribute the economic, environmental and social benefits and burdens of extraction fairly?

The UN Secretary-General's Panel on Critical Energy Transition Minerals specifically identified benefit sharing, local value addition, fair trade and investment, sustainable value chains and resilience as central areas requiring global action.[16]

This represents an important movement from **resource security towards resource justice**.

8.6 Pillar VI — Access to Justice and Effective Remedies

Rule of Law cannot be meaningful without remedies.

Affected communities and other stakeholders should have access to effective mechanisms to challenge:

- unlawful mining decisions;
- environmental harm;
- discriminatory regulation;
- unlawful expropriation;
- contractual violations;
- labour abuses; and
- community displacement.

Access to justice should include judicial and, where appropriate, alternative dispute-resolution mechanisms.

The objective should not simply be rapid dispute settlement.

It should be **fair and accessible dispute resolution**.

IX. CRITICAL MINERALS, ENVIRONMENTAL GOVERNANCE AND HUMAN RIGHTS

The environmental cost of mineral extraction presents a fundamental paradox.

Critical minerals are necessary for renewable technologies, but their extraction can produce:

- biodiversity loss;
- water stress;
- waste;
- pollution;
- carbon emissions;
- land degradation; and
- community displacement.

The IEA has emphasised the environmental and social challenges associated with mineral production, including water stress, emissions, waste management, worker safety, human-rights concerns and corruption.[17]

This demonstrates that the environmental legitimacy of the energy transition depends partly upon the governance of its mineral foundations.

The OECD's environmental due-diligence framework similarly recognises the need to identify and address environmental risks throughout mineral supply chains.[18]

Accordingly, environmental governance should not be treated as an external consideration.

It should be incorporated into the Rule-of-Law framework itself.

X. THE GLOBAL SOUTH AND RESOURCE JUSTICE

The critical-mineral transition risks reproducing historical patterns of unequal resource governance.

For decades, developing countries have exported raw materials while higher-value processing and technological activities have occurred elsewhere.

The energy transition could either reproduce or transform this pattern.

The difference will depend substantially upon governance.

Nakanwagi's analysis highlights the importance of recognising Global South perspectives and developing policy and regulatory frameworks capable of generating economic benefits while protecting environmental and social interests.[19]

The UN has similarly emphasised that countries and local communities possessing critical energy-transition minerals should benefit economically, including through local value addition, while environmental and human-rights safeguards must be maintained.[20]

Therefore, the Rule of Law should incorporate a principle of **developmental equity**.

Resource-rich countries should not be reduced to extraction sites for the clean-energy industries of wealthier economies.

Instead, global mineral governance should facilitate:

- local processing;
- technology transfer;
- skills development;
- employment;
- revenue sharing;
- infrastructure;
- environmental protection; and
- meaningful community participation.

XI. INDIA AND THE EMERGING CRITICAL-MINERAL ORDER

India provides an important case study because it is simultaneously:

1. a rapidly growing energy consumer;
2. a major emerging economy;
3. a participant in global clean-energy initiatives;
4. a technology and manufacturing hub; and
5. a country seeking greater strategic security in critical minerals.

India's critical-mineral strategy must therefore reconcile domestic resource development with international supply-chain security.

A Rule-of-Law access requires visible rules governing:

- exploration;
- mining;
- auctions;
- environmental approvals;
- private participation;
- international investment;
- import diversification;
- recycling;
- strategic stockpiling; and
- international partnerships.

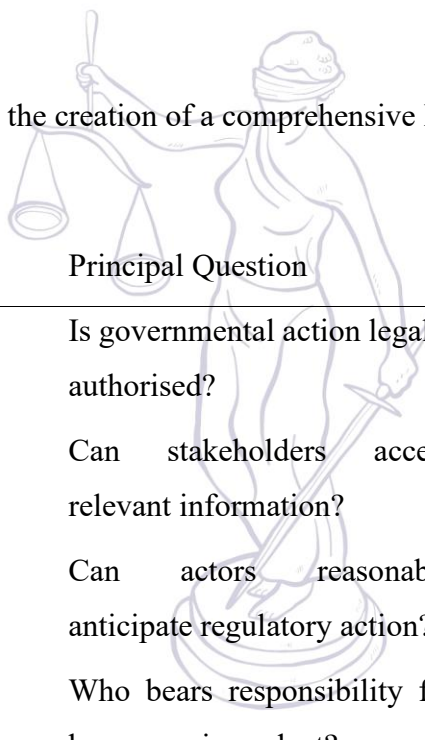
India can also contribute to a more equitable global governance architecture by advocating greater representation of developing countries in international rule-making. The Indian contemporary placement can potentially bridge two traditionally aggressive objectives: **resource sovereignty** and multilateral **cooperation**.

The UN Secretary-General's Critical Energy Transition Minerals Panel is particularly significant in this context, with India's participation as the Panel admitted India among the governments involved in developing global principles for a just and sustainable mineral shift.[21] India's emerging policy should therefore not merely seek access to critical minerals. It should seek to shape the **rules governing access**.

XII. TOWARDS A RULE-OF-LAW FRAMEWORK FOR CRITICAL-MINERAL GOVERNANCE

The analysis above supports the creation of a comprehensive Rule-of-Law framework.

Proposed Framework



Pillar	Principal Question	Governance Objective
Legality	Is governmental action legally authorised?	Prevent arbitrary regulation
Transparency	Can stakeholders access relevant information?	Enable informed participation
Predictability	Can actors reasonably anticipate regulatory action?	Reduce institutional uncertainty
Accountability	Who bears responsibility for harm or misconduct?	Ensure effective enforcement
Equity	Are benefits and burdens fairly distributed?	Promote resource justice
Access to Justice	Can affected parties obtain an effective remedy?	Protect rights and legitimacy

These six principles should apply throughout:

Exploration



Extraction



Processing



Refining



International Trade



Investment



Manufacturing



Consumption



Recycling



Such an approach would transform critical-mineral governance from a narrow supply-security exercise into a comprehensive system of **rule-based resource governance**.

XIII. REFORMING MULTILATERAL CRITICAL-MINERAL GOVERNANCE

13.1 Developing Common International Principles

There is a need for common principles addressing:

- responsible extraction;

- environmental protection;
- transparency;
- community participation;
- benefit sharing;
- trade;
- investment;
- recycling; and
- dispute settlement.

The UN Secretary-General's Panel has already sought to consolidate principles around equitable, sustainable and transparent mineral value chains.[22]

A future international framework could build upon these developments rather than creating an entirely new institutional structure.

13.2 Harmonising Existing Initiatives

The objective should not necessarily be to create one global organisation.

Instead, greater coordination should be established among:

UN



WTO



IEA



OECD



Regional organisations

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National governments

This would eliminate duplication and contradictory standards.

13.3 Strengthening Transparency

An international critical-mineral transparency structure could require participating States and corporations to acknowledge:

- origin;
- ownership;
- production;
- processing;
- environmental impacts;
- contracts;
- supply-chain risks; and
- due-diligence information.



13.4 Protecting Developmental Policy Space

Trade policies and regulation should consider the legitimate developmental interests of resource-abundance developing countries. Mineral-producing States should be able to seek domestic value addition, provided that such measures satisfy transparent and non-arbitrary legal ethics. The objective should be to bypass both extremes: **unrestricted resource nationalism** and **trade rules that prevent developing countries from moving up the value chain.**

13.5 Strengthening Community Participation

Communities affected by mining should not be treated merely as laidback recipients of compensation.

They should have meaningful opportunities to participate in decisions affecting:

- land;
- environment;

- water;
- health;
- employment; and
- local development.

13.6 Establishing Effective Remedies

A multilateral structure should reinforce effective domestic remedies while upholding appropriate international dispute-settlement mechanisms. The legitimacy of mineral governance depends upon affected parties having lawful redressal

XIV. DISCUSSION

The inspection establish that critical minerals represent more than a new category of commodities. They represent an emerging **governance march**.

The geopolitical competition surrounding critical minerals creates encouragements for States to:

- secure supply;
- subsidise domestic industries;
- restrict exports;
- establish strategic partnerships;
- control processing capacity;
- screen foreign investments; and
- diversify supply chains.

Each of these measures may be rational from a national-security perspective. therefore, the collective effect may be fragmentation. The risk is that the global energy transition become recognized by competing mineral blocs rather than cooperative multilateral governance. This would produce a fundamental contradiction:

A shift or change intended to create a more sustainable global energy system could parallelly generate a less predictable and more shattered international resource order.

The Rule of Law provides a means of addressing this contradiction. It does not require States to surrender sovereignty. Nor does it forbid lawful industrial policy. Instead, it requires the exercise of public power to occur through rules and norms of legality, transparency, accountability, predictability, equity and access to justice. The paper therefore advances a broader scope of mineral security.

Traditional approach:

Mineral Security = Availability + Affordability + Supply Resilience

Proposed approach:

Rule-of-Law Mineral Security = Availability + Resilience + Legality + Transparency + Accountability + Equity + Remedies

This reconstruction of concept is particularly important for the Global South.

A system that ensure mineral supply to consuming countries while at fault to guarantee fair value addition, environmental protection and community participation cannot reasonably be characterized as fully sustainable or lawful

XV. CONCLUSION

The global energy shift is fundamentally altering the politics of natural resources. Critical minerals are becoming integral to electric mobility, renewable energy in form of electricity, energy storage and security, digital technologies and other crucial industries. Their importance is therefore likely to increase as decarbonization. However, the emergence of critical minerals also results in new resource conflicts and governance challenges. The main problem is not simply scarcity. It is **governance under conditions of crucial competition.**

Existing arrangements are distributed across multiple legal and institutional governance and administration. This shattered result creates the possibility of contradictory and conflicting rules, regulatory uncertainty, unequal bargaining power and accountability gaps.

The paper has argued that these challenges should be examined and studies through the lense of the Rule of Law.

The proposed six-pillar framework—**legality, transparency, predictability, accountability, equity and access to justice**—provides a basis for evaluating the lawfulness of critical-mineral governance.

The framework also enumerates that mineral security cannot be diminished to securing physical supplies. Sustainable mineral security should account for the extraction and circulation of critical minerals occur within a predictable, transparent and accountable legal system.

The evolving time of the energy transition will therefore depend not only on whether sufficient minerals are available, but also on **who controls them, under what rules, for whose benefit and with what remedies when those rules are violated.**

A just energy transition or change needs a corresponding shift in resource governance.

The international community should consequently move from a model of **competitive mineral security** towards **cooperative, Rule-of-Law-based mineral governance.**

Such a framework would preserve State sovereignty while strengthening international cooperation, protect investment while safeguarding communities, facilitate trade while allowing legitimate developmental policy space, and accelerate the energy transition without reproducing the inequalities associated with earlier resource regimes.

Ultimately, the legitimacy of the global energy transition will be judged not merely by the amount of carbon it eliminates, but also by the **legal, social and distributive conditions under which the minerals enabling that transition are obtained and governed.**

FOOTNOTES

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- [20] United Nations. (2024). *The UN Secretary-General's initiative on critical energy transition minerals*. The initiative emphasises equitable benefits for mineral-endowed countries and communities, local value addition, and harmonisation of international norms.
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