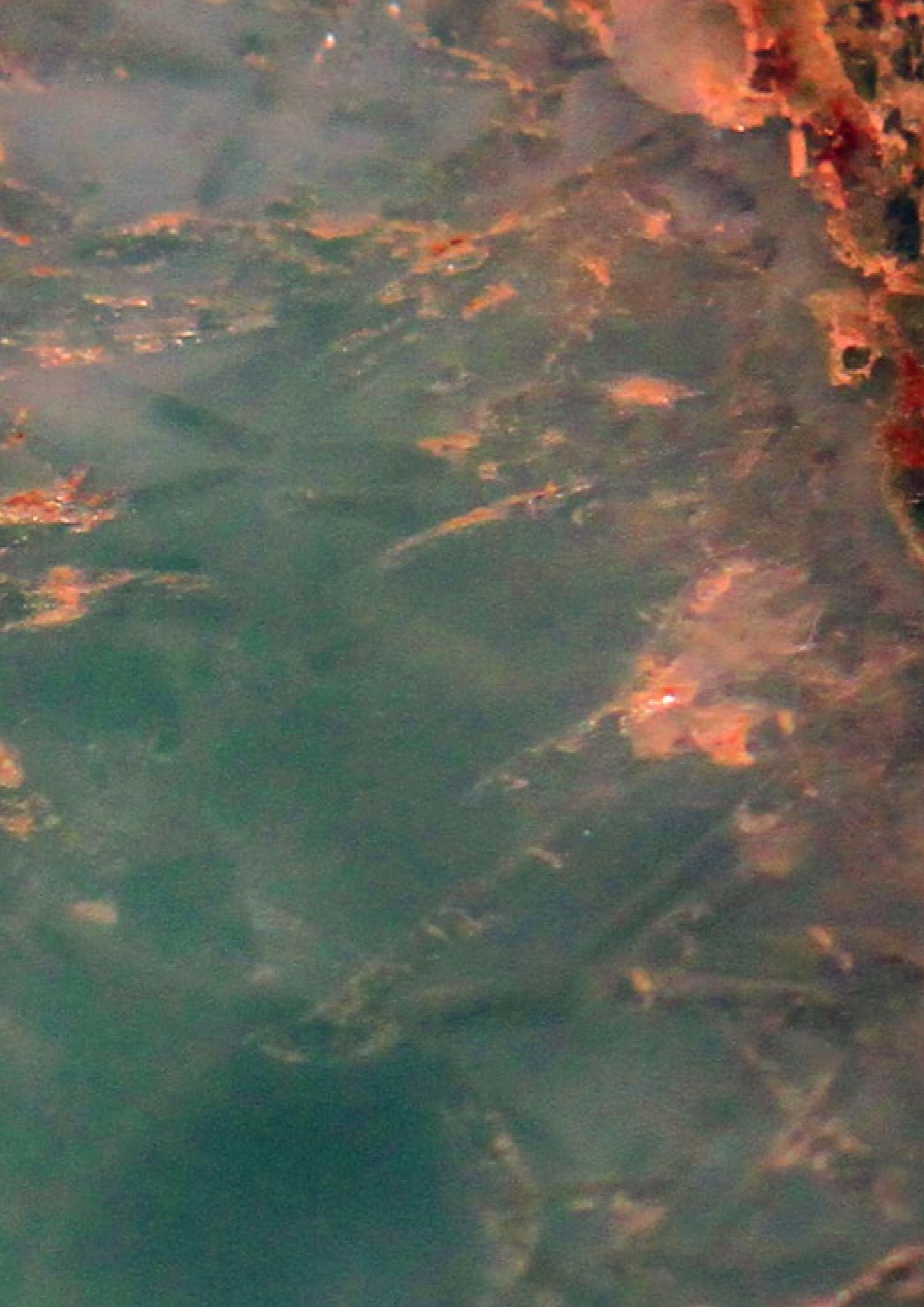

UNICRI's Strategic Response Framework for Tackling Crimes Linked to Critical Minerals



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Executive Summary

The global shift towards clean energy and digitalization is heavily reliant on the availability of critical minerals such as lithium, cobalt, and rare earth elements. These minerals are essential for the production of electric vehicles, renewable energy technologies, and advanced communication systems. However, the increasing demand for these resources may lead to a rise in illegal mining activities and related illicit trade practices, particularly in regions with weak governance. This may undermine sustainable development but also fuel organized crime, human rights abuses, and environmental degradation.

In response to these challenges, UNICRI has developed the **UNICRI Strategic Response Framework for Tackling Crimes Linked to Critical Minerals**. This framework provides a comprehensive approach to mitigating crimes associated with critical minerals by empowering national stakeholders, strengthening legal and regulatory frameworks, and enhancing coordination among law enforcement agencies.

This Framework serves as a practical guide for stakeholders, offering a clear path for addressing vulnerabilities in critical minerals supply chains. By collaborating with UNICRI, partners can play a key role in ensuring their integrity. Joint efforts are essential for promoting sustainable development, safeguarding global security, and facilitating a fair and just transition to green energy.

1. Critical Minerals and their Role in the Green Energy Transition

The global shift towards a green energy future and the rapid development of digital technologies have become fundamental components of efforts to decarbonize economies and promote sustainable development. However, this transition is highly dependent on the availability of critical minerals¹ – such as lithium, cobalt, nickel, and rare earth elements – that are indispensable for a wide range of clean energy technologies. These minerals are indispensable for clean energy technologies, including batteries for electric vehicles, wind turbines, solar panels, and energy storage systems.

The International Energy Agency (IEA) forecasts that the demand for key materials such as cobalt, lithium, and natural graphite will increase by as much as twenty to forty times over the next two decades. The establishment of the United Nations Critical Mineral Panel² highlights growing global attention on the challenges posed by critical minerals supply chains and reflects coordinated efforts to promote sustainable practices, enhance global cooperation, and drive legislative action to secure these vital resources amid the green energy transition.



KEY MINERALS USED IN GREEN ENERGY TRANSITION WITH 2050 DEMAND PROJECTIONS

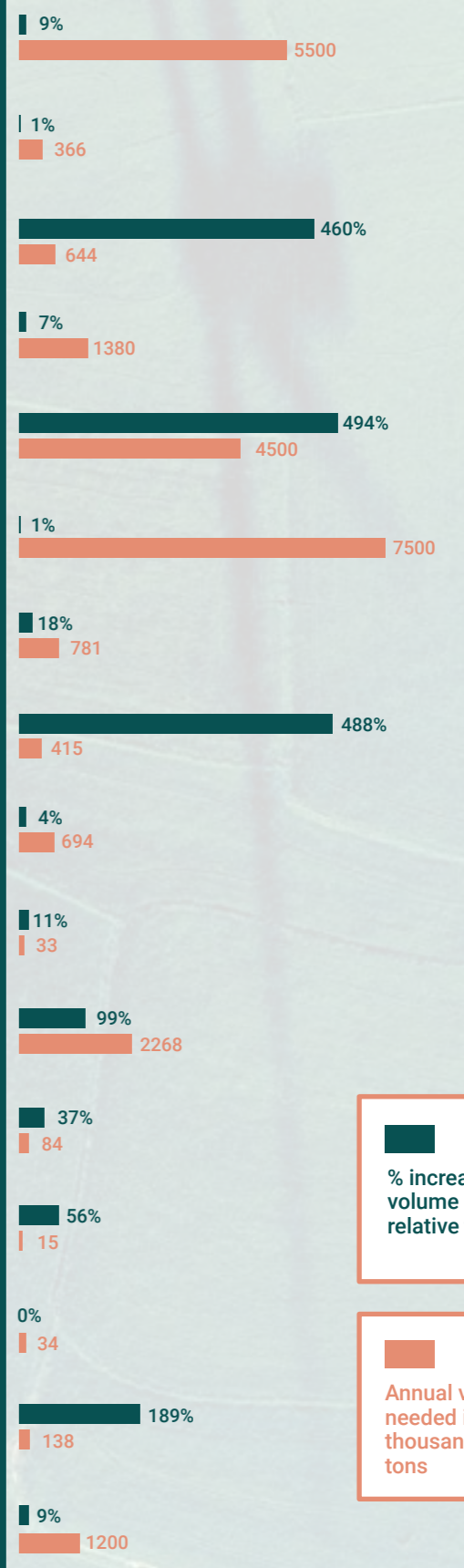
Uses in green energy technologies

MINERAL

Demand by 2050 under 2-degree scenario



| | | |
|----|----|-------------|
| 13 | Al | Aluminium |
| 24 | Cr | Chromium |
| 27 | Co | Cobalt |
| 29 | Cu | Copper |
| 6 | C | Graphite |
| 26 | Fe | Iron |
| 82 | Pb | Lead |
| 3 | Li | Lithium |
| 25 | Mn | Manganese |
| 42 | Mo | Molybdenum |
| 28 | Ni | Nickel |
| | | Rare Earths |
| 47 | Ag | Silver |
| 81 | Tl | Thallium |
| 23 | V | Vanadium |
| 30 | Zn | Zinc |



Wind
 Solar
 Electric Car
 Energy Storage
 Geothermal

% increase of volume needed relative to 2018

Annual volume needed in thousands of tons

USAID (2021), Mining and the Green Energy Transition Review of International Development Challenges and Opportunities.³

2. Key Risks and Vulnerabilities in the Critical Minerals Supply Chain

The rapid growth of the critical minerals industry, driven by the global shift towards green energy, has uncovered a series of risks and vulnerabilities throughout the supply chain.

Key risks include:

1. Weak governance and corruption

Opportunities for corruption are widespread in the mining sector, particularly in countries with weak institutions and poor governance. In these settings, a lack of transparency in contracts and revenue management often redirects profits away from national development goals, preventing the public from fully benefiting from their country's natural resource wealth. Corruption also weakens governance frameworks, allowing criminal networks to infiltrate the sector, further deepening social and economic inequalities and contributing to regional instability.

2. Criminal exploitation and conflict financing

The high value of critical minerals like lithium, cobalt, and rare earth elements makes them attractive targets for organized crime. In regions with weak law enforcement, criminal organizations may exploit regulatory loopholes to traffic minerals, often using the proceeds to fund illicit activities such as human trafficking, terrorism, and armed conflict. For instance, lithium deposits in Mexico are increasingly threatened by the influence of drug cartels, while Afghanistan's significant lithium and chromite deposits are likely to attract organized crime, posing new geographic threats.⁴ Additionally, the mining of tin, tungsten, and tantalum (3T minerals) in Africa's Great Lakes region has been linked to conflict financing, raising concerns that the critical minerals boom could fuel new conflicts.

“Failure to address these risks could lead to increased fragility, poverty, and conflict in many developing countries. In addition, because these effects could create bottlenecks and affect global mineral supply, failure to address mining's challenges could create market uncertainty and ultimately slow down the green energy transition.⁶”



3. Human rights violations

Weak governance in mining regions often results in human rights violations, including labor exploitation, child labor, gender-based violence, and forced displacement of Indigenous communities. Poor regulation allows these practices to thrive, worsening the conditions for already vulnerable communities. The expansion of critical mineral extraction threatens to bring severe social and cultural impacts to local and Indigenous communities, amplifying existing inequities and jeopardizing livelihoods.

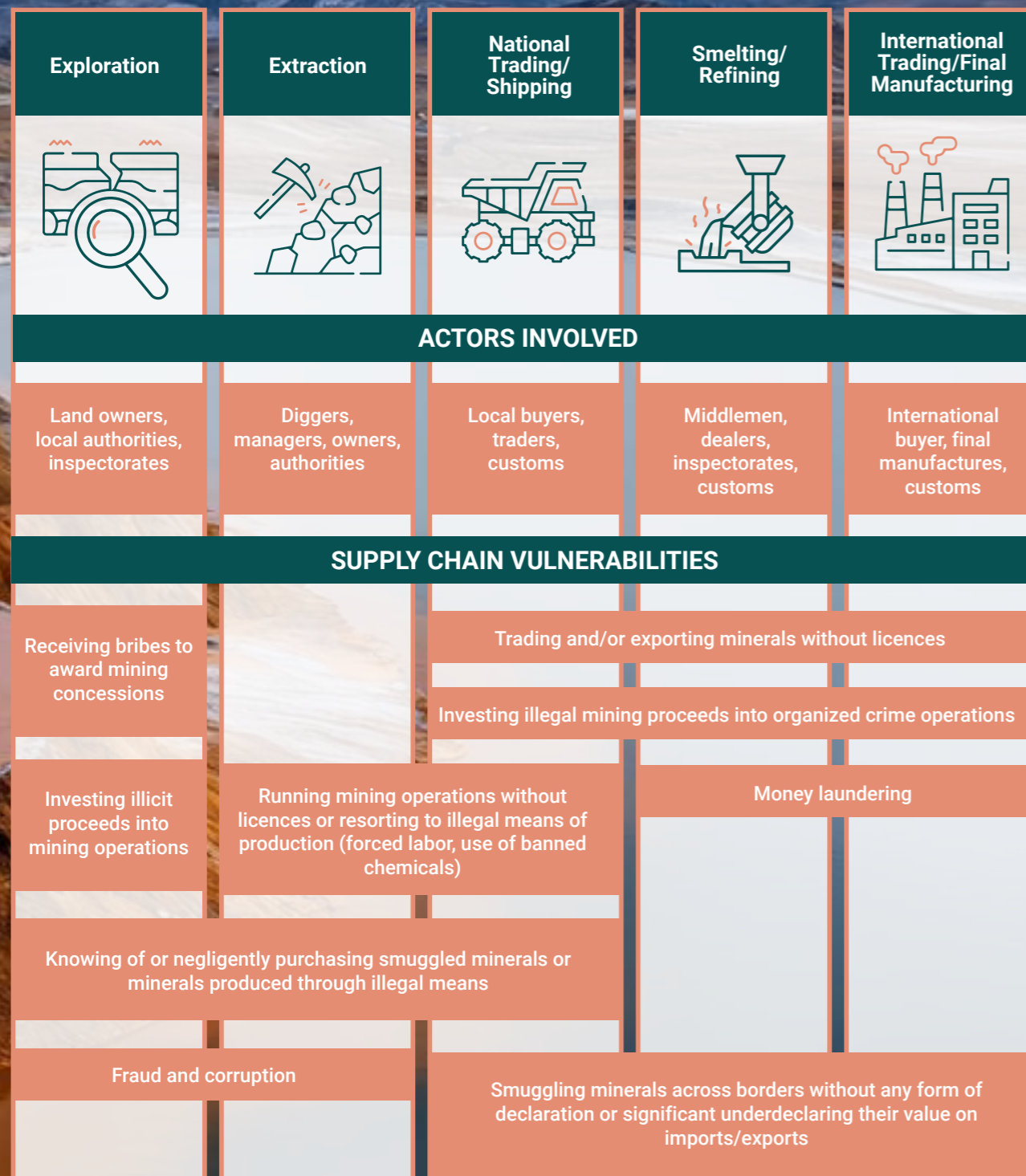
4. Environmental degradation

Mining operations frequently operate outside the bounds of legal frameworks, ignoring safety, health, and environmental standards. These practices may result in significant ecological impacts, including deforestation, land degradation, loss of biodiversity, resource depletion, and pollution of air, water, and soil. Specific processes such as acid leaching and deep-sea tailings disposal in nickel mining, may cause serious environmental hazards. Additionally, lithium mining, particularly in arid regions, demands vast quantities of water, exacerbating local water stress.

5. Supply chain vulnerabilities

The complex and often opaque structure of mineral supply chains offers multiple opportunities for criminal exploitation. Criminal organizations may capitalize on the expansion of infrastructure such as transportation networks, banking systems, and telecommunications to infiltrate and manipulate the supply chain for illicit gains. This may create instability in the market, heighten the risk of financial crimes, and undermine global efforts to secure critical mineral supplies.⁵ Additionally, the increasing digitization of supply chains introduces new avenues for cybercrime, complicating the efforts of law enforcement and industry regulators to track illicit activities.

Potential disruptors and vulnerabilities in the mining supply chain



► (UNICRI elaboration based on UNICRI (2016)⁷ and UNODC (2023)⁸.

3. The Work of UNICRI

The international community has expressed concern about the growing involvement of organized crime groups in illegal mining and trafficking in mining products. These concerns have been reflected in resolutions like ECOSOC Resolution 2019/23, which emphasizes the need to combat transnational organized crime linked to illicit trafficking in precious metals and illegal mining.⁹ Following earlier resolutions, UNICRI was invited to conduct a comprehensive study on the connections between transnational organized crime and illicit trafficking in precious metals.

Since then, UNICRI has been actively involved in efforts to combat transnational organized crime associated with illicit mining. This includes capacity-building activities, conducting comprehensive studies, and producing reports that explore the links between organized crime, illegal mining, and precious metals trafficking.

As part of its broader strategy, UNICRI is also involved in the [Nature Crime Alliance](#), a coalition aimed at addressing nature-related crimes, including environmental crimes linked to illegal mining. This collaboration strengthens global efforts to combat organized crime's role in exploiting critical mineral supply chains and helps build more secure and transparent systems for protecting natural resources.

In line with the [UN Secretary-General's Panel on Critical Energy Transition Minerals](#), for a just and equitable transition, UNICRI emphasizes the need to ensure that benefits from mineral extraction reach local communities, particularly in developing countries.

4. Gaps and Challenges in Securing the Critical Mineral Supply Chain

UNICRI's research has identified several critical gaps and challenges that need to be addressed to effectively combat the wide range of crimes linked to critical minerals, such as illegal mining, smuggling, money laundering, corruption, and organized crime. These challenges span the entire supply chain – from extraction to processing and trade – and require coordinated efforts to ensure the security and integrity of the sector.

The following are key areas that require attention:

Transparency and verification challenges



The opacity of the critical minerals supply chain presents a major gap in ensuring transparency and traceability.¹⁰ While some progress has been made in conflict minerals due to due diligence measures, these are often limited to corporate-level reporting rather than site-specific disclosures.¹¹ This lack of granular reporting makes it difficult to verify the origin of minerals and identify illicit activities. Moreover, several studies suggest that the implementation of due diligence measures has not effectively cut off armed groups' illegal financing from the mineral sector.¹² Instead, these efforts may unintentionally lead to an increase in unregulated artisanal mining, which may worsen the security situation and pose greater risks to local communities.

Enforcement gaps



Enforcement efforts are often inadequate due to limited resources and weak coordination between national and regional authorities. In many cases, illegal mining thrives in areas where state institutions are under-resourced or absent, leaving enforcement agencies unable to monitor and control illicit activities. The lack of risk analysis and evidence-based enforcement strategies, coupled with evolving criminal tactics, creates an enforcement gap that enables criminal actors to evade detection and continue illegal operations.¹³

Weak legal and regulatory frameworks



A significant gap lies in the absence of robust legal and regulatory frameworks, particularly in countries with weak governance. This vacuum may allow crimes like illegal mining, trafficking, forced labour, and money laundering to flourish. Although initiatives promoting responsible sourcing and transparency are gaining traction, many countries lack the necessary laws, sanctions, and enforcement mechanisms to combat these activities effectively. The lack of cohesive international regulations and enforcement frameworks further exacerbates these gaps, allowing illicit trade and corruption to persist across borders. Inadequate enforcement mechanisms, weak sanctions, and systemic governance failures may enable illicit activities to thrive.

Lack of coordination and information sharing among actors



The transnational nature of critical mineral-related crimes requires a coordinated and integrated response, yet there are significant gaps in cooperation between key stakeholders. Agencies involved in compliance and enforcement, such as environmental inspectors, law enforcement, customs, and financial institutions, often fail to share information effectively. This lack of coordination weakens efforts to address organized crime and illicit trade. Additionally, collaboration with artisanal and small-scale mining (ASM) organizations and local communities remains limited, preventing formalization of mining activities and curbing illegal practices. Public-private partnerships, which could play a key role in identifying and addressing supply chain vulnerabilities, are also underdeveloped.

5. Strategic Roadmap: Key Building Blocks for Combating Crimes linked to Critical Minerals

This section outlines the essential building blocks of UNICRI's Strategic Roadmap for addressing the challenges and vulnerabilities associated with the critical minerals supply chain. The goal is to mitigate the wide range of crimes linked to critical minerals, including but not limited to illegal mining, smuggling, corruption, fraud, and organized crime. While a comprehensive approach is ideal, each building block can be implemented independently, providing flexibility based on local contexts and needs.



1. Strengthening Legal, Policy, and Regulatory Frameworks

RATIONALE:

In many regions, legal, policy, and regulatory frameworks are insufficient to address the full spectrum of crimes related to critical minerals, including illegal mining, trafficking, and financial crimes such as money laundering. Strengthening legal frameworks is critical for addressing the full spectrum of crimes related to critical minerals, particularly by incorporating transparency, accountability, and anti-corruption measures. These reforms must emphasize the rule of law and ensure public access to information, creating a robust governance system that can effectively combat illegal activities.

ACTION AND ACTIVITIES:

- **Conduct legal assessments** to evaluate existing laws and policies on critical minerals, focusing on criminal codes, sanctions, and due diligence for private sector actors.
- Ensure legal frameworks mandate **Free, Prior, and Informed Consent (FPIC)** for Indigenous Peoples in line with the [UN Declaration on the Rights of Indigenous Peoples \(UNDRIP\)](#).
- Facilitate **stakeholder consultations** that bring together government, civil society, Indigenous Peoples, and industry to ensure accountability in policy and decision-making processes.

- **Promote alternative livelihood programs** in legislative reforms to offer sustainable economic opportunities to communities affected by mining, helping reduce reliance on illegal or environmentally harmful mining activities.
- **Integrate compliance and enforcement** actors into broader policy-making processes, ensuring that approaches to suppressing illegal activities differentiate between informal practices and criminal enterprises. Ensure these reforms include stronger sanctions for criminal activities, enhanced transparency requirements for the private sector, and protections for vulnerable communities impacted by mining activities.
- Support **experience-sharing and exchanges** through regional or international study tours for government officials to observe best practices in tackling crimes linked to critical minerals.
- **Ensure legal reforms** include anti-corruption provisions, such as independent third-party audits, oversight mechanisms, and traceability systems to prevent illicit financial flows and conflicts of interest.
- Ensure private-sector compliance with **responsible sourcing standards**, aligning with frameworks like the [Organization for Economic Cooperation and Development \(OECD\) Due Diligence Guidance](#) and other global standards for sustainability and human rights.

2. Comprehensive Assessment of the Critical Minerals Supply Chain

RATIONALE:

A lack of detailed knowledge about crimes linked to critical minerals at national and regional levels prevents the development of effective, evidence-based policies. Closing this knowledge gap is crucial for securing supply chains and preventing criminal activities.

ACTION AND ACTIVITIES:

- Promote and **implement traceability mechanisms** that track minerals from extraction through to end-use, ensuring accountability across all stages of the supply chain. These mechanisms must be publicly accessible to reduce information asymmetry.
- Develop and test **user-friendly data collection** tools for gathering information from multiple sources (enforcement actors, industry, NGOs, academia). Tools may include data matrices, questionnaires, and templates for case study analysis.
- Organize **expert group consultations** to collect and validate risk assessments and enforcement strategies, engaging national and international experts.
- Conduct **in-depth supply chain analysis**, focusing on illegal mining practices, environmental impacts, criminal activities, and vulnerabilities across national, regional, and global levels. Produce comprehensive risk assessment reports.
- Establish **local monitoring and reporting systems** that involve communities and indigenous populations in detecting illegal activities, including environmental crimes and financial irregularities. Train community leaders on legal rights, financial crime indicators, and reporting mechanisms.
- Support the creation of **multi-agency task forces** to enable better cooperation and information-sharing between inspectors, customs officials, financial intelligence units, and law enforcement agencies.

3. Building Capacities and Raising Awareness in Compliance and Enforcement

RATIONALE:

Successful investigations and prosecutions are critical for disrupting serious crimes along the critical minerals supply chain. Many law enforcement agencies lack the capacity and awareness to monitor and investigate crimes such as smuggling, money laundering, and organized crime activities linked to critical minerals. Capacity building is essential to equip enforcement actors with the knowledge and tools needed to address these challenges.

ACTION AND ACTIVITIES:

- Develop **investigative and prosecutorial guidelines** tailored to national legislative and procedural frameworks. These guidelines should incorporate lessons learned from successful investigations and focus on identifying connections between crimes like money laundering, terrorism financing, corruption, and environmental crimes.
- Organize **capacity building activities** through both train-the-trainers programs and direct training of practitioners. These activities should involve interactive crime scene simulations, field visits to mining sites, border crossings, ports, and refiners, and multi-agency training sessions.
- Conduct **training needs assessments (TNA)** to gauge awareness levels among different actors in the compliance and enforcement chain. Based on the findings, develop targeted training materials and tools.
- Provide **specific training for financial intelligence units** on topics such as anti-money laundering and mining sector crimes, and for mining authorities on combatting tax evasion, corruption, and profit-shifting.
- Equip law enforcement agencies with the **tools to seize and recover assets** linked to criminal enterprises in the mining sector and ensure that these assets are used to compensate affected communities or reinvested into sustainable development initiatives.

4. Leveraging Innovative Tools and Technologies for Monitoring and Enforcement

RATIONALE:

Advanced technology can play an important role in detecting and investigating crimes linked to critical minerals. While some technologies, such as satellite imagery and remote sensing, are already in use, there is a need for broader adoption of innovative tools like blockchain, artificial intelligence (AI), and forensic analysis to enhance transparency and efficiency in investigations.

ACTION AND ACTIVITIES:

- **Map and promote** the use of existing technological tools for improving inspections, investigations, and prosecutions. This includes technologies for securing supply chains, detecting illegal activities, and conducting forensic analysis.
- **Develop a matrix of technologies** and tools that can be applied at various stages of the supply chain by different actors, including enforcement agencies, industry stakeholders, and customs.
- **Develop a handbook for investigations**, providing practical scenarios for applying technology to investigative processes and preparing forensic reports for court proceedings.
- Organize **interactive training workshops** focused on the use of technologies in investigations. These workshops should include simulations, hands-on exercises, and site visits to mining operations, ensuring participants gain practical experience.
- Hold **workshops for scientists and forensic experts**, focusing on their roles as expert witnesses during investigations and prosecutions, potentially incorporating moot court exercises.

Endnotes

1. It is important to note that there is currently no universally accepted, standardized definition of a critical mineral. However, critical minerals are generally understood as those that play a vital role in technology, the economy, and national security, while also facing significant risks related to the security of their supply.
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