

Critical Minerals and Environmental Justice: Upholding Resource Sovereignty for Indigenous and Local Populations

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Critical Minerals and Environmental Justice: Upholding Resource Sovereignty for Indigenous and Local Populations

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Abstract

This paper critically examines how the tenets of environmental justice can be upheld in order to ensure sustainable extraction and use of critical minerals. The paper observes that the extraction and use of critical minerals is causing several environmental and social concerns which undermine the ideal of environmental justice. In particular, the paper observes that failure to uphold the rights of indigenous and local populations during the extraction and use of critical minerals violates resource sovereignty and fuels environmental injustices. Consequently, the paper argues that it is imperative to uphold resource sovereignty for indigenous and local populations in order to ensure sustainable extraction and use of critical minerals for environmental justice. The paper discusses how this ideal can be attained towards Sustainable Development.

1.0 Introduction

Minerals are classified as ‘critical’ not because they are considered scarce, but because they have significant economic importance in key sectors including the environment, energy, health, defence, and consumer electronics¹; they have a high-supply risk due to the very-high import dependence and high level of concentration in particular countries²; and they lack viable substitutes due to their unique properties and applications³. In addition, it has been observed that minerals are considered critical when they are vital for economic and technological progress and development but face potential supply risks due to scarcity, supply concentration and geopolitical factors among other reasons⁴. It has been argued that the criticality level of a mineral is usually determined by its economic importance and the risk of disruption to supply chains⁵. A mineral’s economic importance depends on how relevant it is for producing new technologies and its role in the global economy, while the supply chain disruption risk refers to the likelihood of a shortage due to a mineral’s physical scarcity or geographical concentration⁶.

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¹ CRM Alliance., ‘Critical Raw Materials’ Available at <https://www.crmalliance.eu/critical-raw-materials> (Accessed on 29/06/2026)

² Ibid

³ Ibid

⁴ International Council on Mining and Metals., ‘Critical Minerals’ Available at https://www.icmm.com/en-gb/mining-metals/critical-minerals?gad_source=1&gad_campaignid=22530173703&gbraid=0AAAAA-kBgRCZXtrLZ9MYG8uhlaflq2Xw-&gclid=CjwKCAiA8vXlBhAtEiwAf3B-g_Velvd3VbNSwExZ45rmE28ASrQNI-52fzPB7NPO88SXKMr2lkYzyxoC_4cQAvD_BwE (Accessed on 29/06/2026)

⁵ Valverde. J., ‘What Are Critical Minerals, and Why Are They So Important?’ Available at <https://unu.edu/merit/news/what-are-critical-minerals-and-why-are-they-so-important> (Accessed on 29/06/2026)

⁶ Ibid

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Critical minerals include copper, lithium, nickel, cobalt, magnesium, niobium, silicon, graphite and rare earth elements⁷. These minerals play a key role in the global economy including through supporting technological advancements. For example, critical minerals such as copper, lithium, nickel, cobalt and rare earth elements are vital components of many of today's rapidly growing clean and green energy technologies including wind turbines, solar panels, electricity networks and electric vehicles⁸. In addition, it has been observed that critical minerals are vital in health, steel-making, defence, space exploration, and aviation among other industries making them not only 'critical' for effective functioning of these industries but also in the quest towards development⁹. In addition, it is estimated that the top three producing countries now account for over two-thirds of global cobalt, lithium, nickel, graphite and rare earth elements demonstrating the criticality level of these minerals due to their geographic concentration¹⁰.

Despite their vital role in the global economy, it has been observed that irresponsible, unregulated and unsustainable extraction of critical minerals fuels grave environmental and social concerns¹¹. Consequently, it is imperative to ensure sustainable extraction and use of critical minerals including through upholding the tenets of environmental justice in order to foster development.

This paper critically examines how the tenets of environmental justice can be upheld in order to ensure sustainable extraction and use of critical minerals. The paper observes that the extraction and use of critical minerals is causing several environmental and social concerns which undermine the ideal of environmental justice. In particular, the paper observes that failure to uphold the rights of indigenous and local populations during the extraction and use of critical minerals violates resource sovereignty and fuels environmental injustices. Consequently, the paper argues that it is imperative to uphold resource sovereignty for indigenous and local populations in order to ensure sustainable extraction and use of critical minerals for environmental justice. The paper discusses how this ideal can be attained towards Sustainable Development.

2.0 Impact of Critical Minerals on Environmental Justice

It has been observed that most mining activities and projects involving critical minerals are undertaken on lands and territories belonging to indigenous peoples and local communities¹². In particular, it is estimated that over 50 percent of critical mineral projects are located on or nearby indigenous peoples' lands, which are lands over which indigenous peoples are recognized as managing or exercising some form of control or influence for conservation purposes¹³. The vast majority of critical minerals such as graphite, nickel,

⁷ World Resources Institute., 'The Critical Minerals Conundrum: What You Should Know' Available at <https://www.wri.org/insights/critical-minerals-explained> (Accessed on 29/06/2026)

⁸ International Energy Agency., 'Critical Minerals' Available at <https://www.iea.org/topics/critical-minerals> (Accessed on 29/06/2026)

⁹ CRM Alliance., 'Critical Raw Materials' Op Cit

¹⁰ Organisation for Economic Co-operation and Development., 'Critical Minerals' Available at <https://www.oecd.org/en/topics/sustainable-mining-for-development.html> (Accessed on 29/06/2026)

¹¹ World Resources Institute., 'The Critical Minerals Conundrum: What You Should Know' Op Cit

¹² Rise in legal action against renewables companies over minerals., Available at <https://www.theguardian.com/environment/2025/jul/01/how-indigenous-people-find-themselves-on-the-frontline-of-the-green-transition> (Accessed on 30/06/2026)

¹³ Owen. J.R et al., 'Energy transition minerals and their intersection with land-connected peoples' Available at <https://www.nature.com/articles/s41893-022-00994-6> (Accessed on 30/06/2026)

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lithium, manganese, cobalt and copper are usually found on or near lands and territories belonging to indigenous and local populations¹⁴. In particular, it has been observed that Africa has the highest proportion of critical minerals projects located on or near land belonging to indigenous and local populations¹⁵. Africa holds significant deposits of the planet's critical minerals including cobalt, bauxite, chromium, copper, graphite, manganese and rare earths which are often located in lands and territories occupied, owned or managed by indigenous and local populations in countries such as the Democratic Republic of the Congo (DRC), Zambia, Guinea, Mozambique and Madagascar among others¹⁶.

The abundance of critical minerals on lands and territories belonging to indigenous and local populations provide opportunities to unlock socio-economic development for these communities who have been historically marginalized for many centuries all over the world. However, it has been observed that instead of unlocking development and prosperity, critical minerals have been a source of environmental injustices against indigenous peoples and local populations. For example, it has been observed that indigenous peoples and local communities all over the world play a key role in climate mitigation and adaptation, biodiversity conservation and land restoration due to their rich Traditional Ecological Knowledge (TEK)¹⁷. However, extractive activities occurring in and near lands and territories belonging to indigenous peoples and local communities can significantly, and sometimes irreversibly, harm their role as custodians of global biodiversity thus reducing their positive impact on the global environment¹⁸. It has been observed that unsustainable extraction of critical minerals takes a huge toll on the environment through environmental degradation, water scarcity, deforestation, pollution, and biodiversity loss negatively impacting indigenous and local populations who live where such resources are located¹⁹.

Unsustainable extraction of critical minerals is also a major source of environmental and social conflicts involving indigenous and local populations²⁰. For instance, it has been observed that land injustices against indigenous peoples and local populations who are often displaced from their ancestral lands during extraction of critical materials fuels environmental conflicts²¹. Failure to uphold the right to Free, Prior, and Informed Consent (FPIC) in all decision-making processes during extraction of critical minerals often

¹⁴ Ibid

¹⁵ Ibid

¹⁶ Mo Ibrahim Foundation., 'Africa's Critical Minerals: Africa at the Heart of a Low-Carbon Future' Available at <https://mo.ibrahim.foundation/sites/default/files/2022-11/minerals-resource-governance.pdf> (Accessed on 30/06/2026)

¹⁷ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Available at <https://digitallibrary.un.org/record/4077484?v=pdf#files> (Accessed on 30/06/2026)

¹⁸ Ibid

¹⁹ United Nations Environment Programme., 'What are energy transition minerals and how can they unlock the clean energy age?' Available at <https://www.unep.org/news-and-stories/story/what-are-energy-transition-minerals-and-how-can-they-unlock-clean-energy-age> (Accessed on 30/06/2026)

²⁰ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

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leads to environmental injustices against indigenous and local populations as evidenced by displacement from their lands and territories, environmental degradation, biodiversity loss and conflicts²².

In addition, unsustainable extraction of critical minerals fuels environmental injustices against indigenous and local populations by undermining their livelihoods, health and culture. For instance, it has been observed that the negative environmental impacts associated with the extraction of critical minerals mining activities, including water abstraction, land use change, biodiversity loss, ecosystem degradation, greenhouse gas emissions and persistent pollutants in soil and water, have a devastating impact on the livelihoods, health, lands and resources of indigenous peoples and local communities²³. These activities often destroy and affect the lands and resources that indigenous peoples and local communities depend on for their livelihoods, lead to adverse health effects and affect cultural sites often leading to cultural disruption and loss of indigenous peoples' TEK²⁴.

Further, it has been observed that despite over half of the world's critical minerals reserves being located on or near indigenous lands, indigenous and local populations often do not receive tangible benefits from these resources undermining their resource sovereignty²⁵. Due to inequitable benefit-sharing arrangements, indigenous and local populations are yet to fully enjoy from the economic gains of critical minerals as evidenced by their marginalized status and poor socio-economic infrastructure in their territories²⁶.

In light of the foregoing concerns, it is imperative to uphold resource sovereignty for indigenous and local populations in order to promote environmental justice.

3.0 Upholding Resource Sovereignty for Indigenous and Local Populations

Unsustainable and irresponsible extraction of critical minerals causes environmental injustices against indigenous and local populations including through fuelling biodiversity loss, environmental degradation, pollution, environmental conflicts, land injustices and inequitable benefit-sharing with adverse impacts on their health, livelihoods, culture, TEK and development. Consequently, it is imperative to uphold environmental justice in order to protect the rights of indigenous and local populations while also ensuring that they enjoy benefits from the extraction of critical minerals in their lands and territories²⁷. It has been observed that at its core, environmental justice means that every person regardless of race, colour, nationality, origin, or income has the right to the same environmental protection and benefits, as well as

²² United Nations., 'Securing Indigenous Rights in the Energy Transition: Preventing Harm, Ensuring Consent, and Promoting Equity in Transition Minerals Extraction' Available at https://social.desa.un.org/sites/default/files/inline-files/Galina_Angarova_EGM_2024_0.pdf (Accessed on 30/06/2026)

²³ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

²⁴ Ibid

²⁵ World Bank Group., 'Protecting Indigenous Peoples' rights amid growing demand for land and critical minerals' Available at <https://egps.worldbank.org/blog/protecting-indigenous-peoples-rights-amid-growing-demand-land-and-critical-minerals> (Accessed on 30/06/2026)

²⁶ Ibid

²⁷ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

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meaningful involvement in environmental policy making²⁸. Environmental justice in the context of critical minerals therefore means that indigenous and local populations have the right environmental protection during extraction of critical minerals, should enjoy benefits from the extraction and use of these resources and should be meaningfully involved in decision-making processes since most critical mineral projects are undertaken on their lands and territories²⁹.

Promoting environmental justice can therefore ensure that critical minerals are harnessed in a sustainable manner in order to uphold the rights of indigenous and local populations. In order to achieve this goal, there is need to uphold the rights of indigenous peoples and local communities including through ensuring their FPIC in all decision making processes during the extraction of critical minerals³⁰. By upholding FPIC, it is possible to promote environmental democracy and ensure that the extraction of critical minerals does not negatively impact the rights, health, and environments of indigenous peoples and local communities³¹.

There is also need to foster the right to a clean, healthy and sustainable environment during extraction of critical minerals in order to promote environmental justice³². In order to achieve this goal, mining companies have been urged to embrace sustainable mining practices including through minimizing waste, recycling materials and protecting the environment and ecosystems during extraction of critical minerals³³. It has been observed that through responsible land reclamation practices, conserving energy and water, and putting in place measures to limit greenhouse gas emissions, it is possible to ensure that mining activities have little impact on the environment³⁴. Through this, it is possible to promote the right to a clean, healthy and sustainable environment by mitigating threats such as biodiversity loss, pollution, water scarcity and environmental degradation during the extraction of critical minerals in order to protect the health, livelihoods, culture and well-being of indigenous peoples and local communities³⁵.

Upholding resource sovereignty for indigenous and local populations is also crucial towards environmental justice. Resource sovereignty is a concept that recognises the right of all states and their citizens to manage

²⁸ The Environmental Justice Movement., Available at <https://www.nrdc.org/stories/environmental-justice-movement> (Accessed on 30/06/2026)

²⁹ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

³⁰ United Nations., 'Securing Indigenous Rights in the Energy Transition: Preventing Harm, Ensuring Consent, and Promoting Equity in Transition Minerals Extraction' Op Cit

³¹ Ibid

³² United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

³³ World Economic Forum., 'What are critical minerals - and why are they key to a greener future?' Available at https://www.weforum.org/stories/2023/05/critical-minerals-technology-geopolitical-greener-future/?gad_source=1&gad_campaignid=22234048793&gbraid=0AAAAAoVy5F44dOzs9wCLCKmPyjffERd90&gclid=CjwKCAiA8vXIBhAtEiwAf3B-g3EfsHxIPATKtBvTDakE_9rtjDPIJZzWsQC25OBwqpBKriKhViixocInkQAvD_BwE (Accessed on 30/06/2026)

³⁴ Mining and ESG: Striking a Balance between Resource Extraction and Sustainability., Available at <https://www.pamapersada.com/DetailMedia/mining-and-esg-striking-a-balance-between-resource-extraction-and-sustainability> (Accessed on 30/06/2026)

³⁵ United Nations. 'The rights of Indigenous Peoples in the context of critical minerals to ensure a just transition : note / by the Secretariat' Op Cit

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and dispose freely of their natural resources³⁶. It has been observed that resource sovereignty covers both the right to physical control over natural resources and the right to determine the exploitation, management, and distribution of natural resources³⁷. Upholding resource sovereignty is crucial since this guarantees states and citizens entitlement to fully and freely manage and utilise their natural resources for economic, social and cultural development³⁸. In particular, since most critical minerals are located in lands and territories owned and occupied by indigenous and local communities, promoting resource sovereignty gives them the right to fully and freely manage and utilise their natural resources for economic, social and cultural development³⁹. In order to uphold resource sovereignty, it is imperative to protect the land rights of indigenous and local populations⁴⁰. It has been observed that clear and enforceable land rights can empower indigenous peoples and local populations to decide whether and how to engage in mining projects on their territories and ensure they share the benefits accruing from extraction of critical minerals towards upholding resource sovereignty⁴¹.

Embracing equitable benefit-sharing arrangements is also necessary towards upholding resource sovereignty for indigenous and local populations. It has been observed that through equitable benefit-sharing frameworks, the extraction and use of critical minerals has the potential to make all countries and especially the developing regions of the world more dynamic, resilient and prosperous, including through providing local job opportunities, increasing community well-being, attracting investment and supporting social infrastructure⁴². In particular, mining companies have been urged to employ local populations and invest in local amenities including infrastructure, healthcare and education in order to ensure that indigenous and local populations access the riches that flow from critical minerals located in their lands and territories⁴³.

³⁶ Office of the United Nations High Commissioner for Human Rights., 'Self-determination of peoples and sovereignty over natural wealth and resources' Available at <https://www.ohchr.org/sites/default/files/Documents/Issues/Development/RTDBook/PartIIChapter5.pdf> (Accessed on 30/06/2026)

³⁷ Resource Sovereignty., Available at <https://pollution.sustainability-directory.com/term/resource-sovereignty/#:~:text=Fundamentals,standards%20related%20to%20resource%20extraction> (Accessed on 30/06/2026)

³⁸ Ngang. C.C., & Kamga. S.D., 'Natural Resource Sovereignty and the Right to Development in Africa' Available at <https://www.taylorfrancis.com/books/edit/10.4324/9781003195115/natural-resource-sovereignty-right-development-africa-carol-chi-ngang-serges-djoyou-kamga> (Accessed on 30/06/2026)

³⁹ Natural Resource Sovereignty and the Right to Development in Africa., Available at <https://www.taylorfrancis.com/books/edit/10.4324/9781003195115/natural-resource-sovereignty-right-development-africa-carol-chi-ngang-serges-djoyou-kamga?refId=5f1b428b-53a5-4116-b2a1-2d269dd8e592> (Accessed on 30/06/2026)

⁴⁰ World Bank Group., 'Protecting Indigenous Peoples' rights amid growing demand for land and critical minerals' Op Cit

⁴¹ Ibid

⁴² Organisation for Economic Co-operation and Development., 'Making critical minerals work for sustainable growth and development' Available at <https://www.oecd.org/en/topics/policy-issues/sustainable-mining-for-development.html> (Accessed on 30/06/2026)

⁴³ World Economic Forum., 'What are critical minerals - and why are they key to a greener future?' Op Cit

4.0 Conclusion

Due to the abundance of critical minerals in their lands and territories, it is imperative to foster environmental justice for indigenous and local populations in order to ensure that they reap benefits from these resources while also being protected from the adverse environmental impacts of mining activities. In particular, upholding resource sovereignty for indigenous and local populations can ensure that they are able to gain benefits from critical minerals for their economic, social and cultural development.

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