Sustaining Violence – A Colonial Déja Vu?

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“The axe forgets but the tree remembers.”

-African Proverb

I. Abstract

In the midst of a world grappling with interconnected global challenges, climate change has surged to the forefront as a growing concern demanding urgent resolution. This research delves into the intricate interplay of historical legacies, power dynamics, and the pursuit of sustainability within the context of cobalt mining—a pivotal facet of the global green energy transition. The research navigates the nexus between climate justice, an unrelenting growth paradigm, and extractivism, with a particular focus on the Democratic Republic of the Congo (DRC) using an exploratory case study approach to determine whether green extractivism can serve as a threat multiplier. The findings unveiled an intricate tapestry wherein historical imprints and power dynamics converge, shaping the violent trajectory of cobalt extraction which has remerged in the post-Paris era. The case of the DRC underscores the discord between sustainability aspirations and the unfettered pursuit of economic growth. The ecological toll of cobalt mining, particularly its resonance within the Congo Basin rainforest, reveals alarming environmental consequences while economic realities expose a paradox wherein growth comes at grave human and environmental expense. The country's contemporary dependence on cobalt fuels an overreliance that further amplifies inequalities, mirroring the historical subjugation perpetuated by exploitative practices. This research overall, underscores that the cobalt crisis transcends a localised ecological issue, instead embodying the global debate surrounding climate justice, equitable development, and power dynamics. To forge a sustainable path forward, confronting historical injustices, fostering inclusivity, and recalibrating the balance between growth and sustainability are imperative, necessitating a radical transformation which re-evaluates growth paradigms, embraces de-growth principles, and prioritises authentic climate justice as crucial steps to disentangle the legacy of colonial and climate violence from the pursuit of genuine sustainability. The insights gleaned from this research have far-reaching implications for addressing similar challenges in other contexts, offering a blueprint for navigating the complexities of extractivism and climate justice within a rapidly changing world.

Keywords: *climate colonialism, green extractivism, sustainability, climate justice, cobalt extractivism, environmental security, green energy transition, de-growth theory*

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With heartfelt gratitude,

Rabia

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IV. Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienist
AEO	African Economic Outlook
AfDB	African Development Bank
ASEAN	Association of Southeast Asian Nations
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources)
CFS	Congo Free State
CDM	Clean Development Mechanism
CPI	Corruption Perceptions Index
CPIA	Country Policy and Institution Assessment
DGAP	German Council on Foreign Relations
D.R	Dominican Republic
DRC	Democratic Republic of the Congo
EIA	Environmental Impact Assessment
EV	Electric Vehicle
FARC	Revolutionary Armed Forces of Colombia
GDP	Gross Domestic Product
HDI	Human Development Index
ICCP	Intergovernmental Panel on Climate Change
IEA	International Energy Agency
MENA	Middle East and North Africa
MNR	Movimiento Nacionalista Revolucionario
MAS	Movimiento al Socialismo
NDC	Nationally Determined Contributions
ND-Gain	Notre Dame Global Adaptation Index
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OHCHR	United Nations Office of the High Commissioner for Human Rights
SIDS	Small Island Developing States
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund (formerly United Nations International Children's Emergency Fund)
U.S	United States
USD	U.S Dollars
U. K	United Kingdom
USSR	Union of Soviet Socialist Republics
ZEA	Zones exploitation artisanal (Artisanal Mining Zones)

1. Introduction

In an era where the interconnected fabric of the global landscape faces myriad challenges, the spectre of climate change has risen to prominence as a paramount concern demanding attention and resolution. As the world grapples with rising sea levels, intensifying natural catastrophes, and the looming spectre of droughts and floods, it becomes apparent that the repercussions of a changing climate are both universal and differentiated, predicated upon a complex interplay of geographic, social, economic, political, and crucially, historical determinants (Mhango, 2019). However, woven intricately within the tapestry of climate change is the indelible imprint of colonialism—a legacy of power dynamics that continues to influence not only the global course of events but also the context of climate discourse. The historical undercurrents of colonialism's pervasive impact intersect with the looming challenges of climate change, culminating in the concept of climate colonialism—a subject that has garnered scholarly attention traversing various domains, from climate justice to environmental security and more. Colonialism's legacy has yielded a trajectory rife with inequalities that persist into the present, functioning as the crucible for the evolution of climate change. Notably, it is the nations comprising the Global South—whose contributions to global carbon emissions have been disproportionately minimal—that find themselves most exposed to climate vulnerabilities and least equipped to combat them effectively (Davis & Todd, 2017; Yusoff, 2018). Amidst this backdrop of climate challenges, a discourse of solutions and strategies has emerged, invoking ideals of sustainability, development, and a paradigm shift towards "green" models. Paradoxically, the very nations that have historically accelerated the climate predicament through mechanisms of power and overconsumption now appear to be the champions heralding solutions to this burgeoning crisis (Feng et al., 2022; Lempert & Nguyen, 2011). This juncture of the Anthropocene is symbolised by the landmark 2015 Paris Agreement, which steered the global community towards

a "green" trajectory. Simultaneously, the lingering shadow of colonialism and the perpetuation of its neo-colonial aftermath continue to cast an unsettling light, particularly within the realm of post-colonial scholarship.

As the world embarks on a journey of green transformation and climate mitigation, it is imperative to introspect whether the proposed solutions, while addressing the paramount challenge at hand, inadvertently perpetuate the very growth-oriented economic model that has driven historical inequalities and environmental degradation. At the heart of this research lies an exploration of the intricate interplay between extractivism, climate justice, and the growth paradigm, particularly within the context of cobalt mining—a vital component of the global energy transition. This research seeks to unravel the complex and often obscured relationship between the legacy of colonialism, the pursuit of sustainability, and the phenomenon of "green" extractivism. Employing an exploratory case study approach, this research endeavours to discern whether the ostensibly eco-conscious endeavour of extracting rare minerals for the green energy transition, notably cobalt, disguises latent forms of violence that echo the historical trajectory of climate colonialism. Within this framework, the overarching inquiry delves into the intricate web of climate colonialism, untangling its intersections with capitalism and the latent violence it perpetuates. As the global community navigates the complexities of climate change and the often-touted green solutions, it becomes increasingly important to scrutinise whether these undertakings serve as genuine vehicles for climate justice and equitable inclusive development or whether they unwittingly sustain a cycle of colonial violence and exploitation, couched under the guise of green hyper-capitalist growth. This research, informed by a theoretical scaffold encompassing climate justice and de-growth principles, aims to decipher whether the absence of authentic climate justice and sustainable growth perpetuates a milieu conducive to violence—a theory that this study endeavours to substantiate through an in-depth exploration of cobalt mining in the

Democratic Republic of the Congo (DRC) through a ‘threat multiplier’ lens. While the nature of threat multipliers—defined by compounded variables—is inherently complex, this research uses an approach which operationalises specific "threat criteria." These criteria encompass *historical* and *resource contexts*, *environmental* and *economic dimensions*, as well as *social* and *human rights implications*. Employing a mix of case study methodology and secondary data analysis, this research ventures to dissect whether the green mining of cobalt indeed functions as an extension of climate colonial violence, ultimately emerging as what I term 'green threat multiplier.' Acknowledging certain limitations, including data constraints as an emerging topic and the inherent specificity and lack of generalisability of an exploratory case study approach, this research, nonetheless, illuminates the intricate facets of the growth-driven green paradigms and its multifaceted implications presenting interesting insights for prospective research in this domain. As it magnifies the need for an imperative transformation in the prevailing global growth model, along with an urgency for authentic justice, this research's denouement critically engages with the outcomes and discussions garnered from this exploration. In a world at the crossroads of growth and sustainability, the research's conclusion accentuates the necessity to confront historical injustices, prioritise inclusivity, and foster a recalibration of prevailing paradigms—a clarion call for genuine transformation and incorporations of concepts of care and compassion amidst the intricate interplay of violence, colonial legacies, and the evolving climate narrative.

The structure unfolds as outlined: Initiating with an in-depth examination of existing literature, the identification of a research gap and formulation of a research question, succeeded by the establishment of a theoretical framework and subsequent delineation of the research design and methodology encompassing the rationale for selecting the case study and recognition of its constraints. Ensuant a comprehensive exploration of the DRC is presented, followed by a critical scrutiny of the results, culminating in a discussion, and

concluding remarks attaching several supplemental appendices to further substantiation of this research.

2. Chapter 2: The State of the Literature

This chapter explores the current literature and engages with the discourse surrounding (neo) climate colonialism, shedding light on its violent implications, while also examining its heralded green solution: - sustainability, linking the two literatures to one, accumulating in climate violence.

2.1 The Anthropocene, Colonialism or Capitalism: Who is the true climate culprit?

Classically, colonialism is invoked as an expansionist process, seizing resources and territory while climate change is mainly presented as an implication of modernisation (Feng et al., 2022). Historically however, colonialism has not only functioned as a driver of the climate crisis but continues to foster and exacerbate inequalities among the most vulnerable communities today particularly from a racialised perspective. Characterised by systematic exploitation, degradation and the elimination of the indigenous and local peoples, colonialism served not only as an attack to the local communities and with that the loss of local environmental knowledge, but also to the environment (Crook et al., 2018). Looking further back, the intersections of climate and empire through climatic and resource differentiation, deeply informed racial imperial ideologies as concepts of western "self" and the alien "other" legitimised practices of exploitation, inherently binding ideas of climate with expansionism (Mhango, 2019). 'Corporate colonialism' emerged with the first East India companies, exemplifying the first capitalistic colonial trading relations which paved the way to exude control and sovereignty over other populations and their resources. In the meanwhile, settler colonialism drove not

only settler cultivation and forced labour consequently shifting environmental conditions considerably (Bhambra & Newell, 2022; Phillips & Sharman, 2020; Voskoboynik, 2018). Drawing upon contributions such as that of Moore, (2015), and a cadre of contemporary scholars, a compelling discourse unfolds positing colonialism as a driving force behind climate change (Hoover, 2017; Whyte, 2018; Yusoff, 2018). Within this nuanced analysis, capitalism emerges as a formidable agent, with its incentives and imperatives intricately intertwined with environmental degradation and ensuing concerns. Moore, (2015) illuminates the historical and ongoing entanglements of capitalism and highlights the pursuit of profit and accumulation to engender ecological harm. In this context, the exploitative forces of capitalism are reinforced by colonial legacies which perpetuate a perilous trajectory of climate change and its far-reaching consequences (Foster & Clark, 2020; Moore, 2015). Such arguments of capitalism for environmental concerns undoubtedly have merit, yet Bhambra & Newell, (2022) emphasise the importance of a nuanced approach recognising the implications of colonialism and debunk the classic scapegoat of capitalism as the sole perpetrator. They argue colonial factors to be taken into consideration and posit that while theories of capitalism delineate the relations of nation state and economy as political economy, colonialism postulates a different political economy rooted in processes of extreme inequalities, often also racialised (Bhambra & Newell, 2022).Colonial and racialised appropriations and dispossessions not only denied indigenous access to land and resources but functioned as forced facilitators driving extraction (Voskoboynik, 2018). Essentially while capitalism does impact and drive climate change and even climate violence, it fails to recognise how intertwined race, colonialism and capitalism are, as arguably capitalism has informed colonialism, which in turn ensures racial and spatial divides (Bhambra & Newell, 2022; Crook et al., 2018).

Furthermore, the concept of the ‘Anthropocene’ emerged in the early 2000s, recognising that human activities have had significant and long-term implications on the earth’s natural and ecological systems representing a new geological epoch defined by the dominant influence of human activities on the planet (Lewis & Maslin, 2015; Steffen et al., 2011). Coined by atmospheric chemist, Paul Crutzen and Eugene Stoermer, the term was popularised and proposed to conceptualise and capture the idea that human actions have evolved into a geological force on par with natural processes (Crutzen, 2002; Crutzen & Stoermer, 2021). While there is recognition of the profound influence of human activities on the Earth’s natural systems, the Anthropocene narrative falls short in acknowledging the specific role of humans in causing or enabling climate change (Malm & Hornborg, 2014; Moore, 2017). Malm & Hornborg, (2014), form a Marxist perspective, offering a critique of the Anthropocene concept, arguing it to obscure the underlying socio-economic and power structures that drive environmental degradation and climate change. Their key contention is that the focus on climate change as a geological event caused by a generalised notion of humanity diverts attention from the socio-economic forces that are driving environmental decline. The framing of climate change as a product of the Anthropocene fails to adequately address the fundamental role played by capitalism, colonialism, and power imbalances in shaping environmental impacts and responsibilities. By attributing climate change to a vague notion of 'generic humanity,' the narrative fails to recognise the unequal distribution of ecological burdens and benefits, and overlooks the root causes of ongoing climate crisis and environmental injustices (Malm & Hornborg, 2014). This is further supported by scholars such as Yusoff, (2018) who investigate the intersections of race and geography in relation to climate change, challenging the dominant narrative of the generalisation of the human impact on the environment. Yusoff, (2018) argues, the Anthropocene to not be experienced equally by all people, particularly the global south bearing the brunt of environmental exploitation and extraction. Racialised geographies have

inherently shaped the distribution of environmental risks, ecological crises and environmental violence which are deeply entangled with racial histories and inequities (Escobar, 2018; Yusoff, 2018). In light of these criticisms, it becomes apparent that a more comprehensive understanding of climate change and its drivers necessitates a deeper examination of the intricate interactions between socio-economic forces and environmental degradation (Malm & Hornborg, 2014; Moore, 2015, 2017). Malm & Hornborg, (2014) perspective invites thought, to move beyond the simplistic framing of the Anthropocene and to critically assess the role of capitalism, colonialism and power dynamics in shaping climate change and the respective response thereto (Malm & Hornborg, 2014). Hickel, (2020) effectively corroborates such arguments and finds the global north, and with, that former colonial powers to be responsible for over 92% of the excess emissions currently faced. Through a quantification of the national responsibility for climate breakdown, an approach rooted in the principle of equal per capita access to atmospheric commons, the national fair shares of safe global carbon emissions consistent with the planetary boundary were derived and subsequently subtracted from country's historical emissions between 1850 and 1969 including consumption based emissions from 1970 to 2015 throughout which each country's share in excess of the planetary boundary were calculated (Hickel, 2020). Countries such as the U.S were responsible for 40% of excess CO2 emissions, while the EU contributed 29%. The G8 nations combined represented an 85% overshot while countries classified by the UN Framework Convention on Climate change as Annex 1 nations, in other words the most industrialised countries were in fact responsible for 90% of excess emissions. In contrast, countries of the global south remained within their boundary of fair shares, including China and India. On the other hand, Matthews, (2016) likewise investigates and calculates climate responsibility by quantifying historic inequality, carbon, and climate debts through national climate contributions, his findings somewhat differing from Hickel, (2020). Matthews, (2016) instead finds countries such as the U.S to be responsible for

32% of the climate debt, Russia 10%, Brazil 9.8% while countries such as India (35%), China (26%), and Bangladesh (4,9%) hold the highest carbon credits. This approach, however, fails to acknowledge the responsibility of high-income countries, as periods pre-1960s were excluded as well as the quantification being territory-based and not consumption based thus failing to recognise the outsourcing of emissions to low-income countries since the rise of globalisation arguably representative of the colonial-capitalist intersection (Hickel, 2020). Brazil for example, has been plagued by deforestation which has contributed and affected the country's carbon storage, carbon sink and land use change which in turn has likewise driven carbon emission. These however benefit predominantly foreign conglomerates as opposed to local communities (Ardila et al., 2021; Mammadova et al., 2022; Zu Ermgassen et al., 2020). Hickel's, (2020) consumption-based approach thus invites a more accurate reflection of the principle of equal access to atmospheric commons. Hereby the significance of appropriate discourse and recognition of colonial and racial histories become apparent as these inform prospective policies and recommendations. Despite this, some argue, capitalistic tendencies to have lifted the world's poor out of poverty (an alleged form of justice) citing the opportunities coal presented to China and India. Hereby the 'needs' of the poor are justified as reasons for continued use of coal for example (Chakrabarty, 2014).Yet the impoverishment and lack of development in these nations, neglect the long imperial implications of historic and neo-colonial policies constraints caused by said colonisation. Refer to supplementary appendix 1 for more information.

In the broader context, the Anthropocene and capitalist arguments reveal a tendency to overlook the profound ecological consequences arising from imperial conquests (Escobar, 2012; Hoover, 2017; Malm & Hornborg, 2014; Whyte, 2018; Yusoff, 2018). These conquests have had far-reaching impacts on the environment, and the ongoing legacies of colonial practices which persistently perpetuate environmental concerns. It is, therefore, essential to

acknowledge that these concerns disproportionately affect populations, shaped by complex factors such as race and geospatial dynamics that are deeply rooted in the colonial legacy (Yusoff, 2018). Capitalism and colonialism are inextricably intertwined, with neither exempt from their role in shaping nor significantly influencing climate change. Capitalism, characterised by the relentless pursuit of growth and an economic system founded on competition and the extraction of wealth, labour, and resources, occupies a central position in colonialism and its contemporary manifestations (Rodney, 1981). While capitalism may form the core, colonialism extends beyond these characteristics, exerting influence over culture, territory, land, race, religion. Many of these influences have served the interests of capitalist greed and the insatiable desire for more, the relationship between capitalism and colonialism being symbiotic, with each bolstering the other (Weiss et al., 2018; Whyte, 2018; Yusoff, 2018). The addition and recognition of colonialism however brings forth long-term implications beyond mere capitalistic incentives. It encompasses colonial institutional constructs, systems, laws, and policies that perpetuate hardship, dependency, and climate injustice, even in the post-independence era. Although the planetary crisis presents a shared threat, the burden of its consequences has been unequally distributed, imposing differentiated responsibility (Crook et al., 2018; Sultana, 2022; Yusoff, 2018). The inherent interconnectedness of colonialism, capitalism, globalisation, and the Anthropocene exacerbates gross climate disparities, necessitating the incorporation of colonial considerations in the pursuit of climate justice and sustainability. Acknowledging the intertwined nature of capitalism, colonialism, globalisation, and the Anthropocene enables a more nuanced approach to addressing climate disparities and pursuing equitable and sustainable solutions (Moore, 2015; Sultana, 2022; Yusoff, 2018).

2.2 Challenging climate change – a colonial approach?

Scholarly discourse surrounding the mitigation of climate change challenges commonly incorporates interrelated concepts known as "*climate vulnerability*", "*climate resilience*" and "*climate adaptation*". The climate vulnerability of nations is not solely contingent upon the probability of being exposed to natural phenomena, but rather pertains to the extent to which a system is susceptible to adverse effects and disruptions induced by climate change. This entails considering the potential detrimental consequences for a specific system or group, encompassing social, economic, and environmental aspects. Consequently, factors such as infrastructure, governance, resource accessibility, and social dynamics assume significance in assessing the system's capacity to withstand and effectively respond to climate-related stresses (Ahlgren et al., 2014; K. Thomas et al., 2019). Climate resilience on the other hand, denotes the complex and dynamic capacity of individuals, communities, socio-ecological systems, and institutions to absorb, adapt to, and navigate through climate-induced shocks, stresses, and uncertainties while maintaining key functions, structures, and essential services (Bahadur et al., 2010; Petz, 2023). It encompasses the ability to anticipate and prepare for climate risks, effectively respond to disruptions, and recover swiftly, fostering long-term sustainability and well-being. Climate resilience hereby envelopes multiple dimensions, including ecological, socio-economic, governance, and cultural factors, requiring interdisciplinary approaches and comprehensive strategies for enhancing adaptive capacities and fostering transformative change (Nelson, 2011). Climate adaptation on the other hand, represents a systematic and purposeful process encompassing a suite of measures, policies, and actions undertaken to reduce vulnerabilities and enhance adaptive capacities in response to the impacts, risks, and uncertainties posed by climate change. It involves recognising the multi-dimensional nature of climate challenges, encompassing physical, ecological, social, economic, and technological dimensions (Gardiner,

2017; Nelson, 2011). Climate adaptation strategies aim to assess climate risks, develop robust and context-specific responses, and implement adaptive measures that promote resilience, foster sustainable development, and safeguard lives, livelihoods, ecosystems, and critical infrastructure. Effective climate adaptation necessitates the integration of scientific knowledge, stakeholder engagement, participatory planning, and continuous monitoring and evaluation to ensure adaptive responses remain relevant and effective (Nelson, 2011; Owen, 2020). Countries particularly vulnerable to the implications of climate change and with limited means to survive them, have become referred to as 'most vulnerable' and 'least resilient'. These are predominantly countries in the global south while the more developed nations have been praised for their 'resilience'. These terminologies however often fail to address the origin and continued implications of this dearth of climate resiliency and adaptation (Mikulewicz, 2019; Petz, 2023; Whyte, 2018). Climate vulnerability, adaptation and resilience are deeply informed by asymmetric power relations regionally, nationally, and internationally. Thus different groups and countries experience the implications of climate change and responses differently as capacities to adapt to even the same ecological disruption may differ (Petz, 2023; Sheller & León, 2016; Yusoff, 2018). Policies and foreign interventions were designed to deprive local populations of resources, decision-making power, and agricultural practices. This has not only endangered them but continues to, as they remain ill-equipped to endure climate-related disasters, the extent to which countries can respond also varies according to the degree of colonial influence (Escobar, 2012; Petz, 2023).

Small Island Developing States (SIDS) are particularly vulnerable to the consequences of climate change, the Caribbean currently being one of the most hazardous regions in the world ((E. Thomas & Zhang, 2020; Weiss et al., 2018). In 2017, hurricane Irma ravaged countless Caribbean islands, notably Barbuda and Puerto Rico (Smith & Rhiney, 2016; Weiss et al., 2018). For

Puerto Rico, this occurred in the midst of one of the worst recessions, afflicted with austerity and continued limited self-governance as a U.S territory. Not long after, Hurricane Maria devastated Puerto Rico destroying its most fragile power grid. As a result, hospitals, telecommunications and the island plummeted, posing a significant human security threat while local and federal governance and support were slow and ineffectual, serving as an overall reminder of Puerto Ricans' limited colonial citizenship (Weiss et al., 2018). Haiti is yet another island plagued by continued colonial and neo-colonial constrictions fused with devastating climate implications. For the archipelago of Hispaniola however, the resilience and capacity to react to ecological disruption between the Dominican Republic (D.R) and Haiti varies considerably, (neo) colonial legacies and divergent ecological and political contexts determining as such (Sheller & León, 2016). Due to colonial variations in governance, exploitation and violence, the country's capacities to respond to climate shocks varies considerably as the French and U.S colonialism was more brutal and violent in Haiti as opposed to the D.R. Today, Haiti is one of the most at risk countries according to the Global Climate Risk Index (Eckstein et al., 2021). For further elaboration on the case of Hispaniola please refer to supplementary appendix 2.

Instances of climate-historic-colonial inequality abound, as exemplified by the contrasting outcomes and adaptive capacities observed in the cases of the D.R and Haiti substantiating a human security implication. Recognition of the ramifications of climate colonialism becomes imperative in discussions pertaining to vulnerability, resilience, and adaptation. Despite contributing less than 5% of the total global carbon emissions, Africa, the second largest continent, has endured significant implications. Notably, countries like Mozambique currently face the highest climate risk within Africa, as indicated by the climate risk index (Eckstein et al., 2021).The region grapples with severe natural disasters, escalating desertification, and other environmental challenges

stemming from climate change, resulting in a host of human security concerns ranging from famine and disease to violence and migration. These challenges impede effective development and perpetuate dependence, underscoring the need for a nuanced approach in examining such discourse and research (Mhango, 2019; Sultana, 2022; Whyte, 2018; Yusoff, 2018).

2.3 Climate crimes – A radicalising (social) threat multiplier?

When taking climate change into consideration, accountability has rarely been a central consideration. Mhango, (2019) attributes climate change not only to colonialism and neo-colonialism but refers to it as a sort of 'neo-imperial terrorism'. While colonialism may have contributed to the devastating implications of climate change, continued neo-colonial practices, governance and policies serve as continuing forces effectively exemplifying north-south inequities (Mhango, 2019; Nhemachena & Mawere, 2019; Sultana, 2022). Beyond the conventional forces of commercialism and capitalism that have been identified as contributing factors to climate crimes, it is noteworthy that great power politics and military motivations have played a significant role, particularly to the detriment of nations in the global South. Specifically, in the South Pacific region, the U.S conducted 67 nuclear tests and experiments in the Marshall Islands between 1946 and 1958, with the "Bravo" test alone yielding an explosive force equivalent to over 1000 Hiroshima bombs (Ahlgren et al., 2014; Barker, 2013; Mhango, 2019). The radioactive fallout from these tests induced various health issues, including birth defects, infertility/miscarriages, and increased cancer rates (Ahlgren et al., 2014). As a result, the displaced population was resettled; however, persistently faced a multitude of implications, including the depletion of flora and fauna, the destruction of habitats, health issues, and dependency on food aid embodying a deep-seated manifestation of both human and imperial greed (Mhango, 2019). Climate change further exacerbates the frequency and unpredictability of droughts and

saltwater intrusion, contaminated ecosystems and agricultural systems have engendered a health crisis characterised by chronic water shortages, and heightened dependence on food aid over the past seven decades (Ahlgren et al., 2014). The already impoverished inhabitants are compelled to subsist on non-nutritious foods, resulting in long-term health implications and the prevalence of chronic diseases, compounded by the presence of contaminants (Barker, 2013). Concurrently, the institutional capacity to adequately care for the well-being of citizens is lacking. The nuclear experiments and their remnants have had, and will continue to have disastrous consequences, not only contributing to ongoing environmental degradation but also posing a complex human security issue (Barker, 2013; Gerrard, 2015). The unguarded and insecure nature of nuclear remnants poses an ongoing threat as leaks and contaminants jeopardise ecosystems, thereby presenting sustained challenges to the South Pacific islands. Moreover, this situation presents a significant obstacle to achieving independence from neo-colonial powers such as the U.S and fostering effective development (Gerrard, 2015; Mhango, 2019). The prevailing international political landscape, characterised by heightened tensions among major powers, significantly contributes to the exacerbation of climate degradation and its implications (Mhango, 2019). Rather than prioritising concerted efforts to mitigate the impacts of climate change, the quest for space exploration and even aspirations of space colonisation have taken precedence over human wellbeing. The historical space race between the U.S and the USSR serves as a stark illustration, with numerous rockets and spacecrafts being deployed to achieve their respective objectives. This pursuit, however, resulted in substantial emissions and the release of millions of debris and waste materials that pollute the atmosphere (Friedberg, 2013; Mhango, 2019).

Beyond this however, powerful actors, governments, criminal enterprises, and non-state actors have likewise facilitated transnational climate crimes which impact civil society, generating extreme costs to ecosystems, livelihoods, and

development in pursuit of financial gains. These activities extend beyond corporate endeavours and encompass illicit natural resource extractions, which not only harm the environment but also perpetuate displacement, poverty, and create opportunities for illegal practices such as illegal mining (Gore et al., 2019). Under the helm of 'green criminology', the environmental crimes and harms adversely affecting human and non-human life, ecosystems and the biosphere, these actions contribute to the neo-colonial forces that drive environmental decline and climate change (Brisman & South, 2018; Espin & Perz, 2021). Criminal and illicit schemes manifest in various forms including wildlife trafficking, illegal fishing, and logging, all of which undermine ecosystems, foster corruption and disrupt biodiversity (Brisman & South, 2018; Gore et al., 2019). The trafficking of hazardous waste has led to the outsourcing of dangerous materials from developed countries in the global north to underdeveloped countries in the global south, posing significant health and environmental risks which Okafor-Yarwood & Adewumi, (2020) refer to as a form of environmental racism. Weak infrastructures and institutions in these countries further underscore the disregard shown by many developing nations (Crook et al., 2018). Similarly, illegal mining has become a lucrative market for transnational criminal networks, non-state actors, and even state actors, resulting in environmental degradation, deforestation, and the use of harmful chemicals such as mercury (Espin & Perz, 2021; Gore et al., 2019; Obiri-Yeboah et al., 2021).

Historic, transnational environmental crimes and great power feuds aside, climate change in and of itself serves as an increasing threat toward stability and security particularly among most developing nations. While in the global security context considered a 'threat multiplier', climate change amplifies existing inequalities, risks, and vulnerabilities (Mavrakou et al., 2022). Continued degradation, extreme weather, and natural disasters in combination with resource depletion have threatened the livelihood and survival of countless

vulnerable communities. Depleted ecosystems, insufficient water sources, agrarian, livestock, and fishery failures further, have fostered food insecurity and impoverishment, ideal breeding grounds for climate migration, which have likewise intersected with terrorism, violence, and social unrest (Frimpong, 2020; Mavrakou et al., 2022). In the African context, the repercussions of climate change are exacerbating existing issues such as marginalisation, inequality, exclusion, and inadequate governance, which serve as fundamental drivers of violence (Ehiane & Moyo, 2022). In general, climate change has engendered significant water stresses in various regions of the global south, exemplified by the Lake Chad Basin which spans 8% of the African continent and sustains the livelihoods of approximately 42 million inhabitants engaged in fishing, farming, and pastoral activities (Nagarajan et al., 2018). Presently, the Lake Chad basin confronts heightened vulnerability to climate-change-induced extreme weather phenomena, including droughts and floods, which profoundly affect food security, water availability, and overall human security within the region. Rising temperatures have facilitated erratic rainfall, recurrent severe droughts and extreme weather events which in the long term also have significant agrarian and land use implications as soil erosion yields crops unmanageable resulting in a loss of livelihood (Ehiane & Moyo, 2022; Nagarajan et al., 2018). The protracted insurgency led by Boko Haram and other extremist and militant groups over the course of 13 years have contributed to the further destabilisation of the Lake Chad Basin and the broader Sahel region. Beyond the ideological warfare pursued by these extremist factions, climate change effectively furnishes them with a strategic advantage, as they exploit the ensuing resource scarcity and intensifying competition for survival, thereby rendering millions of vulnerable young individuals in the region susceptible to recruitment (Ahmadu, 2019; Nagarajan et al., 2018; Telford, 2020). The precariousness of livelihoods assumes a consequential role in the strategies employed by non-state armed opposition groups, exemplified by entities such as Boko Haram or the Islamic State of West Africa. Such groups exploit the

vulnerability of livelihoods, capitalising on the economic incentives they can offer for recruitment. This exploitation is further intensified by the presence of pre-existing ethno-religious marginalisation and stigmatisation, compounding the susceptibility of marginalised communities to recruitment efforts (Ahmadu, 2019). Climate-induced conflicts in general have manifested on a global scale, leading to an unprecedented surge in the number of refugees and displaced individuals, particularly in Africa and Asia. According to the UNHCR Global Report of 2018, an estimated 21.5 million people are forcefully uprooted from their homes due to climate-related disasters (*UNHCR Global Report 2018*, 2018). In this context, climate change functions as a threat multiplier, intensifying the threats to security and exacerbating issues of discrimination, inequality, and inherent insecurity that are prevalent in countries such as Somalia, Sudan, Syria, Yemen, and the Lake Chad region (Ehiane & Moyo, 2022). Somalia, akin to the Lake Chad region, grapples with an erratic climate characterised by recurrent droughts and heavy rainfall, which decimate rangelands and livestock. Pastoralists in Somalia, like their counterparts in the Lake Chad communities, are compelled to migrate in search of greener pastures, while those unable to do so bear the brunt of the consequences (Ehiane & Moyo, 2022). Socio-historic contexts further amplify these insecurities, as ethno-religious divisions and ethno-governmentality sustain grievances, discriminatory practices, and disputes regarding land use and resource allocation. A pertinent illustration of this phenomenon is evidenced by the case of Sudan and Ethiopia's contestation over the Al Fashaga region—a disputed breadbasket of the region rich in fertile lands and abundant water sources. A remnant of British colonialism, the dispute extends to the 1902 unilateral demarcation and allocation of borders by the British, a legacy that persists to the present day (Jamie, 2022). Overall, in these instances, multidimensional vulnerabilities ranging from political marginalisation, poor infrastructure, education and health systems, social injustice, poverty and governance/institutional fragility, contexts which historically have been

underdeveloped through colonial contexts exacerbate climate vulnerability, resilience and adaptivity driving human security challenges and social unrest (Ehiane & Moyo, 2022).

While the lingering remnants of colonialism persist in combination with continued excessive carbon contribution of the global north and continuous climate vulnerability, they likewise remain at the forefront of its heralded solution: - Sustainability.

2.4 Sustainable development: A colonial agenda?

The conceptualisation of sustainable development emerged as a conscientious response to the pressing challenges of environmental stagnation and decline, encompassing diverse definitions and, notably, varying interpretations. At its core, sustainable development strives to reconcile economic growth with environmental preservation, as underscored by Banerjee, (2002) assertion. The 8th principle of the Rio Declaration encapsulates sustainability as the delicate equilibrium between consumption and resources, as noted by Lempert & Nguyen, (2011) and the *Report of the United Nations Conference on Environment and Development*, (1992). Notwithstanding its straightforward definition, Lempert & Nguyen, (2011) reveal the abandonment of sustainable development's fundamental principles in practice, as development actors persistently appropriate and manipulate the terms 'sustainable' and 'development' to suit their own agendas much to the disadvantage of the global south. In fact, they assert that these actors not only fall short of delivering sustainable development in accordance with the proposed guidelines set forth in the Rio Treaty, but also highlight the UNDP's abandonment of these very directives (Banerjee, 2002; Lempert & Nguyen, 2011). In general, the body of scholarship on sustainable development, despite its diverse and dedicated exploration of definitions and characteristics, is often intertwined with

economics, politics, capitalism and arguably colonialism. Speth, (2008) a prominent advocate of sustainable development, connects the pillars of development to equality, growth, democracy, and environmentalism. However, a critical oversight in this perspective is the failure to acknowledge the inherent winners and losers within this equation. While proponents of sustainable development correlate it with equality and growth, sceptics argue for alternative approaches, revealing the potential pitfalls of a green 'sleight of hand' that fails to effectively address genuine climate justice challenges and inadvertently perpetuates inequality (Banerjee, 2002; Escobar, 2012; Navarro, 2023; Speth, 2008). Banerjee, (2002) articulates a critical perspective on contemporary sustainable development, asserting that it often functions as a subsidiary element of the prevailing economic paradigm, perpetuating entrenched practices and policies derived from a mindset rooted in historical patterns of colonial deliberation. As a result, this framework contributes to the marginalisation and disempowerment of the majority of the world's population, particularly in the Global South (Banerjee, 2002). Parson & Ray, (2018) further advance this discourse by illuminating how the concept of sustainability has increasingly served as a veneer, concealing not only the perpetuation of colonial practices but, more specifically, resource colonialism. Through this obfuscation, the intricate power dynamics intrinsic to development initiatives, which inherently favour colonial powers, remain obscured. Scholarly analysis provides additional insights, underscoring the deeply interwoven nature of sustainability and unequal power relations, often resulting in the concomitant processes of displacement, land expropriation, environmental degradation, and other multifaceted socio-environmental, socio-economic, and socio-political grievances (Navarro, 2023; Parson & Ray, 2018).

While disregarding the profound influence of climate change and colonialism on global inequality, certain scholars perpetuate colonial narratives that ascribe to them a 'duty' and obligation to offer solutions to the very problems they

contribute to. Even though scholars like Wilson, (1993) acknowledge the power dynamics wherein wealthier nations dictate international trade rules, he primarily emphasises their responsibility to wisely employ this power, advocating for sustainable development in the global south, while overlooking the corresponding responsibility of the unsustainable practices prevalent in the developed world. Such perspectives effectively reinforce the notion that problems solely reside in the Global South, while solutions can only be derived from the Global North, thereby obscuring accountability and the colonial processes that engendered this predicament (Banerjee, 2002; Sen, 2020). Bandy, (2000) asserts that the discourse on sustainable development serves as a mechanism for legitimising western concepts of progress, which in turn enable and validate the use of violence in the pursuit of modernity. Meanwhile, Banerjee, (2002) characterises sustainable development as an extension of epistemic violence, driven by western ideologies reinforcing and legitimising existing power and cultural hegemony with capitalism being portrayed as a protective force and a supposed solution to the problem (Escobar, 2012). Works such as 'Churning the Earth: The Making of Global India' by Shrivastava & Kothari, (2012) further contribute and support this discourse by critically examining the dominant development paradigm and highlighting the tensions between capitalism, development, and sustainability, shedding light on the unequal power dynamics perpetuated by sustainable development narratives in the case of India. In this specific context, informal economies, existing structures, dynamics, policies, and lingering colonial legacies undermine the pursuit of effective sustainability and inclinations of climate justice. This can be witnessed in the example of the Caribbean. The enduring power dynamics of colonialism deeply permeate Barbuda, akin to other Caribbean nations. Gould & Lewis, (2017) shed light on the perilous implications of ‘sustainable’ foreign capital incentives on the future of Barbuda. Under the guise of sustainability and environmentalism, a "green recovery" narrative has been propagated, appealing to foreign investors. However, in practical terms, this has resulted in

a surge of energy-intensive tourism, further exacerbating property prices, the dispossession of communal lands, and the widening of socio-economic inequalities for Barbadians (Gould & Lewis, 2017). This amalgamation of international investments, tourism, and colonial legacies has metamorphosed into a manifestation of transnational capitalism.

Such endeavours disguised as environmentalism, fail to effectively address climate injustice and perpetuate ongoing climate negligence (Gould & Lewis, 2017; Weiss et al., 2018). Activists such as Elizabeth Yeampierre, among others, have advocated for more efficacious environmental justice measures, emphasising the importance of grassroots empowerment and the recognition of indigenous rights. These alternatives diverge from the capitalist, corporate-driven 'green solutions' that are deeply rooted in economic exploitation and racial inequalities (Weiss et al., 2018). Overall, much of the narratives regarding sustainable development parallels the historical narrative of the global south requiring civilisation during colonialism and has now become presented as in need of sustainable development, conveniently benefiting the interests of the global north (Banerjee, 2002; Escobar, 2012).

2.5 Energised for a Post-Paris era?

The post-Paris agreement era emerged after the adoption of the Paris Agreement in 2015, marking a significant turning point in global efforts to address climate change. This agreement serves as a global commitment to tackle climate change, yet simultaneously raises questions about its beneficiaries. Participating countries outlined their voluntary efforts to reduce carbon emissions through "Nationally Determined Contributions" (NDCs) and developed countries reaffirmed commitments to support climate justice through financial assistance, technology transfer, and knowledge sharing. Massive shortcomings thereof however pertain to the enforcement, as the agreement itself relies on a voluntary

participation without legally binding mechanisms (Tolliver et al., 2020; Tørstad, 2020). The complex interplay of geopolitical interests, national priorities, and capitalist agendas effectively mitigate the agreement's implementation. Nonetheless, the Paris Agreements catapulted the international arena into one concerned with sustainability and carbon offsetting. Despite these positive developments, the discussions and actions related to balancing and offsetting emissions, as well as research and policies, have predominantly originated from the Global North. This reflects an inherent concentration of innovation capacity, funding for initiatives, and the formulation of land-use and energy policies by countries in the Global North, lacking valuable input from the Global South (Sovacool, 2023). This exclusion of perspectives and needs from the Global South creates a skewed narrative. In this context, solutions excluded are twisted for personal gain as carbon reduction or offsetting in the global north become outsourced to the global south, whether through the exchange of carbon intensive processes in the global south or mere carbon trading.

Carbon trading, also referred to as emissions trading or cap-and-trade, is a market-based regulatory approach which seeks to mitigate greenhouse gas emissions by establishing a quantifiable limit on the total amount of emissions allowed within a specified jurisdiction or sector (Gilbertson et al., 2009). Under this mechanism, emission allowances are allocated to eligible entities, such as companies or industries, representing the permissible levels of greenhouse gas emissions they can generate which in turn can be bought, sold, or traded in a designated market (Twyman et al., 2015). Countries also engage in the practice of carbon trading, operating under the provisions of the Kyoto Protocol. This framework assigned emission reduction targets to developed nations and allowed them to engage in the exchange of emission allowances (Bachram, 2004). Nevertheless, the persistent power dynamics exert a profound influence on this practice, as it incentivises poorer countries to sell their surplus allowances to wealthier nations grappling with meeting their emissions goals

(Navarro, 2023; Twyman et al., 2015). This overall strategy falls short of achieving climate justice and addressing the pressing climate predicament. Instead, it inherently pursues a capitalistic cost reduction at the forefront and facilitates a lack of accountability on part of wealthier countries while proclaiming sustainability and a sense of justice (Newell et al., 2012; Twyman et al., 2015).

One prominent illustration of this colonial epistemology of development is the "Clean Development Mechanism" (CDM) established under the Kyoto Protocol a mechanism which enables developed nations to earn carbon credits by investing in emission reduction projects in developing countries, subsequently utilising these credits to satisfy their own reduction obligations (Bachram, 2004; Hesketh, 2022; Twyman et al., 2015). The CDM however, disproportionately benefits developed countries, allowing them to fulfil their targets without undertaking substantial and meaningful domestic action. Conversely, developing nations receive inadequate and asymmetrical compensation for hosting these projects, as exemplified by the case of Barbuda. Additionally, the decision-making processes surrounding CDM projects often lack meaningful local involvement, with external entities dominating and thereby perpetuating colonial legacies (Twyman et al., 2015). The carbon trading mechanism itself overall proves inherently unsustainable, prioritising cost-effective carbon reductions at the expense of genuine sustainable development and climate justice, not to mention the instances of fraud and corruption compounding effective regulation (Bachram, 2004). As a consequence, projects primarily concentrate on curtailing carbon emissions without adequately addressing broader developmental imperatives (Navarro, 2023; Twyman et al., 2015). This approach not only disregards the needs and requirements of the host country but also fails to effectively reduce overall carbon emissions, particularly when considering the focus and initiatives on outsourcing emissions. Dominant neoliberal logics in combination with scientific rational exempt wealthier

nations from climate accountability as the prevailing carbon trading practices perpetuate power imbalances, inadequately compensate developing nations, restrict local participation, and prioritise short-term economic gains over long-term sustainable development and climate justice (Twyman et al., 2015). These inherent shortcomings warrant a critical re-evaluation of carbon trading mechanisms, necessitating alternative approaches that prioritise equitable and transformative solutions to the climate crisis (Newell et al., 2012). However, carbon trading is not the only manifestation of outsourcing carbon initiatives, as carbon heavy practices such as the manufacturing of textiles, chemical production or steel and metal processing become likewise outsourced to the global south (Brown & Spiegel, 2019; Scita et al., 2020)(Brown & Spiegel, 2019; Scita et al., 2020).

2.6 Em'powering extractivism?

Although coal has been under unprecedented scrutiny following the Paris agreement, multinational mining organisations remain operational, often out of countries such as Brazil and South Africa, extracting coal, iron ore, and other minerals, driven by capitalist and colonial demands, often leading to conflicts and violence (Brown & Spiegel, 2019). The establishment of mining activities and energy infrastructure particularly in the Global South often gives rise to new divisions based on race, gender, and social class as a reconfiguration of property regimes shift labour practices, while an influx of capital facilitates the formation of extractive enclaves (Brown & Spiegel, 2019). Extractivism in this regard, characterises a mode of resource extraction which prioritises the exploitation and exportation of natural resources such as minerals, fossil fuels or agricultural products with the intention of exporting these primarily to global markets, often driven by external demands without sufficient consideration for sustainable development, environmental implications or local socio-economic wellbeing, underscoring power imbalances and social inequalities often remnants of

colonialism in the global south, effectively a mechanism of colonial and neo-colonial plunder and appropriation (Acosta, 2013). Fash, (2022)defines extractivism as follows:

> *"Extractivism is a logic and practice of colonialist domination that involves the extraction of natural resource rents without restoration or care of the territories to which the resources belonged nor of the socio-natural relations that they previously sustained. Contemporary extractivism can manifest as development strategies based on synergies between mineral and hydrocarbon extraction, infrastructure (especially energy generation), industrial agriculture, aquaculture and forestry, extensive ranching, even tourism, as well as in the form of smaller scale activities operating with colonialist logics of rent capture without restoration or care. Alternatives to extractivism refer to alternative economic activities and logics based not on colonialist rent capture but diverse forms of socio-natural cohabitation and conviviality." (Fash, 2022, p.5).*

Hereby, extractivism essentially has a tendency to exploit remaining colonial infrastructures, reinforce dependency, exacerbate inequalities, displace local communities, undermine traditional, indigenous livelihoods and practices all the while driving environmental decline, effectively reflecting a power dynamic whereby the global north, historically shaped by colonial legacies and capitalistic tendencies continues to assert control and benefit from the (violent) extraction of resources while shifting the inevitable environmental burden to the global south (Acosta, 2013; Bruna, 2022).

Traced back to the 1500s, extractivism is deeply ingrained within the evolution of capitalism and colonialism focusing on economic efficiency and profit maximisation (Bruna, 2022). Intensified in the post-Paris agreement era, as the global north seeks to reduce its own carbon emissions at a rate equally unsustainable, extractive activities have been framed as a development and poverty reduction opportunity effectively externalising the climate issue

perpetuating a cycle of exploitation and environmental injustice reflecting a continuation of colonial and international power dynamics at grave expense of already vulnerable communities – an overextension of resource appropriation with differentiated distribution of benefits and burdens (Bruna, 2022; Nygren et al., 2022). Extractive industries particularly mining activities in the global south, exploits the legacies of colonialism where land rights are often insecure, facilitating the acquisition of land often also on sacred territories to indigenous communities forcibly displacing local populations which in turn disrupts social structures, cultural practices, traditional livelihoods, effectively creating a sense of grave injustice and loss which results in vulnerability and susceptibility to radicalisation to address perceived grievances through means of violence (Brown & Spiegel, 2019; Bruna, 2022). Environmental degradation and health impacts due to the severe environmental degradation ensuant to mining operations such as deforestation and logging activities, water and air pollution drive not only ecological decline but pose a significant health security crisis, a further radicalising variable as exemplified by the case of Nigeria's Niger Delta, whereby oil extraction activities have resulted in massive oil spills damaging ecosystems, contaminating water and food sources, impacting already vulnerable communities, currently acting as one of the five most polluted locations on earth. As a consequence, the region has witnessed substantial social unrest and insurgency, even piracy as a response to the grievances and alienation within the decision-making processes (Mateos, 2021).

The Tete and Cabo Delgado provinces of Mozambique for example, home to substantial natural gas reserves has embraced a new political economy focused on attracting transnational investment through incentives and tax breaks, particularly for energy infrastructure and projects, an economic model with distinct winners and losers, as a small elite benefit and are integrated into the global circuits of production while the majority face violent displacement and dispossession, socio-economic grievances and inequalities driving vulnerability

and susceptibility to radicalisation and recruitment for groups such as Ansar al-Sunna (Al-Shabaab) (Gebreslassie et al., 2022; Makonye, 2020; Vhumbunu, 2021). Similar dynamics are observed in India and Bangladesh, whereby coal production has been encouraged under the narrative of development when in fact characterised by forced land sales, dispossession, and violent mining induced displacement igniting fierce and violent protests. Hereby ecological threats likewise become amplified, while weak existing institutional infrastructures and colonial legacies serve as a continuation of these injustices (Brown & Spiegel, 2019). Corruption and weak governance, essential pillars of colonial infrastructure likewise drive and perpetuate grievances providing fertile ground for radicalisation and violence, an interplay of which can be seen in illegal gold mining activities in Colombia, whereby non-state actors and armed groups have taken advantage of existing grievances plaguing vulnerable communities (Deák, 2021; Vélez-Torres & Méndez, 2022). The Revolutionary Armed Forces of Colombia (FARC) have been at the forefront of illegal gold mining, exploiting mining operations, engaged in extortion and human rights abuses, while ISIS has funded much of their activities through the exploitation of oil fields in Syria and Iraq (Farmaki & Φαρμάκη, 2021; Le Billon et al., 2020). Water scarcity as a result of energy intensive processes have also been weaponised by non-state actors as a means of violent political participation. Such communities are further plagued by harsh labour conditions as the mining sector often exploits local labour, subjecting already vulnerable communities to hazardous conditions, low wages, and inadequate labour rights, not to mention the plethora of human rights violations and use of child labour (Widana, 2021). The Potosí region of Bolivia has seen a wave of violent, hazardous, and dangerous working conditions particularly for children in the name of silver extraction among other minerals, activities which equally have long-term implications as a denial of an education promotes social inequalities and hinders effective development (Lane, 2019). Overall, these examples highlight not only the direct implications of mining and extractivism but also showcase how these

in turn have a radicalising impact on vulnerable communities promoting not only commercial and state but also non-state violence.

Simultaneously, this provides a moment of opportunity for armed groups, militias, and insurgents to radicalise and recruit or to impose their force through a weaponised approach. In all of this, colonial legacies, corporate power, and multinational mining companies as well as non-state actors wield significant power and influence exempt from accountability for their actions, exploiting the vulnerabilities posed by the legacies of colonialism including, but not limited to, weak infrastructures, post conflict/independence socio-economic challenges and more which effectively exacerbate social inequalities as can be seen in the afore examples. These conditions have not only driven climate vulnerability with increasing ecological decline, but driven vulnerability and complex human security challenges ranging from social grievances, to lack of resource access and even incited violence, radicalising communities (Downey et al., 2010; Shapiro & McNeish, 2021). Extractive logics often also operate based on a binary narrative that pits ecological justice against human justice in terms of job creation and economic growth or in terms of resisting grievances. This logic however, invariably replicates (settler-) colonial logics, with indigenous communities, in particular, being excluded from conversations and decision-making processes concerning mining, while simultaneously establishing an ideal breeding ground for social unrest, radicalisation, and violence often at the expense of already vulnerable communities (Brown & Spiegel, 2019). Beyond this, taking climate colonialism, and the core of extractivism into consideration and the dangers and security implications these have, the ambition of the post-Paris demands for tackling climate change arguably likewise poses an extractivist threat. The energy transition has not only pertained to externalising carbon activities and 'unsustainable' mining but also advocated for clean and green alternatives aiming to negate climate change.

2.7 Sustaining violence?

Viviana & Castillo, (2019) conceptualise energy as a pivotal factor underpinning human and ecological interactions, intricately woven into societal dynamics. This acknowledgment places energy policies in a position of significance, as they reflect the appropriation and management of nature. Contemporary (green) energy planning, reminiscent of the historical colonial context, mirrors a focus on maximising exploitation and profit (Viviana & Castillo, 2019). Rather than incentivising reduced consumption, this approach often promotes capitalist overconsumption while invoking the guise of 'sustainability'. This comes at the expense of the global south, suggesting a lack of genuine commitment to mitigating or preventing climate change. Instead, it externalises and prolongs its implications, especially considering that those primarily driving this approach have yet to experience its severe consequences (Viviana & Castillo, 2019). Lempert & Nguyen, (2011) corroborate this viewpoint, contending that the insufficient emphasis on consumption reduction contradicts the principles of sustainable development. They argue that imperial cultures tend to exploit non-local resources at the cost of local communities, rather than adopting sustainable practices within their own resource framework. This is evidenced by the demand, consumption, and processes of extractivism of ostensibly 'cleaner' natural resources, which can assuage guilt over overconsumption in the global north without affecting substantial change (Lempert & Nguyen, 2011). The extractivist approach to energy transition raises concerns about unequal power dynamics, environmental degradation, and social injustices.

Over the years, mainstream climate crisis politics have transitioned from denial and inaction to a call for halting fossil fuels while concurrently fostering an uptick in carbon offsetting. This has led to a surge in carbon-heavy extractive industries, including those associated with the global south's abundant (rare)

resources (Le Billon, 2021). Interestingly, Le Billon,(2021) notes that the climate crisis has paradoxically exacerbated climate extraction, arguably legitimising ongoing capitalist and colonial exploitation. The notion of climate extractivism or green extractivism, a novel critical concept, underscores the paradoxes inherent in climate mitigation efforts. This concept centres on the extraction and production of materials for renewable and clean energy technologies, such as minerals for solar panels and wind turbines, encompassing large-scale renewable energy projects like hydroelectric dams and biofuel plantations (Bruna, 2022). Dunlap & Jakobsen, (2020) describe the assemblage that legitimates green extractivism as rooted in *'total extractivism'*. This involves deploying violent means to commodify and exploit everything, entrenched deeply within the ontologies and epistemologies of capitalism and colonialism. The notion of 'greening' provides the veneer of sustainability and partial justice. This becomes evident as the demand for rare minerals vital for the green energy transition, such as cobalt and lithium, has skyrocketed. Over the past decade, lithium demand has surged, particularly as a low-carbon alternative in the electromobility sector. However, this has led to a seemingly insatiable demand for a finite resource, exerting immense pressure for increased extraction, paradoxically making the entire concept unsustainable (Acosta, 2013; Garcés & Alvarez, 2020; Graham et al., 2021; Jerez et al., 2021; Ortiz et al., 2014). Cobalt, another critical rare mineral, is indispensable for a variety of applications, including batteries, jet engines, and importantly military technologies thus holding strategic importance, as a source of great power (Gulley, 2022). Instead of incentivising reduced consumption, 'green' extractivism has fostered overconsumption due to the demand for 'clean' and rapid solutions to the growing climate crisis. This paradigm has perpetuated extreme degradation, resource depletion, and local frustration, often side-lining indigenous and local communities (Bauer, 2015; Jerez et al., 2021). Amidst colonial and capitalist conquests, the natural and social environment of the global south has been subjected to extreme forms of violence and degradation.

This normalisation of overconsumption and hyper-extraction aligns with traditional extractivist logic intertwined with coloniality and arguably has been transferred on to 'sustainable development' (Lempert & Nguyen, 2011; Lyons & Westoby, 2014; Mahony & Endfield, 2018; Parson & Ray, 2018). These dynamics, coupled with the multifaceted implications of climate change and neo-colonialism, have potentially manifested in various forms of violence, akin to the extractivist logic of fossil fuels, thus unveiling the research gap within this context.

3. Chapter 3: Research Gap and Question

3.1 Research Gap:

As the afore review of the current state of literature has illustrated, capitalism, colonialism and neo-colonialism remain deeply intertwined while climate change in and of itself serves as a threat multiplier accumulating in a (colonial) climate-violence nexus, the manifestations of which are diverse and extensive. Equally these inform sustainability narratives, re-producing violent capitalist-colonial ontologies and epistemologies amalgamating climate injustice and extractivism motivated by infinite economic growth. While much of the political ecology and environmental security research envelops the various manifestations of climate colonialism, violence, climate justice and sustainability, with green extractivism emerging, the distinct relationship between green extractivism in the name of sustainability and climate violence, what I refer to as '*sustainable violence'* remains underexplored. This dissertation thus bridges these apparently disparate literatures, to establish whether the green extractivism of rare minerals particularly lithium and cobalt in the name of sustainability necessary to the green energy transition serves as an extension of climate colonial violence, thereby constituting a 'climate threat multiplier'. In this context, I question whether green alternatives challenge the trajectory of climate colonialism facilitating climate justice or instead serve as

an extension and reproduction of colonial violence and injustice under the helm of capitalist hyper growth. Without a climate justice and consumption reduction (de-growth) approach to sustainability and 'greening', this framework arguably will reproduce forms of violent dispossession ranging from cognitive, ontological, structural, and physical violence, merely externalising the climate challenges to a Global South with insufficient means to adapt accordingly. This research thus contributes to the study of political ecology by bridging recent work of climate colonialism, climate violence, sustainability efforts of green extractivism and de-growth considerations identifying how the liberal neo-colonial extractivist logics serve as tactic normalising contemporary capitalist-colonial relations as universally valid with green extractivism as a legitimate and necessary precursor to addressing climate change through a threat multiplier lens, my research question thus as follows:

Does the mining of rare minerals specifically cobalt and lithium under the helm of sustainability, necessary to the green energy transition constitute a 'climate threat multiplier?

4. Chapter 4: Theoretical Framework

The discourse surrounding climate colonialism encompasses a vast body of literature, intertwined with an array of pivotal theoretical frameworks including human security, political ecology, and decolonisation theory, to name a few. However, due to the specific scope delineated within this research, a deliberate selection has been made to concentrate on two particular theoretical paradigms. In light of the research's overarching goal to scrutinise the ramifications arising from one of the purported resolutions to the climate predicament – namely, the concept of "green extractivism" involving rare minerals as catalysts for the energy transition – with a particular emphasis on its potential to extend or materialise as an iteration of climate colonialism, the theoretical framework will

centre on the prism of *critical postcolonial climate justice and de-growth theory*. This focused approach seeks to illuminate the nuanced intersections between environmental justice, colonial legacy, and climatic concerns, rendering the theoretical discourse insightful and uniquely tailored to the research's specific objectives.

4.1 Climate Justice

Within the intricate tapestry of global challenges, climate justice emerges as a linchpin that underscores the ethical and moral dimensions enmeshed in the climate crisis. Rooted in the pursuit of rectifying the disproportionate burden shouldered by marginalised and vulnerable communities due to the adverse consequences of climate colonialism and environmental decline, climate justice bears profound significance (Below, 2019; Sultana, 2022). At its core, it emphasises spatial and temporal considerations in the form of geographic factors and intergenerational equity and historical responsibility as essential principles in redressing the exacerbated inequities arising from the climate conundrum. By accentuating equitable distribution of environmental benefits and burdens, climate justice invites an incisive analysis of the socio-political dynamics that underlie resource extraction practices (Sultana, 2022). Sultana's, (2022) nuanced articulation further delineates the tenets of climate justice, casting light on its instrumental role in discerning and rectifying injustices stemming from anthropogenic climate change. This strategic approach entails meticulous scrutiny of those marginalised or excluded from discourse surrounding climate change processes, alongside the exploration of interventions that seek to mitigate its far-reaching effects. The global landscape resonates with the inequitable distribution of climate impacts, echoing the call for a common yet differentiated responsibility. This clarion call highlights that the communities least responsible for precipitating climate change often find themselves ensnared in its most adverse repercussions. This unsettling reality,

as Davis & Todd, (2017)underscore, highlights the need to address the historical legacies and contemporary dynamics perpetuating these inequities, while calling for inclusion in the processes rectifying these. A lack of inclusion of those most adversely affected in climate strategies and projects invites an exclusion of valuable information, ideas, and proposals, insights which only communities impacted can provide insight into (Bhavnani et al., 2022; Sultana, 2022; Yusoff, 2018).

Peering through the lens of climate justice, the necessity to identify prevailing injustices and address their root causes emerges as a quintessential step. Such a trajectory underscores praxis, characterised by the harmonious interplay between theoretical reflection and practical implementation. The ethos of critical climate justice praxis hinges on systemic transformation, seeking to dismantle the structural inequities that underpin power dynamics perpetuating climate injustices. Equity, therefore, emerges as a guiding beacon, charting a course toward actions that alleviate and eliminate harms while embodying the core values of climate justice through tangible political action and solidarity (Sultana, 2022).Acha, (2022) discerning observation accentuates that while climate justice resonates with justice and equity, it requires the incorporation of feminist and post-colonial perspectives to attain its full potential. These critical viewpoints amplify the discourse, unveiling interconnected inequities and highlighting nuances that might otherwise evade the gaze of conventional analyses. The amalgamation of critical postcolonial and feminist analyses engenders a deeper understanding of the intricate tapestry of climate injustices, affording a holistic approach to confront these multifaceted challenges (Acha, 2022; Sultana, 2014, 2022). Integrating climate justice with the realm of extractivism demands a more profound exploration, delving into the complexities of racial capitalism, colonial legacies, and indigenous erasure. In this context, a holistic framework that harmonises these theoretical paradigms becomes indispensable (H. Davis & Todd, 2017; Sultana, 2021, 2022). The

symbiosis of these theories arguably furnishes an intellectual infrastructure to navigate the emerging and evolving notion of 'sustainable violence' within the domain of green extractivism.

In the intricate dialectic between climate justice and extractivism, the focal point transcends environmental exploitation. It extends to the ramifications of historical injustices that propel marginalised communities toward the precipice of exacerbated vulnerabilities. Within this crucible, climate injustices assume the guise of slow, protracted violence against racialised and impoverished societies across the global south (Sultana, 2022). The impact of racial capitalism and colonialism further compounds these climate injustices, with historical legacies rendering individuals disproportionately vulnerable to climate-induced adversities. In this crucible, the lived experiences of climate injustice bear testimony to the recurring cycle of differential marginalisation, underscoring the imperative of nuanced and contextually-sensitive climate justice interventions including sustainable or green transitions (Gonzalez, 2021).Climate justice equally serves as a framework that highlights the intersection of experience of social inequalities as structural violence (Brown & Spiegel, 2019; Porter et al., 2020). The absence of climate justice can thus arguably act as a catalyst, amplifying grievances and perpetuating cycles of violence. This is particularly evident when considering the intricate web of interconnected vulnerabilities. The lack of justice can arguably accentuate and aggravate pre-existing inequalities, fostering a breeding ground for discontent, conflict, and even violence. In this context climate justice serves as a buffer against the amplification of these grievances, offering a framework through which the complex web of environmental, social, and economic vulnerabilities can be addressed comprehensively.

As the canvas broadens, the investigation turns to whether green extractivism becomes a threat multiplier in this dynamic landscape. The concept of a "threat

multiplier" reflects the capacity of specific factors, such as social inequalities and environmental vulnerabilities, to magnify the overall risks associated with climate change (Below, 2019). In this context, the interplay between climate justice and green extractivism takes centre stage, raising pertinent questions regarding the potential for green extractive practices to exacerbate pre-existing injustices, heighten grievances, and escalate the propensity for violence.The intricate synergy between extractivism and climate justice arguably hinges on the symbiotic relationship between historical legacies, power dynamics, and environmental degradation. Green extractivism, often touted as a sustainable alternative, thus must be scrutinised through a climate justice lens to ascertain whether it addresses historical injustices and socio-economic disparities. Failure to do so arguably could render green extractivism a catalyst for conflict, further perpetuating existing challenges. The extractive industries, if not subjected to stringent climate justice considerations, could inadvertently trigger a ripple effect that worsens disparities, fans the flames of social discontent, and catalyses violent upheavals.

The dynamics of threat multiplication within the context of green extractivism and climate justice invite meticulous analysis. A lack of inclusion of marginalised voices in the discourse surrounding extractive practices could compound existing inequalities, thereby intensifying grievances and deepening divisions. The absence of effective problem-solving mechanisms further exacerbates vulnerabilities, providing fertile ground susceptibility to radicalisation and violence. Green extractivism, if unchecked by the principles of climate justice, could indeed act as a threat multiplier, amplifying existing challenges and potentially igniting new conflicts. Overall, climate justice's significance in confronting the multifaceted challenges of the climate crisis cannot be understated. Its principles of equity, historical responsibility, and transformative praxis provide a robust foundation to address disparities and foster resilience (Sultana, 2022). Integrating feminist and post-colonial

perspectives enriches the discourse, unearthing obscured injustices and broadening the horizons of potential solutions (Acha, 2022). Within the realm of extractivism, the symbiosis between climate justice and green extractivism requires thorough scrutiny to assess its potential as a threat multiplier. The nexus between extractivism and climate justice, if not approached with due consideration, could inadvertently compound existing challenges, magnify grievances, and foster a climate conducive to violence. As this research navigates the complex interplay between environmental preservation and social justice, the path forward necessitates an unswerving commitment to climate justice principles, offering a beacon of hope for a more equitable and sustainable future.

4.2 De-Growth Theory

Climate colonialism, as the extensive review of the literature has revealed, manifests in diverse forms, exploiting and exacerbating new and pre-existing vulnerabilities while perpetuating patterns of violence. The historical trajectory of extractive industries is intricately woven with practices that give rise to a multitude of human security challenges, amplifying complex entanglements that ensnare societies worldwide (Bruna, 2022, 2023; Dunlap & Jakobsen, 2020). At the crux of these practices lies an insatiable hunger for more—more capital, more wealth, more power—ultimately over valuing excessive growth over the sanctity of human and environmental well-being. This insidious pursuit of infinite growth, as has been extensively underscored, arguably perpetuates a devaluation of life, favouring material accumulation over fundamental rights and sustainability. However, the pursuit of justice within the realm of climate change necessitates a broader reconsideration beyond human rights alone, transcending the confines of mass consumption and dependency, and encompassing profound shifts toward care-oriented paradigms (Di Chiro, 2019). Amidst the discourse on climate justice, a clarion call for care and

communal well-being emerges as an alternative to the prevailing ethos of relentless growth, embracing the principles of post-colonial and feminist ethics of care and solidarity. Scholars like Clement et al., (2019) and Di Chiro, (2019) advocate for a departure from the eco-neoliberal logic embedded in capitalist notions of growth and consumption. Even well-intentioned climate policies can inadvertently reinforce structural inequities, perpetuating a capitalist agenda driven by imbalances of power, leading to eco-neoliberal outcomes. Di Chiro,(2019) cogently articulates the need to prioritise the mitigation of poverty and suffering alongside climate change, intertwining human rights with economies dedicated to nurturing communities and environments. This ethos of a 'solidarity economy' propels cooperation, reciprocity, and compassion, striving for transformative justice to dismantle unjust systems and ideologies. As Di Chiro, (2019) aptly states, "We need to put caring about worsening poverty and immiseration at the top of the environmental policy agenda if we are truly serious about caring about the devastating implications of climate change" (Di Chiro, 2019, p. 304). Di Chiro's (2019) perspective builds on human rights approaches and indigenous theories, advocating for economies and systems dedicated to 'caring' for both people and the environment. This framework, known as the 'solidarity economy,' champions values such as cooperation, reciprocity, and compassion, with the goal of dismantling unjust systems and fostering holistic transformation (Di Chiro, 2019; Kawano, 2018).

Di Chiro's, (2019) proposition, though significant, might be approaching a critical juncture where more robust strategies are imperative to address the escalating inequality and systemic challenges that plague contemporary society. The global community finds itself grappling with a multidimensional crisis, characterised by eroding democratic values, escalating inequality, and an alarming degradation of the environment. This convergence of crises, often regarded as an inescapable fate, however, I posit is fundamentally a choice, as these grievances are not predetermined inevitabilities but rather one borne of

greed. The prevailing economic growth model, fuelled by the assumption of sustained economic expansion as a panacea for development, perpetuates rampant environmental exploitation, while simultaneously devaluing essential reproductive and care work, particularly that undertaken by women and marginalised groups. The very notion of growth is fraught with misleading connotations, obscuring the unmonetised contributions of marginalised populations and the intrinsic values that fuel societal progress (Daly, 1997; Demaria et al., 2013; Dengler & Lang, 2022; Dengler & Seebacher, 2019).

In this intricate matrix of complexities, the potential of post-colonial and feminist degrowth theories emerges as a liberating force. These perspectives, historically relegated to the periphery, dismantle the hegemonic colonial economic growth model and Keynesian economics, compelling an emancipatory comprehension of structural disregard for care and sustainability. Their integration into the discourse is vital, as they lay the groundwork for reimagining a holistic economic framework, where care, sustainability, and equity take centre stage beyond. Embracing such paradigms allows for the formulation of an approach that resonates with environmental action and policy informed by the principles of care economics (Dengler & Lang, 2022; Dengler & Seebacher, 2019). Central to this recalibration is the concept of de-growth, a transformative movement seeking to challenge the dominant growth-centric economic paradigm. As the world grapples with the adverse consequences of unbridled consumption and relentless production, de-growth theory positions itself as a transformative agent that confronts and disrupts the status quo. Its foundational premise lies in the understanding that unrelenting economic expansion is inherently at odds with ecological sustainability, a stark contrast to the notion of sustainable development (Demaria et al., 2013; Nirmal & Rocheleau, 2019). De-growth challenges the conventional wisdom that equates well-being with material wealth and instead proposes a shift towards sufficiency and equality, where societal flourishing is decoupled from ceaseless

accumulation. Inherent in this paradigm shift is the assertion that environmental sustainability hinges on the recalibration of socio-economic structures driving consumption, particularly within resource extraction industries. The juxtaposition of de-growth theory and climate justice calls attention to the implications of extractive practices and their far-reaching consequences within the broader tapestry of sustainability (Daly, 1997; Nirmal & Rocheleau, 2019).

As I interrogate the interface between de-growth and the phenomenon of green extractivism, a profound lens emerges, one that scrutinises whether such endeavours indeed pave the path toward ecological and social transformation or inadvertently perpetuate the cycle of colonial-capitalist violence. Given the persistence of systemic challenges and the amplification of grievances, a lack of radical societal, political, and economic change might inexorably lead to a perpetuation of violence against human and natural life. In this context, an in-depth analysis of the interplay between de-growth and green extractivism is pivotal, as it unravels whether these initiatives bear the potential to transcend historical cycles of violence or inadvertently contribute to their perpetuation.

Overall, the spectre of climate colonialism looms large, and its manifestations underscore the urgency to rethink prevailing economic paradigms. Within this milieu, de-growth and the reintegration of marginalised perspectives emerge as transformative tools that can potentially dismantle structural injustices while a lack thereof can only foster violence.

4.3 Synthesis: Merging Climate Justice and De-Growth to navigate green violence

The convergence of climate justice and de-growth theory within this theoretical framework arguably yields a powerful lens to discern the potential emergence of 'sustainable violence' inherent in (green) extractivism. Climate justice lays

bare the vulnerabilities of marginalised communities, while de-growth theory interrogates the extractive practices fostering ecological degradation. This synergy casts light on the intricate interplay between resource extraction, environmental degradation, and social equity. Delving into the harmonious interplay and potential tensions of these paradigms offers a unique vantage point to evaluate whether the absence of their principles paves the way for violence. The realm of climate justice is characterised by its deep-rooted emphasis on rectifying imbalances borne by marginalised communities due to climate colonialism and environmental decline. Geographic factors, historical responsibility, and intergenerational equity form the bedrock of its principles, aiming to address the disparities stemming from climate challenges while the resonance for shared responsibility underscores that those least accountable endure its most severe consequences (M. Davis, 2013; Sultana, 2022). In tandem with climate justice, de-growth theory offers an alternative narrative by challenging the prevailing ethos of unrelenting growth. It champions the principles of care and communal well-being over relentless material accumulation, while advocating for an economic paradigm rooted in nurturing communities and the environment (Clement et al., 2019; Dengler & Lang, 2022; Di Chiro, 2019; Kawano, 2018). Synthesising the insights of climate justice and de-growth theory not only enriches our understanding of the climate crisis but also offers a unique vantage point to explore the potential for violence arising from green extractivism. The intricate interplay between climate justice and green extractivism hinges on historical legacies, power dynamics, capitalist demand, and environmental decline. By subjecting green extractivism to the rigorous principles of climate justice and de-growth and discerning the synergies between these paradigms, this research aims to ascertain whether the absence of their principles and considerations might inadvertently cultivate conditions conducive to violence. This analysis transcends the mere juxtaposition of ideas; it delves into the consequential effects of their absence and the implications it bears for the manifestations of violence arguing that

without robust climate justice and de-growth considerations, green extractivism could in fact act as a catalyst for conflict, accentuating pre-existing grievances and deepening the propensity for violence.

Through the confluence of climate justice and de-growth theory, this research aims to unveil a potent perspective on the potential pathways to 'sustainable violence' within the realm of green extractivism. The discourse transcends the boundaries of theory, delving into the heart of their interplay to assess whether their absence fosters a climate where violence thrives. This synthesis thus serves as a pivotal lens, offering insights into how the amalgamation of climate justice and de-growth theory reframes our understanding of violence's complex tapestry and unveils the potential routes through which it may unfold in the context of green extractivism.

5. Chapter 5: Research Design and Methodology:

5.1. Research design

Given the nascent nature of this subject, the investigation into the role of green extractivism as a potential threat multiplier, the adoption of a large-N quantitative research approach was excluded due to both limited data availability and the constraints inherent to this study, encompassing issues of accessibility and scope. Given the intricate nature of various injustices, exploitation, and their multifaceted dimensions, alongside the integration of concepts relating to de-growth and the economics of care, a qualitative approach was deemed more appropriate for the present circumstances and thus chosen as the preferred method.

Initially, the research was envisioned to encompass a comparative analysis of the focal subject matter, aiming to shed light on two distinct rare minerals and

their potential implications. However, constrained by the word limit, the secondary case study was regrettably omitted from the main body and instead appended for the readers' reference. Instead, a singular case study was subsequently embraced to provide an in-depth and nuanced exploration of the subject matter, ensuring a detailed approach. In this specific context, the research design qualifies as an exploratory case study, a methodology characterised by its purpose to unveil and understand a novel phenomenon. Focused on the empirical initiation into the structure, dynamics, and contextual intricacies of the subject, exploratory case studies serve to formulate hypotheses and or address research questions for more focused and profound inquiries (Chopard & Przybylski, 2021). While green extractivism has been investigated across various contexts, the aspect of its role as a potential threat multiplier remains understudied. The exploratory case study framework aptly facilitates an exhaustive comprehension of the multifaceted interplay of factors within the phenomenon being examined. By concentrating on a particular case, this design enables a comprehensive grasp of the distinct socio-political, economic, and environmental dynamics at play, while contextualising historic, political, and current dimensions.

5.2. Methodology

The chosen research method will entail a case study method combined with secondary data analysis method. The case study research method, involving the examination of previous studies and reports, offers a robust framework for delving into and comprehending intricate issues. It proves particularly effective when a comprehensive and in-depth exploration is required. This method transcends mere quantitative statistical investigations, enabling researchers to grasp the behavioural intricacies of a phenomenon and expound upon its process and outcomes. By meticulously observing, reconstructing, and analysing the cases under scrutiny, researchers gain a profound understanding (Tellis, 1997;

Zainal, 2007). Case study research allows for a meticulous scrutiny of data within a specific context, often focusing on a limited geographical area or a select group of individuals. Essentially, it involves the thorough analysis of real-life phenomena, their interrelationships, and contextual conditions (Zainal, 2007). As articulated by Yin, (2009, p.18) the case study method is an "empirical inquiry which investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomena and context are not clearly evident and in which multiple sources of evidence are used". Thus, making this an ideal method to apply in this instance. Furthermore, secondary data analysis will be employed which follows a procedure of secondary data collection, in order to conduct research with a different purpose from the original context of the data use. This includes data obtained from surveys, records, official statistics, academic studies and more (Bookstaver, 2021). In this instance, given that this is a novel consideration and approach to green mining, and has an approach of several overarching and interdependent variables, this approach is particularly useful as data can be carefully selected, extracted, and triangulated to provide a holistic and in-depth approach to this investigation.

Threat Multiplier:

The core of this research sets out to determine whether sustainable solutions to the climate crisis, specifically whether the green extractivism of rare minerals crucial to the green energy transition serve as threat multipliers. For the purpose of this research this will therefore be termed '*green threat multipliers'*. Although lacking a formal definition, the term '*threat multiplier'* has been employed across diverse realms of security contexts ranging from technology to politics, demographics, health (pandemic) and climate change to characterise phenomena that increases the magnitude of existing threats, thereby exacerbating the risks and challenges faced by a state, organisation, or

population. Given the lack of official definition, inferences from several scholars such as Dodson et al., (2020), Lekunze, (2020), Sprague et al., 2022, Warren, (2023) were drawn to provide a conceptualisation of the term and provide an understanding thereof.[1] Within the field of security, understanding and analysing threat multipliers assists policymakers, researchers, and professionals to understand and recognise the complex dynamics and interdependencies that shape contemporary security challenges while stakeholders are able to enhance their ability to develop comprehensive and effective strategies for mitigating and managing these. Climate change for example, constitutes a threat multiplier, as it exacerbates existing challenges and creates new risks. Frequency and intensity of extreme weather events damages infrastructure, disrupts ecosystems and essential ecological services such as pollination or carbon sequestration which can have cascading effects on food production, water quality and more impacting human well-being (Huntjens & Nachbar, 2015; Lekunze, 2020; Yackle, 2007)(Huntjens & Nachbar, 2015; Lekunze, 2020; Yackle, 2007). As climate change as a threat multiplier envelopes so many different dimensions, establishing whether its solution equally constitutes as such, becomes crucial to determine. To determine this, a specific operationalisation will be applied.

5.3. Operationalisation, Measurement and Data

Several criteria have been selected to operationalise and measure whether or not the green extractivism of cobalt can be considered a threat multiplier and have been included in the Table 1 below for overview.

[1] Important to note is that the following stems from inferences drawn from the afore scholars among knowledge accumulated throughout my tertiary education.

Table 1: Operationalisation Criteria, Description and Data (own computation)

Criteria	Description	Data
Historic Context	Understanding the historical context of colonialism, its influence on extractivism and the contemporary security context and development.	Historical academic literature.
Resource Context	Analysing mineral's importance, supply and demand, market data.	Reports, market reports, databases (IEA).
Environmental Implications	Examining environmental vulnerabilities, adaptivity and implications such as pollution/contamination.	Country/resource reports, World Bank data, ND-Gain data, academic sources.
Economic Factors	**Macroeconomics:** Analysing the economic model, context, and resource dependency **Development economics:** Assessing resource dependency, economic inclusion/redistribution	World Bank; AfDB data; reports.
Social and Human Rights	Investigating the social and human rights contexts, abuses and injustices.	Academic sources, UN/NGO reports (Amnesty International): ACLED database.

Overall, this research framework has no concrete timeline as the criteria are overarching (i.e historic variations, data availability etc.), therefore, data available and useful for this framework will be used, and timeframes will be indicated. For most of the data regarding resource, economic and social and human rights data, data as recent as possible was chosen. The reason for this specific choice was to (1) *provide current insight into the case*; (2) *the green energy transition is relatively new* (as of 2015 if we consider a post-Paris transition), thus taking time inflation into consideration, implications and insights including data available is relatively recent.

5.4. Validity and Reliability:

Data collection and procedures:

As this research is within an emerging field, there is limited data readily available, while the gathering of primary data within the scope of this research was equally limited. Given the security context of the selected case, and limitations I had as a student, in-person data collection was not feasible. Several organisations (NGOs, government bodies, international organisations) were contacted in the initial phase of this research, to conduct interviews however with no response. The scope of this research will thus rely solely on the use of existing secondary data. The data for each variable has been included in the operationalisation but equally will be mentioned throughout the analysis, as each variable has several sources. Data useful for the respective variables was also aggregated using specific databases and indicators. By cross-referencing information from various diverse sources, different perspectives providing valuable comprehensive insight into the multifaceted relationship, is provided. This approach thus serves to bolster the validity and reliability of the research findings contributing to a more comprehensive and nuanced analysis.

5.5. Limitations and mitigation strategies:

Overall, this research is not without limitations, and these must be considered within the framework of the analysis and are included in Table 2 for ease of oversight.

Table 2: Limitations and Mitigation Strategies (own computation)[2]

Limitation	Reason for limitation	Mitigation Strategy
Data availability	Emerging field with limited accessible data sources.	Various comprehensive data sources will be used while providing transparent reporting on data gaps or potentially compounding factors.
Data quality	Potential data collection biases.	Various reputable, well-established data sources will be prioritised, with cross-validation of information when available.
Scope and generalisability	Focus on one specific case study, results here may differ in another context. Inferences and insights may be transferred but transferability is limited.	Data triangulation and contextual information to enhance the robustness of the findings.
Causality and Correlation	Causal relationship between green extractivism and threat multipliers is challenging due to confounding variables. While correlations may exist, proving causation is limited.	Contextual information and confounding factors will be included where need be.
Temporal limitations	Environmental and social dynamics are constantly evolving in addition to data time gaps, or is subject to research timeframes	Will prioritise recent data, sources while acknowledging potential limitations due to data and research timeframes.
Complexity of threat criteria	External factors	Contextual information will be provided and external factors considered.
Reflexivity	As a woman of colour from sub-Saharan Africa, maintaining neutrality will be difficult.	Maintenance of a reflexive journal, to acknowledge and mininmise potential bias.
Scope	Word limitation.	Case study 2 as supplemental appendix.

[2] Colour differences were chosen to highlight the negatives (limitations) and positive (mitigation).

Overall, through meticulous and extensive research and procedures to address limitations and reflexivity, this research is aimed to enhance the reliability of the findings through transparency and critical engagement with the topic. This research as mentioned is not without limitations, nonetheless, serves as a valuable contribution to bridge a gap and potentially encourage subsequent research within this emerging field. There is a need for large scale quantitative data pertaining to green extractivism in general but also specifically relating to the security implications these may pose to provide general insights into the practices which in addition to qualitative analyses such as these can serve to provide contextual and specific insights.

5.6. Justification for Case Study Selection: The Democratic Republic of the Congo

Initially this research set out to explore the dynamics of lithium and cobalt as the rare minerals catalysing the green transition. Given the amount of evidence a specific decision was made to instead focus on one case study to explore more in-depth the implications green mining has. The Democratic Republic of the Congo (DRC) as case study in this research is underpinned by its significant role as cobalt capital within the global context of resource extraction, environmental dynamics, and socio-economic complexities. Firstly, from a regional perspective this case offers a distinct and informative perspective that aligns closely with the research objectives of exploring the intersections of climate justice, de-growth theory, and the potential for threat amplification arising from green extractivism. Focus will hereby be placed as much as possible on the specific mining regions, in this case Katanga and eastern regions of the DRC.

The DRC, particularly the Katanga region, presents a highly complex yet compelling case study due to its pivotal role as a central cobalt supplier—a vital

component of modern technology, including renewable energy infrastructure and electric vehicles. The historical legacies of resource exploitation, coupled with complex power and regional dynamics including economic and environmental challenges, offer a rich context for investigating the potential for threat amplification linked to green extractivism. This case study aligns with the research's aim to ascertain whether the absence of genuine climate justice and de-growth principles in resource management exist and whether these can contribute to the exacerbation grievances within the extractive industry. The DRC's case also highlights the intricate relationship between environmental decline, resource demand, and the implications for sustainable development. Overall, the selection of the DRC as a case study is a deliberate choice aimed at analysing and illuminating the intricate dynamics of resource extraction, climate justice, de-growth, and the potential for (structural) violence. This case provides invaluable insights into the multifaceted dimensions of green extractivism, enhancing the depth and significance of this research contributions to the fields of environmental studies and conflict analysis.

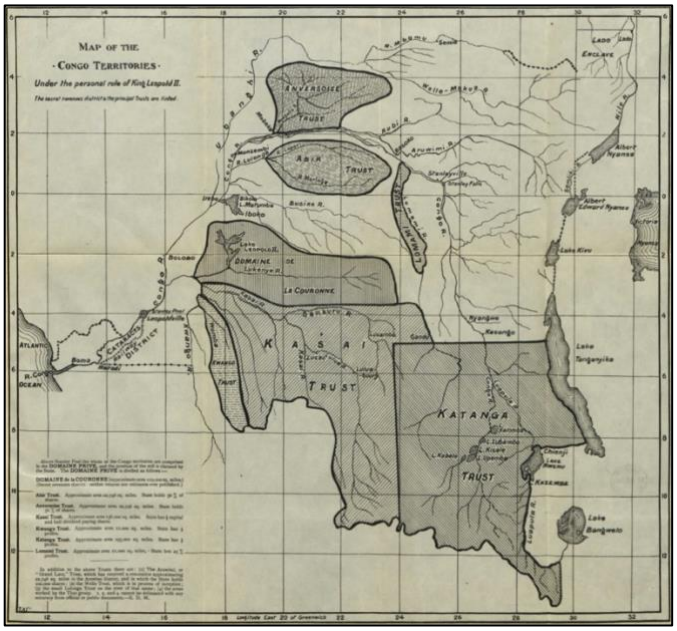
6. Case Study: A pot of Cobalt – Sustaining Katanga's Violence?

6.1. Historic Context:

6.1.1. Colonial Period:

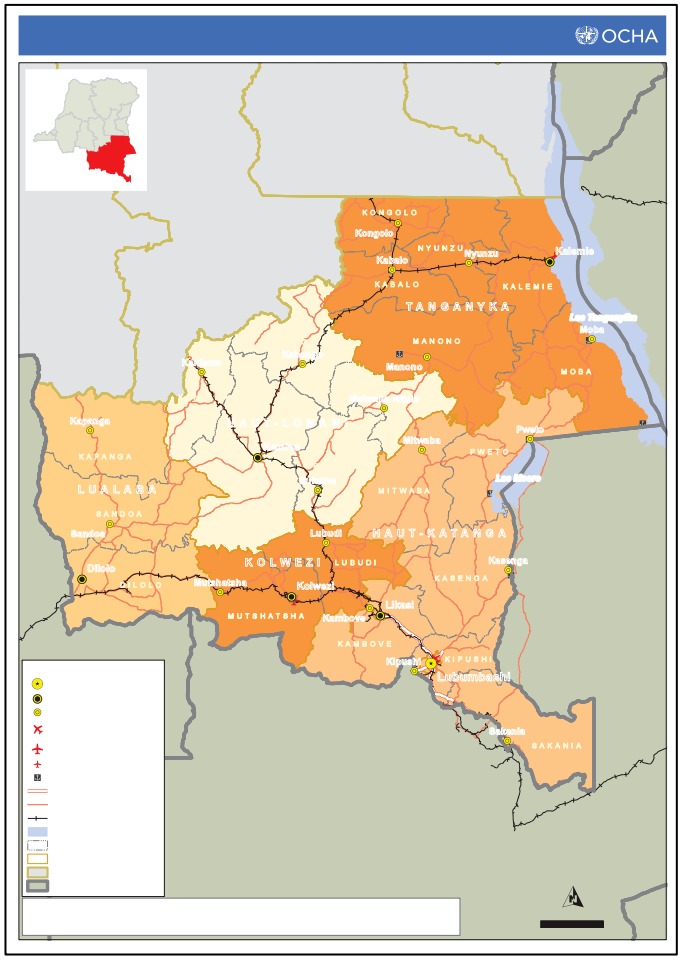
The historical narrative of Katanga's mining evolution is inextricably intertwined with its colonial legacy, which originated in the late 19th century under the dominion of King Leopold II of Belgium. Assisted by the British explorer Henry Morton Stanley, Leopold established the Congo Free State (CFS) to the north of Katanga. Despite the local Chief's attempts to impede colonial forays, the region's abundant copper resources and promising gold prospects attracted significant attention, culminating in the Stairs Expedition to Katanga and the assassination of the local Chief Msiri in 1891. King Leopold II formally asserted control over Katanga on the 15th of April 1891, placing the resource-rich territory under the stewardship of his enterprise, the "Compagnie du Katanga." The trajectory from the CFS to Katanga bore witness to the ruthless exploitation of minerals through forced labour and egregious violence inflicted upon the local populace (refer to Map 1 for a visual representation) (Nzongola-Ntalaja, 2021; Stanard, 2013).

Map 1: Map of the Congo Territories under personal rule of King Leopold II (Map of the Congo Territories—Under the Personal Rule of King Leopold II, 1904)



The initial administrative framework established to govern Katanga emerged only in the early 20th century, spearheaded by the Comité Spécial du Katanga—an administrative entity distinct from the CFS. Despite concerted resistance from the indigenous Luba communities, notably marked by a significant rebellion in 1896 after Luba populations were subjected to enslavement in Katanga's copper mines, the Belgian government assumed control over the CFS in September 1910. This transition was precipitated by the profound brutality, enslavement, and violence inflicted upon the local population under King Leopold II's private rule. Katanga, henceforth, became an integral part of the Belgian Congo while retaining a degree of regional autonomy (Nzongola-Ntalaja, 2021). Once Katanga was firmly entrenched under Belgian authority, its mineral wealth became a focal point for intensive exploitation by Belgian enterprises. In 1914, substantial deposits of copper ore rich in cobalt were first uncovered by the Belgian firm Union Minière in the southern expanse of the Belgian CFS, corresponding to present-day Haut Katanga (see Maps 1 & 2 for ease of reference) (Gulley, 2022).

Map 2: Province du Haute Katanga – Carte Administrative (Reference Map - Province Du Katanga - Carte Administrative, 2012)



Capitalising on this opportunity, the province underwent pronounced development compared to the rest of the country. As mining activities intensified, the Belgian mining consortium employed a combination of contract mercenaries and hired guards to quell local resistance and ensure the extraction and transport of minerals and commodities. The Luba people, a core component of the local populace, frequently contested and disrupted mining operations, often facing brutalisation, torment, enslavement, and even death. The high demand for labour in the mining sector translated into not only the enslavement of indigenous populations but also the abduction of individuals from neighbouring regions and countries, including Zambia to facilitate the workforce (Nzongola-Ntalaja, 2021). Notably, Belgian colonisation in this

region has been recognised as one of the most extreme manifestations of colonial violence. The arduous conditions of forced labour in plantations and mines subjected local communities to severe physical and psychological suffering, including amputations and mass killings for non-compliance or failure to meet production quotas. These adverse circumstances equally facilitated a staggering loss of life due to diseases, malnutrition, and exhaustion (Nzongola-Ntalaja, 2021; Stanard, 2013).

6.1.2. Independence – the Congo Crisis:

A protracted and intricate series of events, influenced by both local and international dynamics, unfolded as part of the backdrop of anticolonial movements, ultimately culminating in the attainment of independence in June 1960. At the forefront of this struggle for autonomy stood Patrice Lumumba, an influential and charismatic leader who spearheaded the movement for independence. Lumumba's resolute pan-Africanist and anti-colonial stance, however, posed a substantial threat to vested colonial interests and great power politics (Nzongola-Ntalaja, 2014; Nzongola-Ntalaja & Husaini, 2020). In response, these interests orchestrated the sowing of seeds of ethnic and resource-based distrust between the administration of Katanga and Lumumba's emancipation movement. Notably, western colonial, particularly Belgium, facilitated and orchestrated the eruption of a violent secessionist movement in Katanga, under the leadership of Moise Tshombe. Lumumba, with foreign backing, notably from Belgian quarters, was ousted and deposed in a coup (Langer, 2014; Nzongola-Ntalaja, 2011, 2021). Subsequently, he was apprehended and handed over to the secessionist factions in Katanga, leading to his eventual assassination, aided by external forces. The aftermath of Lumumba's demise plunged the political landscape into a maelstrom of volatility and complexity. The region and the nation grappled with a succession of power struggles, leadership transitions, and foreign interferences, ushering in

a turbulent period. The secession, violent ousting and assassination in this period is frequently referred to as the "Congo Crisis" (Gulley, 2022).

6.1.3. First Congo War and the Cobalt Crisis:

Following Lumumba's assassination, Joseph Desire Mobutu, a pivotal figure in Lumumba's removal from power, proceeded to solidify his authority by orchestrating a violent military coup in 1965. This marked the inception of an authoritarian regime in the DRC characterised by severe repression of political opposition, extensive state control, and a rebranding of the nation as Zaire (Gulley, 2022). In 1967, a significant development unfolded as the mining industry underwent nationalisation, giving rise to the state-owned mining enterprise known as Gécamine. Regrettably, corruption and mismanagement plagued this state-owned venture, contributing to economic instability within the country (Gulley, 2022; Nzongola-Ntalaja, 2021). This era bore witness to what has come to be known as the 'Cobalt Crisis' in the DRC, which intriguingly became intertwined with the dynamics of the Cold War. In 1975, the mining sector endured a setback when the primary export route for DRC commodities, the Benguela railroad, suffered damage in Angola due to the actions of rival factions (supported by Western powers) in the midst of the Angolan Civil War. Consequently, DRC exporters were compelled to utilise subpar alternative transportation routes. Once repairs were made to the rail line, the Angolan government (backed by the Soviet Union) denied the DRC access, owing to Mobutu's support of Angolan rebels (Kisangani, 2012). As a result, DRC's cobalt production dwindled, leading to a substantial decrease in global cobalt reserves between 1975 and 1977, with a significant portion being procured by the USSR in 1982. The subsequent occurrence of two conflicts, Shaba I in 1978 and Shaba II in 1979, further aggravated the situation in Katanga. These conflicts erupted when secessionist forces infiltrated the region from the USSR-backed Angola. Strikingly, despite the turmoil, cobalt production managed to

increase. Western apprehensions about the Soviet Union potentially dominating the cobalt market spurred a sharp rise in cobalt prices in 1979 (Gulley, 2022). Mobutu's military apparatus inflicted terror upon the Katanga population for their perceived support of rebels, prompting thousands of ethnically Lunda individuals to seek refuge in neighbouring Angola and Zambia. A significant proportion of these refugees were skilled personnel employed within the mining sector, thereby exacerbating the labour shortage (Kisangani, 2012). Notwithstanding the pervasive repression and the tumultuous Cobalt Crisis, Mobutu's regime persisted for three decades, sustained through a blend of suppression, patronage, and international backing. However, the early 1990s witnessed a culmination of repression and human rights abuses, ushering in a tipping point where the pressure for political change could no longer be disregarded. Internal dissent and external pressure converged to bring about the downfall of Mobutu's rule. The onset of the First Congo War (1996-1997) marked a watershed moment, as rebel forces led by Laurent Désiré Kabila succeeded in toppling Mobutu's government, subsequently elevating Kabila to the presidency (Gulley, 2022).

6.1.4. Second Congo War:

Upon assuming the presidency in 1997, Kabila undertook the task of rebranding the nation as the Democratic Republic of the Congo. However, his tenure was swiftly characterised by a display of autocratic inclinations, accompanied by an array of challenges stemming from the nation's historical instability and violent past (Gulley, 2022; Nzongola-Ntalaja, 2021). Subsequently, in 1998-2003, the second Congo War erupted, a conflict often referred to as the Great War of Africa. This multifaceted conflict drew in multiple nations, foreign military forces, and armed factions, leading to a wide-scale eruption of violence, mass displacement, and tragic loss of life, the deadliest conflict since World War 2. The roots of this conflict are intricate, influenced by the legacies of colonial

racial categorisations and spatial divisions. These elements contributed to the exacerbation of ethnic tensions, competition for valuable resources, and regional power struggles (Huening, 2009). Within the context of Katanga, the conflict retained a resource-driven nature, wreaking havoc on the region. Various armed groups seized control of strategic mining zones, harnessing mineral exploitation as a means to finance the ongoing conflict. This dynamic sustained a self-perpetuating cycle of violence and instability within the region. Historical antecedents cast a long shadow over this turmoil. During the colonial era, Belgian authorities employed a "divide and conquer" strategy to sustain control, systematically imposing ethnic and regional divisions referred to as ‘ethnogovernmentality’. This approach favoured certain groups while manipulating rivalries to serve colonial interests. This insidious tactic laid the groundwork for enduring tensions and conflicts, which continue to reverberate in Katanga and beyond (Hoffmann, 2021; Nzongola-Ntalaja, 2021; Welsh, 1996)(Hoffmann, 2021; Nzongola-Ntalaja, 2021; Welsh, 1996).

6.1.5. 21st century DRC:

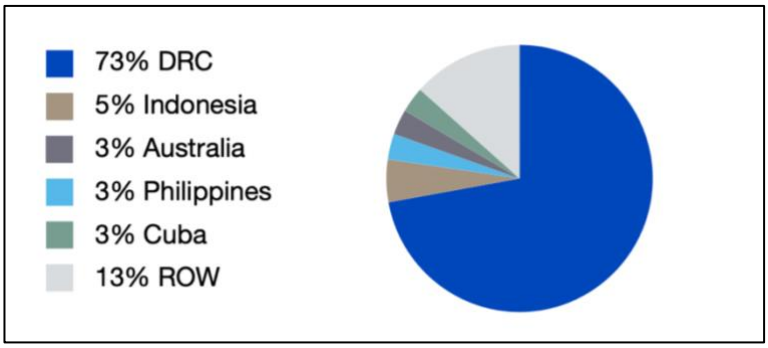
In 2001, Kabila was assassinated, leading to his succession by his son Joseph Kabila (now Kabila Jr.) as the nation's president. Despite the establishment of a transitional government in 2003 that laid the groundwork for democratic elections in 2006, the DRC remained ensnared in a relentless cycle of instability. This turmoil particularly impacted regions endowed with valuable resources, where a persistent combination of instability, armed clashes, and widespread human rights violations persisted. Notably, the eastern territories, grappled with pronounced volatility as various armed groups vied for dominance over both territory and the invaluable resources it contained. Kabila Jr.'s presidency continued the trajectory of controversy and corruption that characterised his predecessors. However, in 2019, a significant turning point arrived with the election of Felix Tshisekedi, marking a historic moment as the DRC witnessed

its first peaceful transition of power (Nzongola-Ntalaja, 2011; Sossou, 2022; Tshimanga, 2022)(Nzongola-Ntalaja, 2021; Sossou, 2022; Tshimanga, 2022). On a broader scale, the history of the DRC, interconnected with regional dynamics and resource concentrations, has borne witness to an enduring legacy of profound violence and instability. The nation's inception was shaped within an environment marked by extreme psychological and physical duress, and subsequent years have only seen one instance of a peaceful transition of leadership. With decolonial aspirations stifled, a succession of dictatorial regimes has come and gone, while armed conflict and insurgency have cast violence into a cyclical pattern. Disparities, identity complexities, and entrenched instability have fuelled a cycle of conflict and displacement, perpetuating a cycle of violence. This cycle has manifested in various forms, including radicalisation, entrenching the DRC in an inescapable pattern of recurrent violence (Nzongola-Ntalaja, 2021; Radowicz, 2022).

6.2. Resource context: Understanding Cobalt

Cobalt, an elemental cornerstone in the creation of strategic technologies such as advanced batteries, jet engines, rare-earth magnets, petroleum catalysts, and pivotal construction components, assumes an unparalleled role within the global technological landscape (Gulley, 2022). Its significance is magnified by the fact that the DRC singularly accounts for a staggering 73% of the global cobalt supply, as of 2022, followed by Indonesia (5%), Australia, the Philippines, and Cuba (3% each), with the rest of the world contributing 13% (*Cobalt Market Report 2022*, 2023; Gulley, 2022). This pronounced concentration within a single geopolitical entity, as visually depicted in Figure 1, precipitates a dynamic interplay of economic, social, and environmental factors, elevating the DRC's cobalt sector to a pivotal locus of global interdependence (*Cobalt Market Report 2022*, 2023).

*Figure 1: Share of mined cobalt supply in 2022, % (*Cobalt Market Report 2022*, 2023)*



The import of this concentration crystallises when gazing into the annals of the Cobalt Crisis, an era marred by violence, instability, and the geopolitical competition for dominance. The historical underpinnings of colonial legacies, regional and ethnic schisms, and the tempestuous narrative of political upheaval, including dictatorships and wars, have ignited a maelstrom of violence within the cobalt sector. The inclusion of foreign interests, often intertwined with the machinations of great power politics, has further intensified this conflict, as vividly illuminated by the intricate contours of the Cobalt Crisis. Despite cobalt's persistent high-ranking status in mineral supply risk assessments, its production continues to burgeon, sustained by the dual forces of concentrated supply and escalating demand (Gulley, 2022). Figure 2 unveils the progressive crescendo in cobalt demand for batteries, with a distinctive appetite for Electric Vehicles (EVs) since 2018 (Cobalt, IEA, 2023). Figure 3 casts light upon the metamorphosis of cobalt demand across diverse sectors, delineating a waning interest in Portables, Super Alloys, and the 'Other' domains, juxtaposed against a burgeoning demand from the EV sector. The fulcrum of this EV surge, encompassing China, Europe, and North America, is visually presented in Figure 4. While EV sales embarked on a global growth trajectory in 2021 (102%), the ensuing year saw a contraction (59%). Notably, Europe, China, and North America emerged as epicentres of this growth, with Europe's meteoric rise in 2020 gradually tapering off in 2021 and 2022 (see Figure 4) (*Cobalt Market Report 2022*, 2023). Confronted with this mounting

demand, the DRC witnessed an astronomical 70% escalation in mined cobalt supply in 2022 alone, as can be seen in Figure 5—a trajectory projected to surge by an astonishing 157.05% by 2030 (see Figure 6 and Table 3)[3] (*The Cobalt Market Report 2021-2030*, 2021).

Figure 2: Overall Supply and Demand of Cobalt for batteries by sector, 2016-2022 (Cobalt, IEA, 2023)

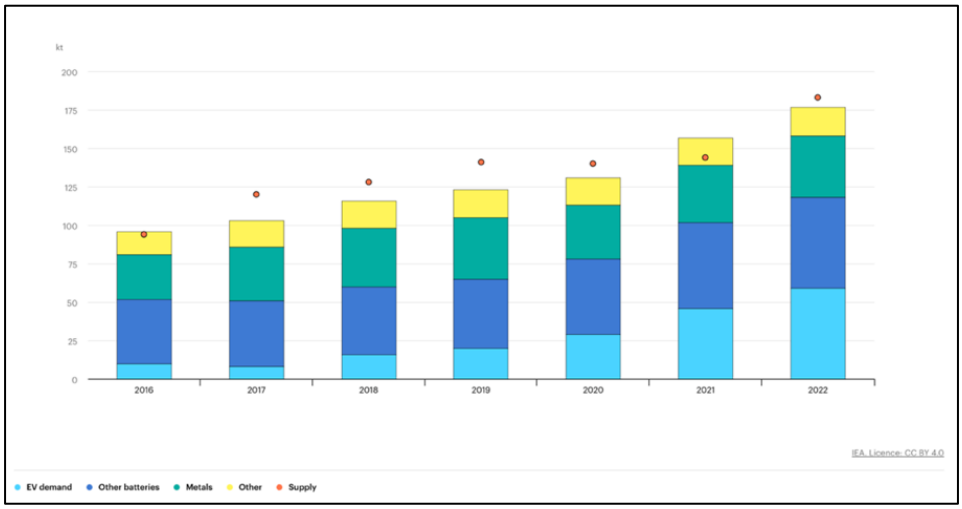
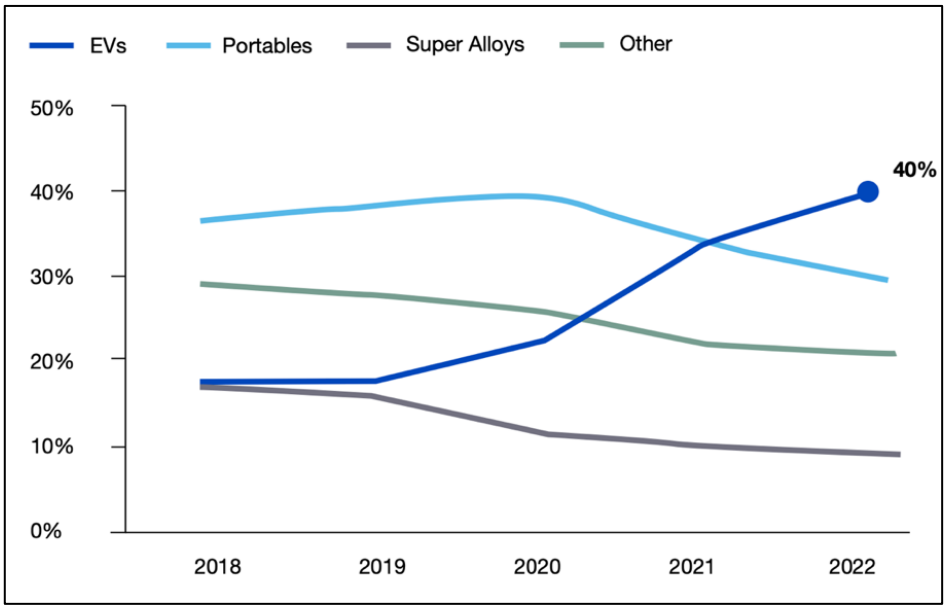


Figure 3: Share of total cobalt demand by sector(%) (Cobalt Market Report 2022, *2023)*



[3] Given a lack of data available in percentage, the percentage was derived based on the data from Table 3. Refer Appendix 3 to see the calculation.

*Figure 4: Growth in total EV sales by major region(%) (*CobaltMarketReport 2022*, 2023)*

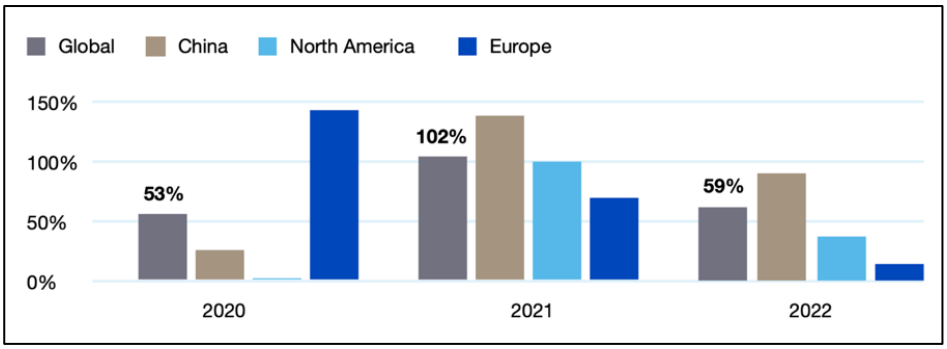


*Figure 5: Growth in mined supply by major country in 2022, tonnes of cobalt (*Cobalt Market Report 2022*, 2023)*

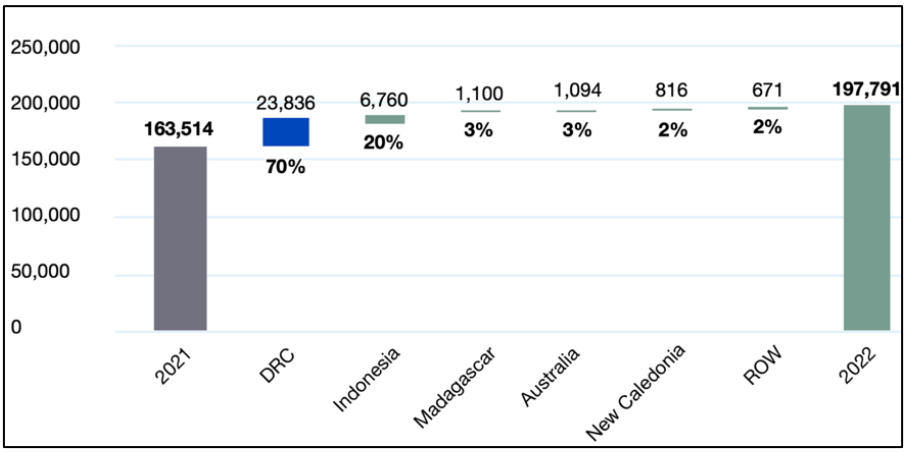


*Figure 6: Cobalt Market Supply/Demand Forecast (*Cobalt Market Report 2022*, 2023)*

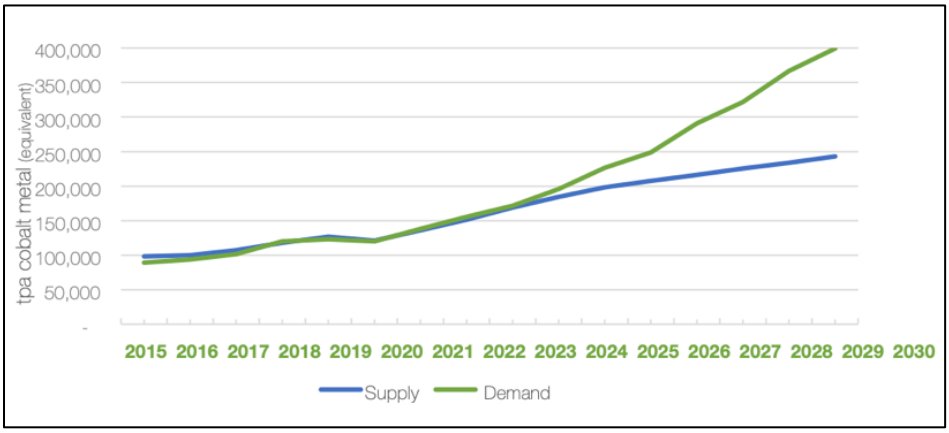


*Table 3: Cobalt Market Balance (t) and Pricing (USB/lb) (*The Cobalt Market Report 2021-2030*, 2021)*

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Supply	98,113	99,899	107,218	117,898	126,089	120,988	135,987	151,494	168,929	184,530	198,262	207,282	216,209	225,353	234,030	243,000
Demand	89,089	93,432	101,231	119,763	122,921	120,099	138,211	155,432	171,322	195,786	226,369	248,526	290,876	321,620	366,866	399,279
Market Balance	9,024	6,467	5,987	-1,865	3,888	889	-2,224	-3,938	-2,393	-11,256	-28,107	-41,244	-74,667	-96,257	-132,836	-156,279
Cobalt Price (US$/lb)	$12.67	$12.09	$24.98	$25.10	$16.54	$15.92	$20.15	$23.00	$25.30	$27.50	$31.50	$28.00	$28.00	$28.00	$28.00	$28.00

Against the backdrop of a burgeoning renewable energy mandate, the global expansion of renewable capacity is poised to accelerate by 85% whereby renewables are set to account for over 90% of the global electricity capacity expansion between 2022 and 2027, propelled predominantly by China, the European Union (EU), the U.S, and India, with the urgency of clean energy transitions galvanised by the geopolitical context, such as the Russian invasion of Ukraine (Renewables Report 2022, IEA, 2023). Notably, the Renewables 2022, report, from the IEA, (2023) also underscores an inequitable allocation of renewable capacity growth, with China and advanced economies claiming the lion's share, juxtaposed against relatively restrained growth in emerging and developing nations (see Figure 7 and Figure 8). Sub-Saharan Africa shares the lowest capacity followed by the Middle East and North Africa (MENA), Association of Southeast Asian Nations (ASEAN) and Brazil (Renewables Report 2022, IEA, 2023). Moreover, an analysis of cobalt production illustrates the dominant stance of leading producers, predominantly hailing from the Global North, collectively commanding nearly 53% of global production, with discernible influence emanating from entities based in China, Russia, and Switzerland (notably Glencore) (see Figure 9) (*The Cobalt Market Report 2021-2030*, 2021). An analysis conducted by the German Council on Foreign Relations (DGAP) yielded that a substantial proportion, estimated to be within the range of 70-80%, of Congolese cobalt originates from industrial mining operations under foreign ownership. Conversely, approximately 20-30% of the cobalt supply is derived from local artisanal and small-scale mining endeavours.

This intricate distribution pattern is reflective of a multifaceted dynamic, influenced by factors such as corruption and discriminatory practices, which collectively impinge upon the foundational principles of human security (Vinke et al., 2023). This consolidation of cobalt production within a select cluster of entities from the Global North lends further weight to the intricate interplay between resource extraction, economic considerations, and power dynamics encapsulated within the cobalt sector.

Figure 7: Renewable capacity growth in the main and accelerated cases 2010-2017(Renewables Report 2022, IEA, 2023)

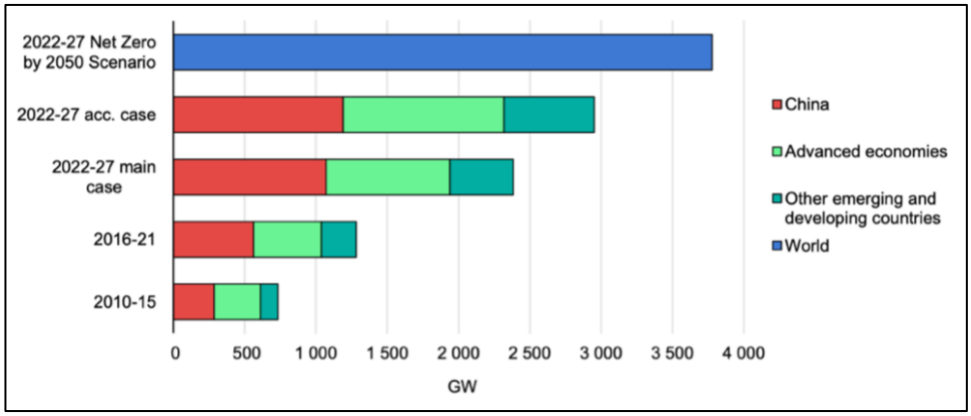


Figure 8: : Renewable capacity growth outside of China, main and accelerated cases (2010-2027) (Renewables Report 2022, IEA, 2023).

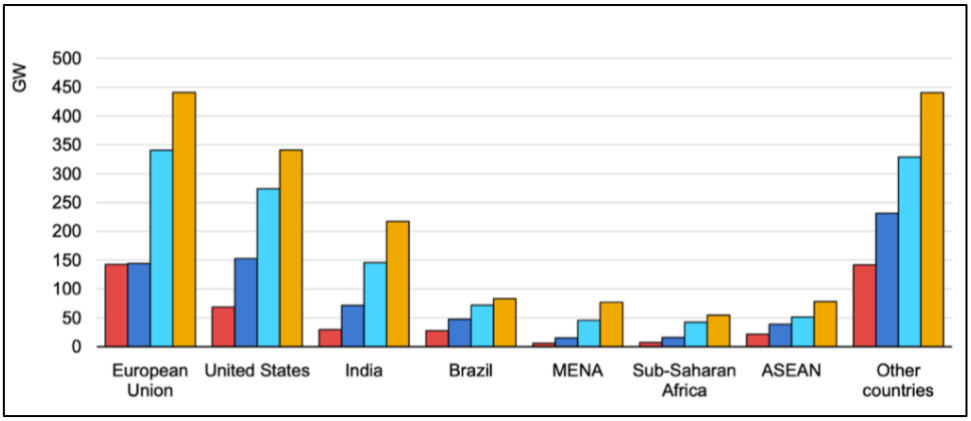
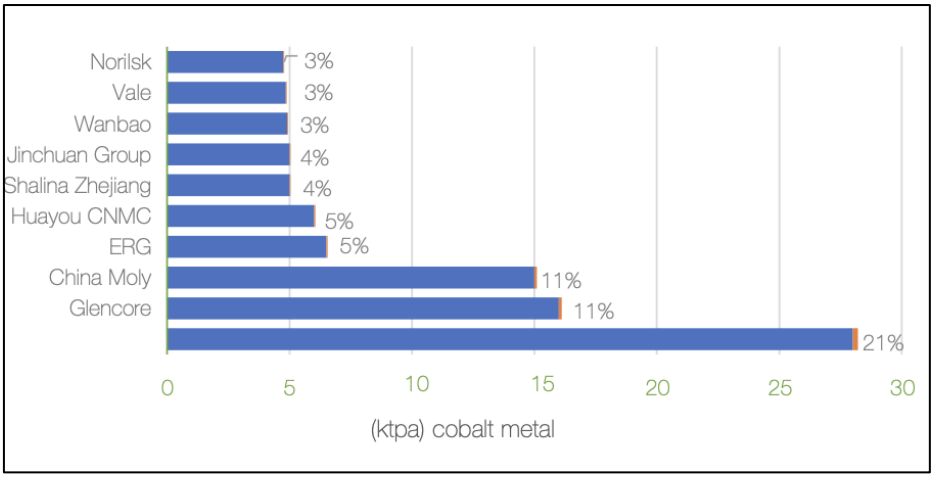


*Figure 9: Leading Cobalt Producers 2020(*The Cobalt Market Report 2021-2030*, 2021)*



6.3. Environmental impacts:

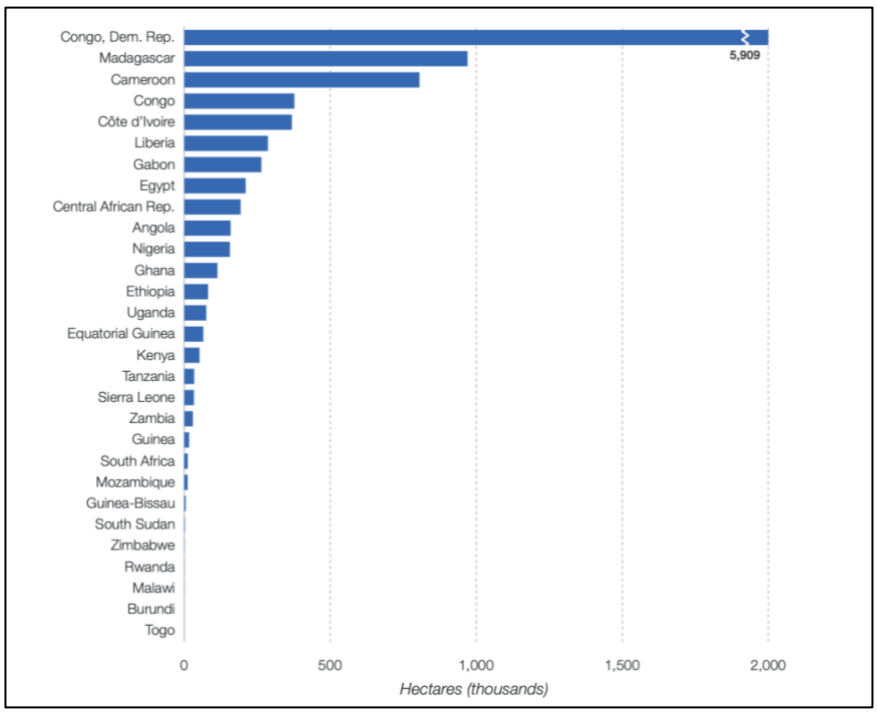
Climate change is exacerbating the array of challenges faced by the DRC, including enduring civil strife, fragile governance structures, and deeply entrenched socio-economic inequalities (Vinke et al., 2023). According to the Notre Dame Global Adaptation Initiative (ND-Gain) Country Index[4], , the DRC ranks at a precarious 182 out of 185 countries in terms of climate vulnerability and preparedness. This placement encompasses a vulnerability score of 169 out of 185 and a readiness score of 189 out of 192, indicating that the DRC not only grapples with heightened susceptibility to climate-induced impacts but is also inadequately equipped to manage the ensuing repercussions (ND-Gain, 2023).

[4] The Country Index formulated by the Notre Dame Global Adaptation Initiative (ND-Gain) encapsulates a nation's susceptibility to climate change and interconnected global challenges, concurrently considering its preparedness to enhance adaptive capabilities (ND-Gain, 2023).

6.3.1. Land use and Biodiversity:

Land use and biodiversity considerations present further complexity. As home to the Congo Basin rainforest, the second largest rainforest, a critical carbon reservoir and sanctuary for biodiversity, the ecological implications of cobalt mining in the DRC have been insufficiently addressed (DRC, World Bank, 2023; Vinke et al., 2023). After years of substandard mining practices, the nation's mining industry confronts multifaceted challenges, encompassing water-related effects, waste management, biodiversity hazards, and air contamination. A significant area within the DRC, specifically 70% of the Central Zambezian Miombo Woodland Ecoregion, is situated in the Katanga region, thus incurring substantial biodiversity risks (Renewables Report 2022, IEA, 2023). Furthermore, Cobalt production necessitates substantial tracts of land for mining and processing infrastructure, inclusive of waste storage. In this context, mining waste is classified as 'tailings' (mining by-product waste) and 'slags' (waste from smelting or metal refining) (Schütte, 2021). Given cobalt's association with copper and nickel mining, recalibrations of annual global land use alterations are consolidated into 3 square kilometres. While this area might seem modest, the concentrated presence of cobalt renders it ecologically and socially significant. Consequently, mining procedures often engender deforestation, soil degradation, and population displacement, underscoring substantial ecological and societal impacts (Cheyns et al., 2014; Schütte, 2021; Vinke et al., 2023). Figure 10 illustrates the mass deforestation which occurred in the DRC alone, boasting the largest forest cover losses. This is further evidenced by numerous abandoned open pits, tailings, slags, and waste heaps, signifying the lack of successful reclamation endeavours, with an estimated 416 million tonnes of slags and tailings inventoried in 2018 (Schütte, 2021).

Figure 10: Forest cover loss in Africa between 2001 and 2021(AfDB, 2023)



6.3.2. Pollution:

The ramifications of pollution merit attention. Over the course of a century, mining has propagated considerable waste dispersion, yielding secondary substrates rich in metals (Faucon et al., 2012). Emissions from smelting operations, persisting for more than eight decades in the vicinity of Lubumbashi, have notably compromised woodland integrity. Mining and smelting activities frequently coincide with paramount local sources of metalloid environmental contamination (Pourret et al., 2016). Notably, the smelting of sulphide ore, from which cobalt is derived as a by-product, has led to notable ecological impacts due to sulphur dioxide emissions, frequently emanating from inadequately secured tailings (Schütte, 2021). Soil systems, particularly, endure the impact of mining-associated dust particles laden with metallic pollutants (Castillo et al., 2013). Furthermore, Narendrula et al., (2012) observe exceedingly elevated cobalt concentrations in the Katanga mining area, surpassing a noteworthy 1000 µg Co/g. The Katanga region's substantial pollution and high population density

magnify the concern of human exposure to metallic pollutants. Banza et al., (2009) quantified elevated metal concentrations in the urine of residents proximate to mining and smelting facilities, corroborating substantial metallic exposure. Elenge et al., (2011) further find metal content in the hair of copper miners, corroborating significant exposure to chemical constituents as well. The elevated exposure to metallic pollution precipitates various health implications, including respiratory maladies, heavy metal poisoning, neurological disorders, augmented cancer risks, reproductive and developmental anomalies, and dermatological and capillary afflictions. Cheyns et al., (2014) ascertain mining communities as particularly impacted, with cobalt values surpassing the American Conference of Governmental Industrial Hygienist (ACGIH) occupational Biological Exposure Index. Conversely, non-polluted regions witness predominant cobalt exposure through dietary sources, including water and food. Consequently, dietary intake predominantly contributes to cobalt contamination via soil and water transfers (Cheyns et al., 2014).

6.3.3. Water:

Water usage warrants distinct consideration. The extraction and beneficiation of cobalt necessitate substantial water volumes per metric ton, with estimates akin to those for Australian nickel-cobalt sulphide ores, which require 1,100-1,400 litres of water per metric ton. Significantly, diverse mine types and ownership structures give rise to varying water consumption patterns, with Russian polymetallic mines exhibiting water usage of 30,000 litres per ton for refining. Albeit water recycling measures vary significantly, the broader context reveals that merely 26% of the DRC's population had direct access to potable water in 2014, as opposed to the African average of 60% (Schütte, 2021). Furthermore, contamination of surrounding surface waters, groundwater, and coastal waters engender complex challenges. This encompasses the deleterious effects of acid mine drainage attributed to sulphide ores. Historically, these

environmental predicaments often co-occurred with substandard regulatory standards, reflecting expedient rather than thorough outcomes. Despite regulatory advancements, corruption vulnerabilities persist as a substantial obstacle. Ecosystems marred by heavy metal contamination or river sedimentation necessitate decades to recuperate. Cobalt, copper, nickel, zinc, and other resource pollution have left an enduring imprint on river sediments and soils proximal to the mining hub of Kolwezi (Cheyns et al., 2014; Schütte, 2021).

6.3.4. Energy and Emissions:

Energy and emissions constitute another critical facet. Processing activities engender substantial energy consumption and emissions. The carbon footprint of mining is shaped by direct emissions and spatial factors. For example, approximately 30-40% of greenhouse gas emissions generated in open-pit mining, stem from the mine's vehicle fleet. In the DRC, copper-cobalt mining presents pronounced social and ecological risks, with ore and intermediate product transportation to diverse ports yielding substantial emissions. Dust emissions, intrinsic to mining, deserve special attention due to their impact on air quality. The ramifications of dust exposure pose significant threats to community well-being, engendering respiratory diseases, including silicosis, and carcinogenic afflictions, especially pertinent to a nation ill-equipped to address the resultant fallout (Amnesty International, 2016; Schütte, 2021).

6.4. Economic implications

6.4.1. Macroeconomics

The Democratic Republic of Congo (DRC) experienced a substantial expansion of its real Gross Domestic Product (GDP) by 8.5% in 2022, a noteworthy escalation from the 6.2% growth in 2021 (as illustrated in Figure 11). The African Development Bank attributes this remarkable surge primarily to the extractive sector, which exhibited a remarkable growth rate of 20.8% (AfDB, 2023; DRC, World Bank, 2023). The impetus behind this economic expansion can be traced to vigorous exports that escalated by 3.8%, coupled with a notable 18.6% surge in investments. However, the elevated costs of food and imported energy precipitated an inflation rate of 9.1%. Paradoxically, while revenue and aid witnessed an augmentation, rising to 17.2% of the GDP from 13.7% in 2021, the overall budget deficit widened considerably from 0.9% to 2.8% of the GDP in 2022. This phenomenon is ascribed to exceptional expenditures associated with security implications and electoral processes (Afdb, 2023). Moreover, the African Economic Outlook (AEO) 2023 by the African Development Bank (AfDB) attributes the surge in food and energy prices, coupled with ensuing social unrest, to the reverberations of the Russia-Ukraine conflict that have tainted global supply chains. These disruptions have exerted a cascading effect on food and energy prices across the continent, eroding households' purchasing power and, subsequently, augmenting the incidence of poverty. This, in turn, has given rise to over 400 instances of social unrest in Africa during 2022, directly correlated with mounting price levels (AEO, 2023). It is paramount to underscore that the untapped agricultural potential of the nation renders it susceptible and exposed to external shocks, primarily due to its status as a net food importer (DRC, World Bank, 2023). Despite a marginal increase in public debt, which rose by 1 percentage point to 24.7% of the GDP in 2022, the risk of overindebtedness remains moderate. Notably, credit extended to the private

sector surged remarkably from 17.8% in 2021 to an impressive 39.6% in 2022, a development accredited to the burgeoning economic dynamism. Additionally, international reserves witnessed a remarkable 54% upswing, amounting to 1.7 months of import coverage in 2022, chiefly propelled by augmented mining exports. However, the current account deficit expanded significantly from 1% of GDP in 2021 to 6.4% in 2022 (AEO, 2023). Predictions for the near future indicate that the real GDP is poised to experience growth of 7.2% in 2024, with the extractive sector anticipated to expand by at least 12% between 2023 and 2024, underscoring the sector's momentous role (as evidenced in Figure 11). While the projections augur well for growth and poverty alleviation, they remain susceptible to the vagaries of commodity price fluctuations. Furthermore, the DRC's position as one of the world's 15 most corrupt nations, as declared by the Corruption Perceptions Index (CPI) , casts a shadow over these promising prospects (CPI Report, 2022, 2023; DRC, World Bank, 2023).

Figure 11: Macro Poverty outlook indicators(DRC, World Bank, 2023)

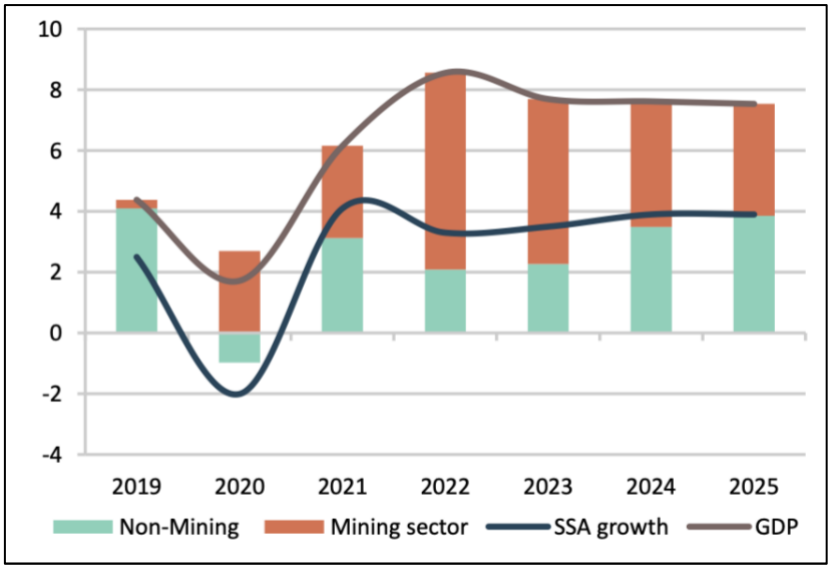
	2020	2021	2022e	2023f	2024f	2025f
Real GDP growth, at constant market prices	1.7	6.2	8.6	7.7	7.6	7.5
Private Consumption	-8.0	1.6	0.8	4.2	3.8	2.5
Government Consumption	9.5	11.8	25.1	9.2	1.7	-2.2
Gross Fixed Capital Investment	37.8	21.8	25.5	7.8	10.9	11.8
Exports, Goods and Services	4.0	19.9	23.8	15.8	6.0	5.5
Imports, Goods and Services	15.1	21.7	24.5	9.1	6.0	5.0
Real GDP growth, at constant factor prices	2.3	6.2	8.6	7.7	7.6	7.5
Agriculture	2.5	2.4	2.7	2.8	2.9	3.1
Industry	4.2	7.9	15.1	12.4	9.8	9.0
Services	0.1	5.6	3.0	3.3	6.2	7.0
Inflation (Consumer Price Index)	11.4	9.1	9.2	8.5	7.2	6.8
Current Account Balance (% of GDP)	-2.3	-0.9	-2.9	-1.0	-0.9	-1.0
Fiscal Balance (% of GDP)	-1.2	-0.8	-2.7	-2.1	-1.0	-1.0
Revenues (% of GDP)	9.2	13.8	16.9	17.0	16.5	16.3
Debt (% of GDP)	22.9	23.9	25.1	23.3	23.1	23.1
Primary Balance (% of GDP)	-1.0	-0.7	-2.2	-1.5	-0.5	-0.4
International poverty rate ($2.15 in 2017 PPP)[a,b]	64.9	64.0	61.9	60.5	59.3	57.8
Lower middle-income poverty rate ($3.65 in 2017 PPP)[a,b]	85.0	84.5	83.4	82.6	81.7	80.9
Upper middle-income poverty rate ($6.85 in 2017 PPP)[a,b]	96.4	96.1	95.8	95.5	95.2	94.9
GHG emissions growth (mtCO2e)	0.0	0.1	0.2	0.2	0.3	0.4
Energy related GHG emissions (% of total)	1.2	1.2	1.2	1.2	1.2	1.2

6.4.2. Extractive sector significance:

Economically, the mining sector exerts a preeminent influence, commanding a substantial share of the economy with exports accounting for an overwhelming 98.9%. In contrast, growth within non-mining sectors, notably services, presents a more restrained trajectory. While there are expectations of gradual growth within the services sector (as indicated in Figure 11), the crux of economic expansion is anticipated to remain ensconced in the extractive sector. This inclination strongly underscores a pronounced reliance on mining, notably the extraction of copper and cobalt, which collectively constitute a staggering 80% of the country's exports (AfDB, 2023; DRC, World Bank, 2023). Figure 12 further elucidates the escalating growth trajectory of the mining sector, a trend projected to persist, exemplified by its remarkable upsurge in 2022. This growth trajectory tightly corresponds with the fluctuations in the GDP, a phenomenon that presents both opportunities and challenges. While underscoring the symbiotic relationship between the mining sector and economic growth, this linkage also entails vulnerabilities. A single-source dependence, as is the case here, arguably magnifies the repercussions stemming from global fluctuations in the prices of mining commodities (DRC, World Bank, 2023). This susceptibility is particularly conspicuous within the artisanal mining domain, which experienced notable setbacks during the onset of the COVID-19 pandemic, in contrast to their counterparts in the large-scale industrial segment. It is estimated that the industrial mining sector contributes to around 70-80% of the overall mining activity, with the remaining portion attributed to local artisanal miners (AfDB, 2023; Buzton, 2021; Umpula et al., 2021). In essence, the mining sector's formidable economic sway, predominantly driven by copper and cobalt extraction, casts a distinct imprint on the country's economic landscape. The sector's profound growth, closely intertwined with the nation's GDP dynamics, presents a dual-edged scenario: a conduit for economic expansion while simultaneously rendering the economy susceptible to global

price oscillations. This economic framework acutely emphasises the pivotal role of mining, both in driving growth and in shaping the economy's response to external influences.

Figure 12: Real GDP growth and contributions to real GDP growth (%)(DRC, World Bank, 2023)

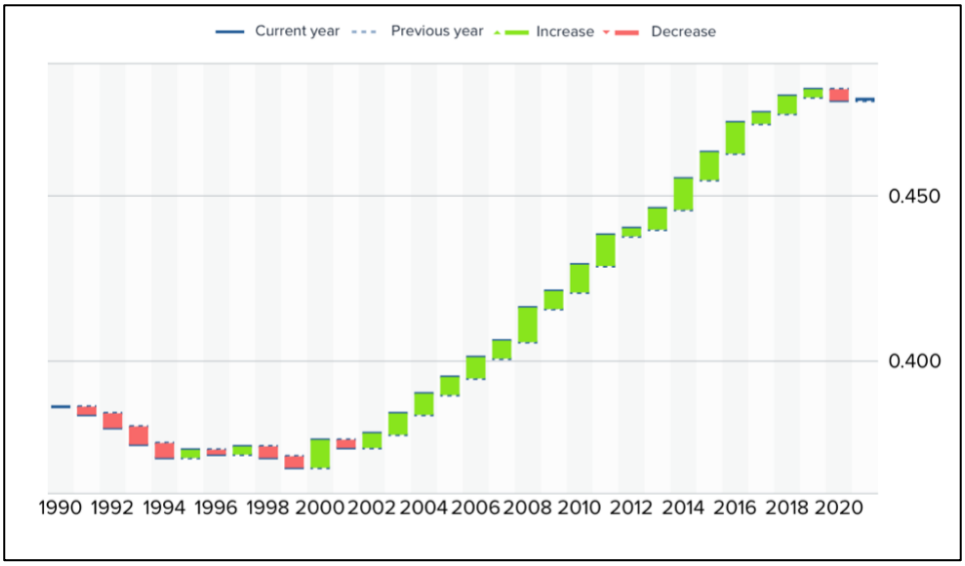


6.4.3. Development economics

The allocation of investment towards climate action in the DRC has been notably limited, while the nation's capacity to augment such efforts remains constrained. Within the period of 2019 to 2020, a mere 1.9% of the $424 million in climate finance originated from the private sector. The National Adaptation to Climate Change Plan (2022-2026) underscores the necessity of cultivating public-private partnerships to mobilise private financial resources. However, juxtaposed against the estimated $48.7 billion required for adaptation and mitigation, the government's revenue in 2022 amounted to only $11.7 billion. Sustaining green growth for the span of 2021-2030 is projected to necessitate $66 billion, or $7 billion annually, creating a climate finance shortfall of $6.2 billion each year (AEO, 2023). Curiously, both the World Bank, (2023) and the AEO, (2023) posit the mining sector as a potential source to bridge this financial

gap. Nonetheless, this proposition appears paradoxical since, as previously illustrated, the mining sector is neither ecologically sustainable nor environmentally friendly. This predicament renders the nation particularly susceptible to climate and commodity shocks, compounding the challenges imposed by the escalating dependence on the mining sector for adaptation. Despite overarching macroeconomic growth indicators, the majority of the population in the DRC has not participated in this growth trajectory, exemplifying the dearth of inclusive development. The World Bank, (2023) attributes this phenomenon to a history characterised by prolonged conflict, political instability, and authoritarian governance, amalgamating into a humanitarian crisis. In 2022, the DRC ranks among the five poorest nations globally, with 62% of its population—equivalent to 60 million individuals—living on less than $2.15 per day. Alarmingly, one out of every six people in the DRC resides in extreme poverty. While projections indicate a decline in poverty rates, the prevalence of poverty remains substantial, marked by spatial and ethnic disparities. The most impoverished communities are situated along densely populated corridors extending from Kongo Central to Haut Katanga in the west to east direction, and from Ituri to Tanganyika in the north to south direction. Poverty rates in these regions exceed 50%, in stark contrast to wealthier provinces, particularly those enriched by mining activities (DRC, World Bank, 2023). Although the Human Development Index (HDI) has displayed improvement since the 1990s (as displayed in Figure 13), the DRC's 2021 HDI value of 0.479 underscores an exceedingly low ranking on the global scale (Human Development Reports 2021, 2022).

Figure 13: Trends in Congo (Democratic Republic of the)'s HDI 1990-2021(Human Development Reports 2021, 2022)



Much of the prevalent poverty and developmental stagnation is attributed to the enduring legacy of colonialism, subsequent political instability, forced displacements due to authoritarian regimes, resource-linked armed conflicts, and the presence of weak institutional infrastructure. This conclusion is reaffirmed through an assessment conducted via the World Bank's Country Policy and Institutional Assessment (CPIA). Specific CPIA data, spanning from 2005 to 2022 was selected to determine this. For the calculation, the specific criteria employed included in this assessment were as follows:

1.) *CPIA policy and institutions for environmental sustainability rating*
2.) *CPIA policies for social inclusion/equity cluster average*
3.) *CPIA building human resources rating*

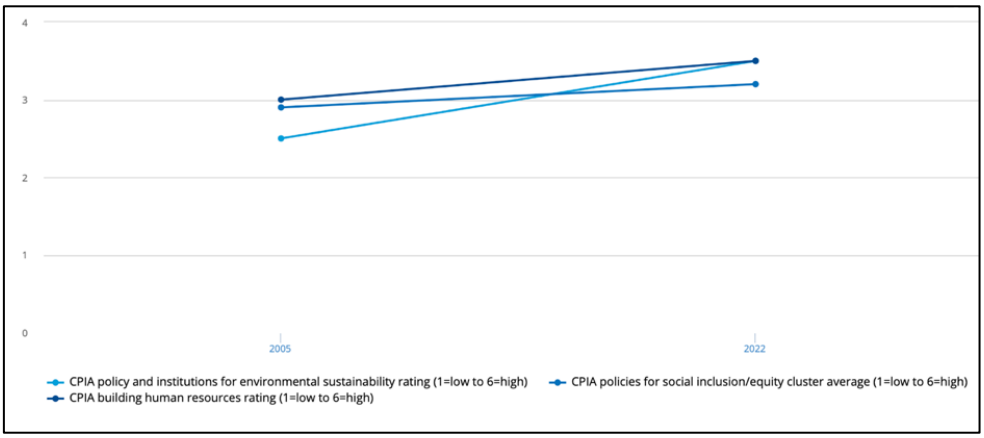
The rating scale extends from 1 (low) to 6 (high) to gauge institutional robustness.

As demonstrated in Table 2 (refer to Figure 14 for visual representation), while the institutional strength for each criterion has grown since 2005, the overall values remain low, rendering the country highly vulnerable to domestic, global and economic shocks. Notably, the CPIA for environmental sustainability exhibited the most significant growth, rising from 2.5 to 3.5, followed by the CPIA for building human resources, which increased from 3.0 to 3.5. In contrast, the CPIA for inclusion and equity displayed the slowest growth, expanding from 2.9 to 3.2 *(CPIA, 2023)*. aken within the context of the DRC's resource wealth and global dependence, the overall state of developmental and inclusionary economics within the nation remains fragile, further accentuated by the discrepancies in growth trajectories among institutional capacities. Significantly, the criterion for inclusion arguably underscores the absence of enduring justice aligned with macroeconomic expansion, as opposed to prioritising inclusivity and sustainable development over the long term.

Table 4: CPIA Assessment DRC 2005 & 2022(CPIA, 2023)

	2005	2022
CPIA policy and institutions for environmental sustainability rating (1=low to 6=high)	2.5	3.5
CPIA policies for social inclusion/equity cluster average (1=low to 6=high)	2.9	3.2
CPIA building human resources rating (1=low to 6=high)	3.0	3.5

Figure 14: Graph CPIA Assessment DRC 2005 & 2022: (CPIA, 2023)



6.5. Human rights and security: [5]

6.5.1. Artisanal mining:

In 2002, the DRC government promulgated a revised mining code with the strategic intent of boosting the mining sector and engendering heightened foreign investment. This legislative alteration delineated that the practice of artisanal mining, small scale mining activities carried out manually, employing basic tools to excavate rocks from tunnels deep underground, could exclusively transpire within designated authorised artisanal mining zones (ZEA), those being areas where the feasibility of large-scale industrial mining is limited. This disposition consequently led to the displacement of artisanal miners from a multitude of sites, thus facilitating a spatial reallocation for enterprises of Western and Chinese origin. This paradigm shift exerted a compelling coercive effect, mandating artisanal miners to engage in operations within areas that lack formal authorisation and regulatory oversight. This predicament has introduced an element of peril for the labour force due to the uncontrolled and unregulated nature of these endeavours (Amnesty International, 2016). Overall, the profound reliance on the mining sector has rendered poverty-driven artisanal mining a source of vulnerability for a substantial cohort of individuals, numbering between 150,000 to 200,000 miners. The pivotal determinant of these miners' incomes and livelihoods is the price offered for cobalt and its associated copper. In light of this, the establishment of fair pricing mechanisms and transparent processes emerges as a pressing imperative (Amnesty International, 2016; Buzton, 2021; Umpula et al., 2021). A comprehensive investigation conducted by the BGR, titled "Mapping of the Artisanal Cobalt Mining Sector in the Provinces of Haut-Katanga and Lualaba in the Democratic

[5] As the environmental section include insights into the health implications of pollution, and spatial necessities of mining (facilitating displacement) these considerations were excluded, and focus was placed on labour inequalities, human rights, and security.

Republic of the Congo," uncovered that 40% of surveyed artisanal miners earned less than the stipulated minimum wage of $4.2 USD per day (BGR Report, 2019). Elaborating on this issue, Umpula et al., (2021) demonstrate a disconcerting pattern of exploitation involving trading companies, local and mining police, the national secret service, artisanal mine overseers, industrial mining corporations, and traders. This exploitation encompasses coercing miners to make unofficial payments while receiving inadequate compensation for their efforts. The vulnerability of miners is exacerbated by fraudulent practices, including falsified purity and weight assessments. Moreover, miners who extract both copper and cobalt often receive payment for only one mineral, with the trader effectively taxing the other (Umpula et al., 2021).The outbreak of the Covid-19 pandemic further exacerbated this precarious situation. As mines technically 'shut down' and export complexities led to reduced cobalt demand, the artisanal sector bore a disproportionate impact. While some miners continued working due to an absence of alternative employment opportunities or social safety nets, many were compelled to accept significantly reduced prices to cover their expenses. Numerous miners found themselves selling cobalt for a mere fraction of its actual value. Notably, a palpable disparity persists between formidable multinational entities and local miners, with monopsonist buying structures prevalent in the sector perpetuating unequal trading relationships, while the state has remained inactive in intervening to rectify this imbalance (Umpula et al., 2021). Moreover, the endeavour to meet responsible sourcing initiatives set by the private sector has added an additional financial burden on miners. Multinational mining corporations engaging with artisanal miners expect adherence to regulatory standards, often without offering fair or reasonable pricing in return (BGR Report, 2019; Buzton, 2021; Umpula et al., 2021).This underscores a distinct prioritisation of short-term foreign growth and operational efficiency, potentially at the expense of the long-term resilience of local communities. This phenomenon overall neglects notions

of degrowth and genuine justice, concepts seemingly not encompassed within the extractive model being examined in this context.

6.5.2. Health, Safety and Child labour

In light of the pronounced dependence on cobalt mining as a principal livelihood for artisanal miners, the unregulated nature of the working conditions presents a substantial and concerning nexus of health and physical security hazards. Miners are often devoid of essential protective equipment and functional gear, exacerbating the risks associated with potential mining accidents. The hand-dug mines, which can span extensive distances without adequate support and ventilation, contribute to an environment prone to peril. Given the absence of regulatory oversight, there is a distinct lack of official data to accurately quantify the occurrence of fatalities in such circumstances (Amnesty International, 2016). Lawson, (2021) further indicates within the contingent of 255,000 Congolese engaged in cobalt mining, an estimated 40,000 (15.7%) are children, some as young as six years old who are subjected to harsh physical conditions, labouring for up to 12 hours per day while carrying heavy loads. The remuneration for such toil is meagre, ranging from $1 to $2 USD per day (Lawson, 2021). Children who manage to attend school often juggle between their studies contributing 10-12 hours of labour during weekends and holidays. Conversely, those without access to education remain entrenched in continuous mining labour, with some enduring staggering work hours exceeding 24 hours at a stretch (Amnesty International, 2016).

Data was aggregated from the UNICEF Data warehouse using specific indices underscoring the amalgamation of attendance and achievement metrics across diverse educational strata (primary, lower secondary, upper secondary), complemented by the encompassing quantification of child labour participation (embracing both economic activities and household responsibilities) within the

cohort of children aged 5-17. It's noteworthy that data was only available for 2018 (UNICEF, 2018). As can be seen in Figure 15, the attendance rate for children within the primary school tier stands at 77.5% for female students and 78.9% for their male counterparts. However, these proportions undergo a noticeable contraction to 31.4% and 32.4% respectively at the lower secondary educational echelon, further tapering to 32.8% and 35.8% for upper secondary educational involvement. In terms of completing primary education, the rates stand at 66.2% for girls and 67.1% for boys. Yet, these percentages exhibit a discernible descent to 51.7% and 57.5% within the lower secondary phase. Notably, the trajectory of completion in upper secondary education showcases a reduction to 26.7% for girls and 36.3% for boys. An estimated 9.2% of children aged 5-17 were observed to be actively participating in child labour, encompassing economic activities. Moreover, this percentage diverges among gender, with 16.7% attributed to girls and 12.6% to boys, encompassing child labour for economic and household chores within their scope of engagement. This reveals significant insights into the challenges faced by children in accessing quality education. The attendance and completion rates exhibit a consistent decline as children advance from primary to upper secondary schooling, indicating systemic barriers that hinder continuous educational engagement. The prevalence of child labour activities among children aged 5-17 arguably serves as factor contributing thereto. Moreover, gender disparities emerge as a critical factor shaping educational outcomes. Girls experience marginally lower attendance rates during primary schooling, with the gender gap widening in secondary education (UNICEF, 2018).

This is a crucial indicator for overall development prospects but also provides insights into the exploitative nature of the industry inherently characterised by growth at great expense of life, and future development, not to mention the lack of acknowledgement of unmonetised labour of girls as crucial labour force within households a critical acknowledgement of feminist de-growth concepts.

Figure 15: UNICEF Child Education and Labour indicators DRC (%)(UNICEF, 2018)

Indicator	Sex	Female	Male
Adjusted net attendance rate for children of primary school age		(*) 77.574	(*) 78.983
Adjusted net attendance rate for adolescents of lower secondary school age		(*) 31.482	(*) 32.451
Adjusted net attendance rate for youth of upper secondary school age		(*) 32.855	(*) 35.864
Completion rate for children of primary school age		(*) 66.262	(*) 67.1
Completion rate for adolescents of lower secondary school age		(*) 51.716	(*) 57.554
Completion rate for youth of upper secondary education school age		(*) 26.741	(*) 36.384
Percentage of children (aged 5-17 years) engaged in child labour (economic activities)		(*) 9.2	(*) 9.2
Percentage of children (aged 5-17 years) engaged in child labour (economic activities and household chores)		(*) 16.7	(*) 12.6

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6.5.3. Conflict and (political) instability:

The DRC has overall endured a protracted history of violent and armed conflict, stemming from a confluence of factors. The tumultuous shift from colonial subjugation to an independent nation, marked the inception of a trajectory marred by repressive authoritarian governance, ultimately culminating in two large-scale wars and an array of armed confrontations, orchestrated by an intricate interplay of non-state and state entities (Nzongola-Ntalaja, 2021) (Nzongola-Ntalaja, 2021). Figure 16 presents an analytic depiction of conflict dynamics within the DRC, extrapolated from the Armed Conflict, Location and Event Dataset (ACLED), spanning the period from 2005 to 2022. The analysis encompasses an array of conflict categories including *battles, violence against civilians, explosions/remote violence, riots, protests, multiple event types* [6] and *strategic developments* which catalysed conflict. While the years from 2005 to 2016 exhibited some oscillations in conflict occurrences, prominently in the forms of battles and violence against civilians, a discernible upsurge transpired

[6] Multiple event types refers to contexts where a single event involves a combination of several event types (i.e, armed conflict leading to civilian casualties). (ACLED, 2023)

between 2017 and a zenith in 2021, subsiding by 2023 (ACLED, 2023). Notably, the ACLED Conflict Watchlist for 2023 for the DRC accentuates the concentration of conflict within the eastern fringes, contiguous to Rwanda (see figure 17) (Conflict Watchlist, 2023). The interlude spanning 2012 to 2016 witnessed the emergence of the Kasai conflict, typified as an ethno-regional strife instigated by political rivalry to the reigning administration led by Kabila Jr. This turbulence was paralleled by an assemblage of armed factions. Escalating political tensions converged in the call for Kabila Jr.'s resignation, culminating in the ascendancy of Felix Tshisekedi post an extended 11-year tenure in 2016 (Tshimanga, 2022). Conspicuously, the March 23 Movement (M23), a predominantly Tutsi rebel faction, emerged during the 2000s, wielding substantial influence within the eastern quarters of the DRC. Their purported backing by Rwanda exacerbated the already strained relations between Kigali and Kinshasa (Muleefu, 2013). Collectively, the recurrent surges in conflict instances encapsulate a protracted humanitarian crisis borne of the aftermath of successive wars, compounded by ethno-regional tensions and geopolitical intricacies. This amalgamation has kindled political rivalries, electoral dynamics, mining undertakings (principally concerning gold, coltan, and tin), in tandem with the societal and economic reverberations of the COVID-19 pandemic. Interestingly, the Katanga region, the cobalt hub, is conspicuously linked to fewer conflict occurrences (ACLED, 2023). However, it's pertinent to note that armed factions and insurgent groups have exhibited an enduring predilection for violence intertwined with the illicit extraction of resources, notably gold, especially prominent within the eastern sectors of the DRC (Cuvelier, 2013). Confronted by the persistent presence of myriad armed factions and insurgent entities, coalescing with the burgeoning demand and concentration of cobalt reserves in the DRC, an argument can be posited that the epicentre of armed conflicts and insurrections might gravitate towards the southern expanse of the nation. It's noteworthy, however, that as of present, substantiating data remains absent to validate this conjecture.

Figure 16: ACLED data of the DRC 2005-2023(ACLED, 2023)

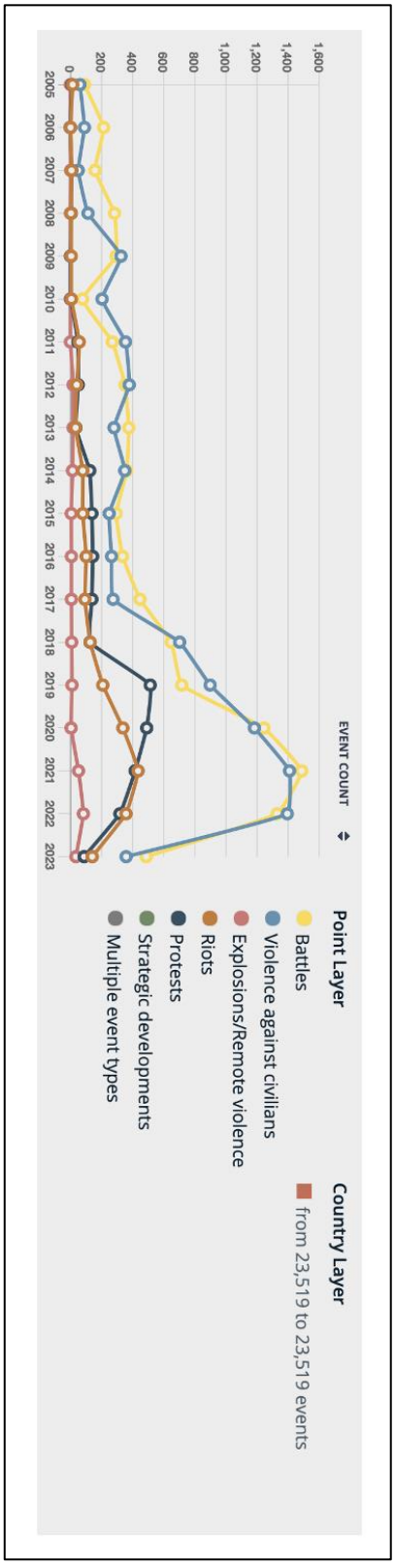
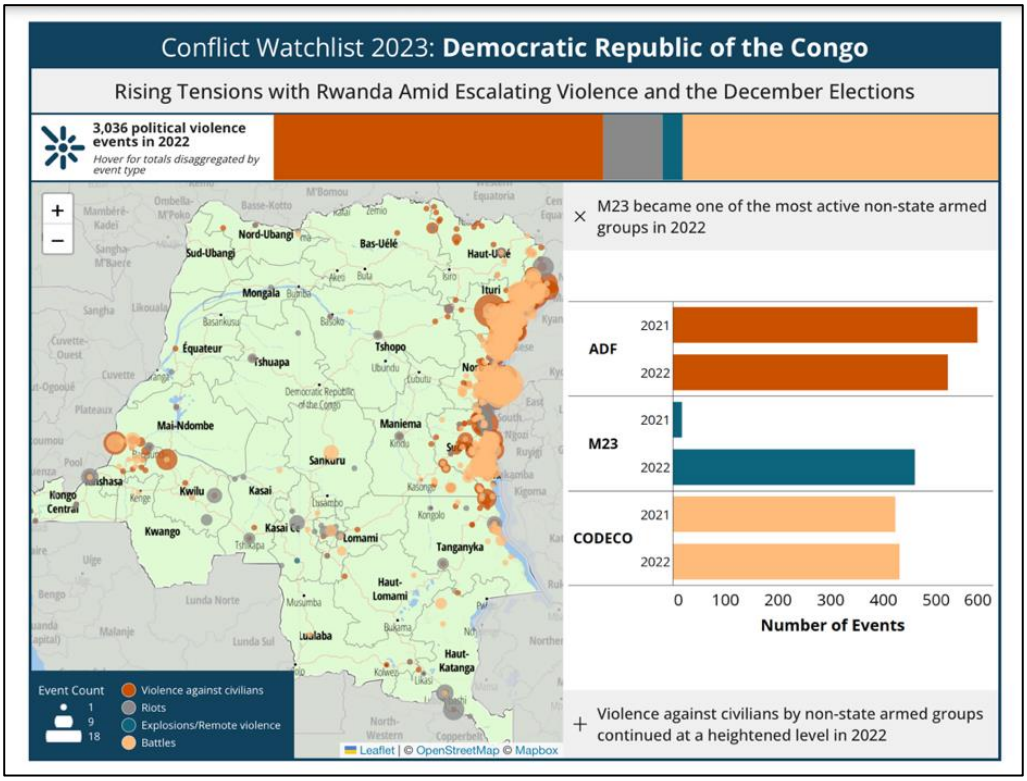


Figure 17: Conflict Watchlist 2023: Democratic Republic of the Congo (Conflict Watchlist, 2023).



7. Results and Discussion

The subsequent section elucidates the principal findings of the research and engages in a discussion that aligns these findings with core themes of the literature review and theoretical framework.

7.1. Historical Underpinnings: Colonial Legacy and Violence Nexus

The title "This is what we die for," poignantly borrowed from the Amnesty report on cobalt mining in the DRC, serves as an apt characterisation of the revelations emanating from this research. Within this context, the analysis embarks on a meticulous examination of historical antecedents and the interplay of growth and resource-related violence that finds its genesis in the early epoch

of colonialism. The evolution of Katanga's mining landscape intricately interweaves with its colonial past. Evidenced by King Leopold II's establishment of the Congo Free State, the forcible exploitation of minerals through coerced labour during the early 20th century cast a grim shadow, which has persisted. The subsequent transition into the post-independence era in 1960 ushered a complex tapestry of events, marked by the tumultuous Congo Crisis. The latter was marred by a struggle for, juxtaposed against a backdrop of secessionist endeavours facilitated by and for western interests—particularly Belgian—thus entrenching a protracted authoritarian rule. In a cyclic manner, the ramifications of this historical trajectory have cast a shadow that continues to linger in the contemporary narrative, particularly pronounced in regions abundant in natural resources. Thus, the narrative of the DRC has been indelibly marked by an amalgamation of violence, corruption, and cyclical conflicts. The reverberations of colonial exploitation, intertwined resource conflicts, and internal divisions have been seminal in engendering persisting instability and unrest within the region. Particularly noteworthy is the correlation between pervasive injustice and the proclivity for excessive growth, the intersection of which consigns the relatively nascent post-independence nation to a bleak trajectory, wherein manifestations of structural and physical violence persist in various criteria of assessment. As posited by Davis & Todd, (2017) and Yusoff, (2018) the marginalised disproportionately bear the brunt of these ramifications, underscoring an exigent necessity to confront historical legacies lest these perpetuate, as underscored in the insights of Malm and Hornborg. The discernible power imbalances, mirroring the impact of colonialism and capitalism, are manifestly evident within the confines of the DRC's case, reflecting the immutable potency of historical imprints. A salient observation is the subordination of human and environmental well-being to the voracity of resource extraction, reflective of the overarching influence of great power politics, thereby rendering the nation ensnared in a cycle of instability that is further exacerbated by the tenacity of power imbalances. Much aligned to

Escobar, (2012) and Petz, (2023) who elucidate that policies and foreign interventions were designed to effectively legitimise violent extraction, exemplified by the case of the DRC. The orchestration of an authoritarian regime congruent with western interests to subdue the prospects of a decolonial DRC, alongside the perpetuation of colonial echoes in the context of cold war dynamics, accentuates the multifaceted dimensions of extractivism and climate justice, as espoused by Sultana, (2022) illustrative of the overvaluation of resources and thus capital over human and environmental wellbeing. The confluence of ethno-governmentality, regional wealth, and the dearth of justice further corroborates the theory articulated by Brown & Spiegel, (2019) indicative of an ongoing manifestation of colonialism's insidious legacy. This sentiment further harmonises with the perspectives of Escobar, (2012) and Yusoff, (2018) both proponents of the notion that the Anthropocene bears the indelible mark of racialised exploitation and vulnerability, a reality that is intrinsically relevant to the case of green extraction, further entwining the cobalt crisis with broader discourse surrounding climate justice and historical injustices. In this disconcerting juxtaposition, the emphasis on addressing inequities and inclusivity has seemingly yielded a framework that can only be characterised by a predilection which exacerbates vulnerabilities and perpetuates power imbalances. Notably however, results of this exploration yield that the violent extraction of the mineral in this context already serves as a threat multiplier, as evidenced by the "Cobalt Crisis". Dependency, geopolitical and cold war dynamics saw a decrease in global cobalt reserves amalgamating into two conflicts with several actors backed by the West and USSR, not to mention considerable violence and a humanitarian crisis as thousands of ethnically Lunda of the Katanga region who became forcibly displaced which further aggravated geopolitical tensions with neighbouring countries (Gulley, 2022; Kisangani, 2012; Nzongola-Ntalaja, 2021).

7.2. Ecological and Human Toll of Extractive Pursuits

Central to the findings is the ecological toll exacted by cobalt mining in the DRC, a reality that casts a pall over any purported sustainable benefits of such endeavours. The geographical concentration of cobalt mining in the ecologically pivotal Congo Basin rainforest, a veritable carbon repository, has catalysed a series of consequences, culminating in deforestation, soil degradation, and the displacement of local populations. It is pertinent to underscore that while the immediate ramifications are localised within the confines of the DRC, the broader global implications stemming from the assault on this pivotal carbon reservoir are poised to resonate at a worldwide magnitude. The potential jeopardy it poses could extend to encompass the entirety of the global community. This extractive trajectory further engenders deleterious emissions and waste, fostering the escalation of toxic metal concentrations in the environment, thereby contributing to a concerning ecological pollution paradigm. The nexus of water-intensive cobalt extraction with attendant challenges of safe and accessible water is underscored by the contamination of surface and groundwater sources, coupled with the emergence of acid mine drainage, collectively articulating a formidable ecological and human health quandary. The high-energy processes integral to cobalt extraction notably exacerbates carbon emissions, a predicament intensified by dust emissions that impair air quality and impact the well-being of local communities. Yet, these consequences transcend the boundaries of mining communities, impacting unpolluted regions as well. The exposure occurs via dietary routes, encompassing food and water tainted by soil contamination. These findings draw attention not only to the intrinsic unsustainability of cobalt mining but also strikingly contrast the purportedly concept of 'clean' economic paradigms that are imbued with growth-oriented proclivities at the grave expense of ecological and human life, much aligned with (Moore, 2015) contention of capitalist colonial pursuits at ecological expense.

These outcomes essentially affirm the assertions by scholars such as Viviana & Castillo, (2019) as well as align with the perspectives of Lempert & Nguyen, reflecting contemporary energy planning reminiscent of historical colonial contexts. This resemblance underscores an emphasis on the maximisation of exploitation and profit, rather than advocating for reduced consumption. This trajectory comes at a considerable cost to an already vulnerable nation, effectively externalising and perpetuating the far-reaching humanitarian and ecological consequences. My findings further reinforce Lempert & Nguyen, (2011) argument that imperial cultures tend to prioritise the exploitation of non-local resources, often at the detriment of local communities, rather than embracing sustainable practices within their own resource framework, a sentiment underscored by the observable demand, consumption, and the substantial toll that accompanies the pursuit of ostensibly 'cleaner' alternatives. The notion of green and sustainability, arguably, assumes a facade that serves to alleviate neoliberal guilt stemming from overconsumption, without engendering the transformative changes essential for justice and equality, as emphasised by Sultana, (2022). Remarkably, the trajectory of cobalt mining effectively accelerates the realisation of its darker counterpart. Notably, the decline of the Congo Basin rainforest as an invaluable carbon sink resonates with the articulation by Dunlap & Jakobsen, (2020) wherein total extractivism assumes precedence over the principles of human and environmental well-being legitimised through violent means. This dichotomy is perceptibly echoed within the ambit of the resource and economic criteria assessed, manifestly depicting the disjuncture between sustainability principles and the prevailing dynamics of the market. The resource and economic results yield a paradigm characterised by an incessant expansion driven by the burgeoning demand for cobalt, an evident dissonance with the ideals of de-growth and economics of care, as elucidated by Di Chiro, (2019) is irrefutably discernible. The contentious imperative to supply cobalt for the green energy transition, paradoxically juxtaposed against aspirations of justice and de-growth, presents a fundamental

incongruity. This discord underscores a foundational contradiction wherein the industries seemingly primed to usher in sustainable and cleaner energy solutions stand emblematic of a fundamentally unsustainable economic model, intricately interwoven within complex geopolitical tapestries and power dynamics emboldened by colonialism. This inclination is emblematic of a sector perpetually driven by economic exigencies, thereby engendering a trajectory diametrically opposed to the ethos of sustainability and yielding insights into the complexity of instituting a framework of care in a milieu that is pervaded by the tenets of economic imperatives. Consequently, the expansion of the cobalt sector emerges as inherently unsustainable, emblematic of a larger systemic conundrum wherein the pursuit of sustainable tenets is consistently stymied by deeply entrenched historical and economic structures, corporate predilections, and pervasive global power dynamics. This engenders a challenging context wherein the ideals of climate justice and degrowth are incrementally eclipsed, offering a sombre reflection on the intricacies underpinning the attainment of sustainability within a global landscape dominated by economic dictates.

7.3. Economic Realities: Paradox of Growth

The economic ramifications of the cobalt crisis within the DRC unfold a paradox wherein the nation's macroeconomic trajectory, while displaying signs of growth, remains prone to vulnerability as evidenced by inflation and social unrest stemming from disruptions in the global supply chain, not to mention considerable internal turmoil. The DRC's susceptibility to external shocks is characterised by a pronounced reliance on imports, notably for sustenance, thus rendering the nation inherently predisposed to the ripple effects of global perturbations. This sensitivity is further exacerbated by the pronounced dependence on the global pricing of cobalt, wherein the mining sector holds dominion, constituting an overwhelming proportion of the nation's exports. The prominence of copper and cobalt extraction, which collectively comprise 80%

of the DRC's exports, illuminates a distinct overreliance on the extractive sector, a reliance marred by the prevalence of rampant inequalities and embedded violence. The juxtaposition of the nation's resource wealth with the sobering reality of pervasive impoverishment, where 62% of the population subsists on less than $2.15 per day, underscores a disheartening narrative. The confluence of historical conflicts, institutional fragility, and the overemphasis on mining reinforces this predicament, further echoing the assertion posited by Gulley, (2022) that cobalt serves as a potent emblem of power. In extending this narrative, it becomes evident that cobalt indeed constitutes a font of power, albeit not harnessed for the betterment of the DRC, nor for the artisanal miners, and notably, not for the children whose futures are imperilled by this sector. The prevalence of poverty-driven artisanal mining precipitates a state of subservience for African communities, mirroring continued historical subjugation, albeit within a contemporary framework characterised by a neoliberal expediency. This trajectory operates in a manner that absolves wealthier nations from accountability while privileging short-term economic gains over the pursuit of sustainable development, as expounded upon by (Twyman et al., 2015).The cobalt industry's manipulation of vulnerable individuals, in consort with exploitative practices propagated by trading entities, law enforcement, and overseers, has precipitated an amplification of brutality concomitant with the prevailing culture of overconsumption. The complicity of multinational corporations, ostensibly adhering to responsible sourcing standards, yet exacting financial encumbrances on miners' sans commensurate recompense, epitomises the prevailing power imbalances and a myopic emphasis on transient growth, overvaluing capital over the sanctity of human life and nature. This harrowing model of green extractivism not only traverses the contours of environmental degradation and security apprehensions but fundamentally re-subjugates the DRC's populace to the dictates of the Global North. The prevalence of rampant child labour, with an estimated 40,000 child miners—or potentially more—relegates a generation to a short future and

stunted development by withholding access to education. Their vulnerabilities extend to encompass impoverishment, pollution, and a dimmed developmental trajectory. These chilling realities underscore not solely the deleterious impact of the extractive industry but indeed epitomise a grave manifestation, arguably bordering on a slow genocide of their future and with that, the DRC.

In summary, this section elucidates a comprehensive narrative woven from the multifaceted layers of the cobalt crisis within the DRC. It underscores the profound resonance of historical imprints and power dynamics, the ecological reverberations of extractive pursuits, and the economic paradoxes that underscore a nation's vulnerability amid the clamour for growth. In the assimilation of these critical findings within the theoretical framework, a sobering realisation surfaces: the cobalt crisis is not merely an isolated ecological predicament but rather a microcosm of the larger global debate encompassing climate justice, equitable development, and the intricacies of power imbalances. This contemplation culminates in an imperative to confront historical injustices, to foster inclusivity, and to navigate the confluence of growth and sustainability in a manner that befits a more equitable and just future. The journey undertaken here encapsulates the poignant intersection of these dynamics and beckons the global community to collectively engage in the recalibration of principles for a future that eschews exploitation and embraces genuine transformation.

8. Conclusion and future considerations:

To address the central research inquiry posed in this study, a comprehensive examination of the multifaceted implications arising from cobalt mining in the DRC was undertaken, encompassing historical, resource-related, economic, environmental, social, and human rights dimensions. The investigation yielded intricate and interwoven findings that shed light on the dark role of cobalt extraction as a threat multiplier. Importantly, these ramifications extend beyond the realm of ecological concerns commonly associated with green contexts, as underscored by historical insights. This historical perspective unveils that well before the contemporary focus on green transitions, cobalt exploitation had already served as a potent threat multiplier. Reckoning with historical legacies and addressing the enduring impact of historic injustices and imbalances is paramount for achieving genuine sustainable development and climate justice to establish an approach with sensitivity and inclusivity. Furthermore, with the pronounced demand for green growth evident in the resource and economic considerations, emerges as an amplifier of threats, with far-reaching consequences that actively and passively worsen ecological and human harm. It is imperative to emphasise that these findings pertain specifically to the DRC, the epicentre of cobalt supply. Given the outlined limitations detailed in section 5, these results are context-bound and lack generalisability or transferability. Nonetheless, they offer valuable insights and inferences that can be extrapolated to other contexts. The conceptualisation of (green) extractivism as a potential catalyst for multiplying threats provides a lens through which to assess the repercussions of extracting other rare minerals, relevant for potential investigations in different geographical locales and minerals like lithium, which is equally critical to the green transition. The historical underpinning of pervasive violence perpetuated by economic systems grounded in relentless consumption, as extensively explored in the literature review, and affirmed by the findings, is a distinctive aspect. Remarkably, even sustainability, ostensibly

seeking to address ecological justice concerns, inadvertently perpetuates the same paradigm of excessive consumption and growth, thus manifesting a form of violence. Effecting radical transformation, as advocated by Sultana, is deemed necessary to curtail the festering of inequalities and the propagation of injustice and violence. This transformative endeavour necessitates an abandonment of the hegemonic economic growth paradigm, fundamentally shifting economic and social models, one that redirects focus towards principles of de-growth, economics of care, and, most importantly, authentic climate justice. Echoing Clement et al and De Chiro, human and ecological wellbeing needs to be at the forefront and a system of compassion for life and nature is paramount. In the absence of genuine climate justice, inequalities and grievances fester inhibiting genuine development and engendering various forms of physical and structural violence. In the absence of a resolute reduction in consumption and a revaluation of the demand for perpetual growth, the outcomes are destined to yield both environmental and human harm, disproportionately affecting vulnerable populations. The case of the DRC starkly illustrates the far-reaching implications, encompassing environmental degradation, exploitative child labour practices, and an exclusionary resource development approach, all of which collectively undermine genuine progress, development stability, and peace. They effectively imprison nations. It is imperative to underscore that within this context, the persistent presence of institutional instability, coupled with climate vulnerability, further compounded by the findings elucidated in this investigation of green extractivism of cobalt as a threat multiplier, creates a perilous cycle in which these factors reinforce and magnify one another, crucial considerations for decisionmakers and prospective research. This interconnected web of dynamics serves to perpetuate an enduring legacy of violence, casting a shadow over the prospects of any form of genuine sustainable development and meaningful progress.

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10. Appendices

Appendix 1:

A1: Case of India:

Pre-colonial India was heralded as the "golden eagle", boasting a self-sustaining agrarian economy alongside a burgeoning manufacturing sector celebrated for its craftmanship. From spices to cotton and silk, India's goods and craftmanship lured colonisers and was thus colonised for two centuries, culminating in a tumultuous and divisive struggle for independence from Britain in 1947 (Griffiths, 2019; Tharoor, 2018). Amidst the multifaceted forms of colonialism, European industrialisation played a significant role in perpetuating impoverishment which has had long lasting impacts. The early days of industrialisation saw the extraction and use of cheap raw materials and processing, allowing for investment in industrial technology effectively enriching colonial powers (Tharoor, 2018). For Indian artisans and handicraft industries this translated to a loss of fair competition and subsequent impoverishment which in turn forced many into the agricultural sector, effectively de-industrialising India (Griffiths, 2019). While profits for the industry became productive, Europeans profited from an ever-growing market of industrialised goods whereas, the primary sector could not become more productive as agriculture and land is limited in use (Kanisetti, 2017; Tharoor, 2018). Indian workers thus not only remained impoverished but also the demands of increased productivity drove an over and misuse of agricultural land including degradation. The consequences of colonialism thus are become apparent in ethno-religious disparities, weak institutional infrastructures, and continued exploitation (Kanisetti, 2017). Colonialism paved way for continued hard, structural, and soft power strategies which in turn induced dependency on foreign and colonial nations continued by the legacy of foreign investment and international loans (Kaur, 2021). Effectively one key stone facilitated many

other strategic stones, the aforementioned example only one of many highlighting (neo)colonial injustice and its implications on impoverishment and climate injustice.

Appendix 2:

A.2. Case of Haiti vs the Dominican Republic – the climate colonial partition of Hispaniola:

Although the D.R and Haiti share a convoluted history, currently both converge in common environmental crises ranging from warming oceans, deforestation, soil degradation and intense natural disasters, to threats of bio- and marine diversity (Sheller & León, 2016). In terms of capability to respond however, both nations strongly diverge due to vast differences in environmental management, land use, institutional capacity for ecological governance, as well as their relations with international organisations and thus funding agencies (Marzelius & Droste, 2022). Hispaniola boasted particularly fruitful tropical woodlands of great interest to European colonisation. This deforestation resulted in changes in land cover and land use but also changed the purposes of plantation economies leaving many Caribbean islands like Hispaniola particularly susceptible and vulnerable to current anthropogenic climate change. Here however, the vulnerabilities contrast and responses differ considerably between the two island nations (Marzelius & Droste, 2022; Sheller & León, 2016). After a brutal century of violence, enslavement, and over exploitative plantation economics, which effectively facilitated extreme soil degradation, the enslaved Africans of Saint-Domingue rebelled against the French achieving independence in 1804 (Fick, 1990). In fear of a slave rebellion throughout the colonies, the French forced the new and first slave republic to pay retributions, 150 million gold francs over 30 years, concludingly paying 112 million francs the equivalent of $560 million USD today to their former slave owners. This not only constricted any attempts at development and prosperity but also resulted in a 19-year military occupation of the Island on behalf of the U.S to ensure the

debt would be paid. Spaniards had a different approach which was less exploitative and eventually integrated with the indigenous peoples. Both became occupations of the U.S in the 20th century and throughout this period of occupation, the agrarian sector radically transformed for the worse for Haiti (Dalleo, 2016; Dubois, 2004; Méheut, 2022). As opposed to planting a variety of crops which could sustain the population, Haitians were encouraged to overuse their soil and crops for produce that would be exported. The U.S continued to orchestrate agricultural and trade interventions throughout the 20th and 21st century, which effectively reinforced economic, political, and ecological control at the expense of Haitians (Dubois, 2004; McGuigan, 2006). This and the infinite amount of debt accumulated while Haiti managed to remain largely food-self-sufficient until the 1980s, institutional fragility and political turmoil provided an opportunity for the U.S to pressure Haiti to liberalise trade. Rice from the U.S subsequently was heavily subsidised and imported into the country also effectively devastated local food producers who have had to slash import tariffs on rice (Dalleo, 2016; Dubois, 2004; McGuigan, 2006). This in addition to less rainfall and higher population densities extensive deforestation, erosion, soil degradation and rising socio-economic inequality has thus made Haiti significantly more vulnerable to climate change while their Dominican counterparts thanks to less violent means of extraction and land use of the Spaniards are able to manage the implications of anthropogenic climate change and thus be more climate resilient (Sheller & León, 2016).

Appendix 3:

A.3. Demand Growth Calculation (*The Cobalt Market Report 2021-2030*, 2021)

Due to a lack of available data in percentages, the projected demand was calculated in percentage based on the data values of Table 3. The derivation of the calculation can be seen below:

Percentage Increase = ((Projected Demand in 2030-Demand in 2022) / Demand in 2022) * 100

((399,278-155,432)/155,432) * 100 = 157.05 %

Appendix 4: Supplemental Case Study: Bolivian Lithium – Charging Violence?

1. Historic Context:

1.1.Colonial Epoch:

The early 16th century heralded a transformative period for the Andean region as Spanish conquistadors, under the leadership of Francisco Pizarro, initiated the decline of the Inca empire. This process culminated in the capture of Incan emperor Atahualpa in 1532, marking the genesis of Spanish dominion over the territory. Amid the 18th century, the geographical expanse known as Upper Peru, a self-governing domain encompassed within the Viceroyalty of Peru, an extension of the Spanish colonial administration. Bolivian prosperity emanated significantly from its silver mines, most notably the illustrious Cerro Rico in Potosi, a contributor of substantial wealth to the Spanish Empire (Brosseder, 2019; Morales, 2010). This epoch was, however, rife with egregious discrepancies, as Spanish overseers disregarded and discriminated against the

indigenous populace, nurturing an erroneous sense of superiority. This period bore witness to a harrowing chapter of violence and repression, casting indigenous communities into laborious servitude within mines and plantations, enduring harsh conditions, and succumbing to physical and economic exploitation. The arrival of foreign diseases precipitated widespread epidemics and increased mortality rates, while the imposition of Spanish cultural norms suppressed indigenous societal structures, culminating in a decline of both population and cultural heritage. The cataclysmic effect of the Napoleonic invasion of Spain in 1807 however induced a vacuum of authority and oversight within the Spanish colonies, emboldening local sentiments towards the pursuit of independence (Brosseder, 2019).

1.2.Quest for Independence and Political Turmoil

Bolivia's protracted quest for independence unfolded across a span of three centuries under the yoke of Spanish colonial governance, culminating in a turbulent 16-year period from 1809 to 1825. The persistent ascendancy of Spanish authority owed in part to adroit colonial administration and a modicum of societal assimilation, notwithstanding the conspicuous undercurrents of violence. Indigenous disenchantment with colonial dominion however reached its zenith during the 18th century, propelled by amplified exactions of tribute payments and heightened expectations of mining productivity. Concurrently, criollos[7], disenchantment, stemming from disillusionment with the Spanish crown's mercantilist doctrines, coalesced with these localised strivings, paving the way for eventual convergence under the leadership of Simon Bolivar after whom the country is named and Antonio Jose de Sucre. The culmination of confrontations between forces of resistance and royalist loyalists crystallised into Bolivia's definitive declaration of independence in 1825. Bolivar's transitory stewardship ushered in reformative measures, although tempered by

[7] People of full Spanish descent, born into viceroyalties.

his reservations about Bolivia's capacity for autonomous self-governance, prompting the transfer of authority to Sucre, who assumed the mantle of Bolivia's inaugural elected president. The convulsions brought about by the wars of independence proved injurious to the economy, particularly affecting the mining sector and precipitating a slump in silver production due to an amalgamation of factors, including inadequate investment and labour constraints. Fiscal constraints were further accentuated by military outlays and indemnity obligations owed to Peru. Sucre's reinstatement of tribute payments was a strategic countermeasure to navigate Bolivia's fiscal predicaments, but the incursion by Peruvian General Agustin Gamarra in 1828 precipitated Sucre's resignation (Morales, 2010). The subsequent ascendancy of Peru to the presidency during the years 1829 to 1839 engendered a transformative phase for Bolivia, characterised by consequential socio-economic reforms and a fleeting unification with Peru under the banner of the Peru-Bolivian Confederation. However, the confederation's ephemeral existence was punctuated by internecine and external resistance, culminating in its eventual dissolution. The ensuing decades bore witness to a succession of coup d'états and evanescent regimes, laying bare a nation perennially ensnared by the quagmire of political instability, a circumstance further exacerbated by the nation's setbacks in the Chaco War and the overarching reverberations of the global Great Depression (Morales, 2010; Sobrevilla Perea, 2011).

1.3.Evolving Political Landscape

The Sexenio, a 6-year period between 1946 and 1952, saw a resurgence of the traditional conservative order. This era, distinguished by the return to power of entrenched ideologies, played a pivotal role in shaping the trajectory of Bolivia's political landscape. The following period witnessed a shift to democratic governance, although the decade leading up to 1982 was dominated by a series of coup d'états that culminated in nearly two decades of non-democratic rule.

Amid this tumultuous phase, Bolivia embarked on the nationalisation of its tin mining industry, with the intention of reasserting control over vital resources and addressing prevailing inequalities. The National Revolutionary Movement (MNR) government, in particular, implemented reforms aimed at wealth redistribution and the enhancement of labour conditions. These endeavours, while marked by noble intentions, encountered challenges stemming from economic volatility and political tensions (Morales, 2010). The years spanning 1969 to 1980 witnessed further oscillations between military dictatorships and democratic interludes, ultimately heralding the dawn of a democracy in 1982. This collective historical saga epitomises Bolivia's oscillation between anarchy and political regime shifts, encompassing both military and democratic administrations, with a juxtaposition of conservative and leftist governments. This erratic trajectory has engendered over 190 coups since the nation's inception (Farthing, 2019).

1.4.Neoliberal Reforms and Indigenous Movements

The late 20th century and early 21st century bore witness to the advent of neoliberal reforms, reflective of the global trend toward economic liberalisation and the curtailment of state intervention. While conceived with the intent of fostering economic growth and advancement, these reforms bore mixed results and ignited contentious debates. Advocates celebrated the purported economic stabilisation and the attraction of foreign investment, while detractors raised concerns regarding escalated social inequalities as ramifications of privatisation (Morales, 2010). Contemporary Bolivian politics have been significantly influenced by indigenous movements, constituting a substantial segment of the populace that has historically been marginalised by prevailing political and economic dynamics, which have often favoured mestizo[8] populations. Over recent years, indigenous communities have coalesced to assert their rights,

[8] Refers to mixed people in the Americas.

cultural identity, and political participation. Notably, the Cochabamba Water War of 2000 stands out as a poignant manifestation of this activism, prompted by the privatisation of water services by multinational corporations. This mobilisation yielded successful results, compelling the government to reverse its course and exemplifying a mobilisation against neoliberal policies (Hylton et al., 2007).

1.5. The Ascent of Evo Morales and Its Complex Legacy:

The ascent of Evo Morales in 2006 marked a historic juncture in Bolivia's trajectory, as he became the nation's first indigenous president. His leadership, epitomised by the Movement for Socialism (MAS), championed indigenous rights, land reform, and social equity. Although his administration espoused the importance of indigeneity, it encountered considerable controversy, particularly concerning its stance on extractive industries and environmental policies, which conflicted with indigenous interests. Morales's decision to pursue a fourth term kindled accusations of authoritarianism, instigating widespread protests, his re-election in 2019, plagued by allegations of electoral fraud, prompting a cascade of protests and ultimately leading to Morales's resignation and departure from the country. This power vacuum paved the way for Luis Arce of the MAS party to assume the presidency (Farthing, 2019; Zilla et al., 2020).

1.6.Emerging Role of Lithium Mining in Bolivia's Economy:

Adding a contemporary twist to Bolivia's historical narrative, the exploration of lithium mining has gained prominence, particularly in the vast expanse of the Salar de Uyuni. Bolivia's engagement in lithium extraction is relatively recent compared to its historical trajectory of tin and silver mining. The Uyuni salt flat, formerly known as the white desert, was an isolated location largely unused by the government until 1976 when the Geological Service of the U.S found lithium in its brines and began the process of identifying and quantifying its

evaporite resources (Sanchez-Lopez, 2019). This marked the beginning of a long and conflictive process of commodification and transformation of the Uyuni Salt Flat and marked a change for the surrounding communities, as it balances its legacy with contemporary concerns, the emergence of lithium mining and the modern intersection of economic aspirations. In comparison to its neighbouring nations, it has yet to establish itself as a dominant force in the global lithium market despite its considerable reserves. This is not to discount its involvement in lithium mining; however, it trails behind Chile and Argentina, owing in part to the challenging terrain of its high-altitude salt flats, which render the conventional solar evaporation extraction method unsuitable (Baxter, 2020; Sanchez-Lopez, 2019).

2. *Resources:*

The Salar de Uyuni, situated atop the Bolivian Andean plateau, stands as the largest expanse of salt and a natural marvel. Within its confines reside prodigious lithium reserves, amounting to 21 million tonnes found in its brines, as documented in Figure 1. This formidable repository is complemented by significant caches of potassium and magnesium. In terms of reserves, Bolivia is followed by only a few countries, namely Argentina (20Mt), the U.S (12Mt)., Chile (11Mt), Australia (7.9Mt), and China (6.8Mt), in a descending order (Sanchez-Lopez, 2019; Venditti, 2023) The intricate process of extracting and evaporating lithium from brines is predominantly extracted from the "Lithium Triangle," an area encompassing Bolivia, Chile, and Argentina, underpinning a complex operation. Notably, this region accounts for 55% of the total global lithium reserves and a staggering 85% of brine-derived lithium (see Figure 2 for an illustrative representation) (The Economist, 2017).

Figure 18: Countries with the largest Lithium reserves (in million tonnes)(Venditti, 2023)

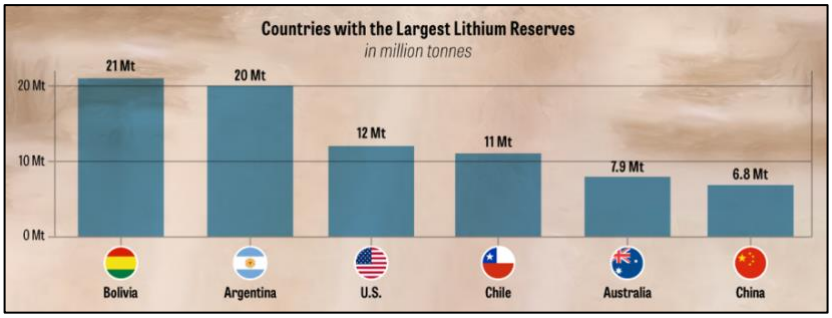


Figure 19: Lithium Triangle (The Economist, 2017)

The rapid ascendance of the clean energy sector, as portrayed in Figure 3, has catalysed a notable surge in demand for the planet's lightest metal. Its eminence as a coveted commodity within the realm of the green transition has surged from 30% to an impressive 56% between 2017 and 2022. This transformative influence extends across a spectrum of applications, spanning from portable electronic devices to the foundational lithium-ion batteries propelling electric vehicles (EVs) and energy storage systems. In consequence, lithium's centrality to pioneering technologies resonates strongly, auguring a trajectory of increased demand. Forecasts reverberate this sentiment, prognosticating a doubling of

demand by 2030 and a further expansion of 3.5 times by 2050, with a pronounced focus on the EV sector, as substantiated by the International Energy Agency (IEA) (refer figure 4) (Lithium, IEA, 2023).

Figure 20: Growth of mineral demand clean energy(Critical Minerals Market Review, 2023)

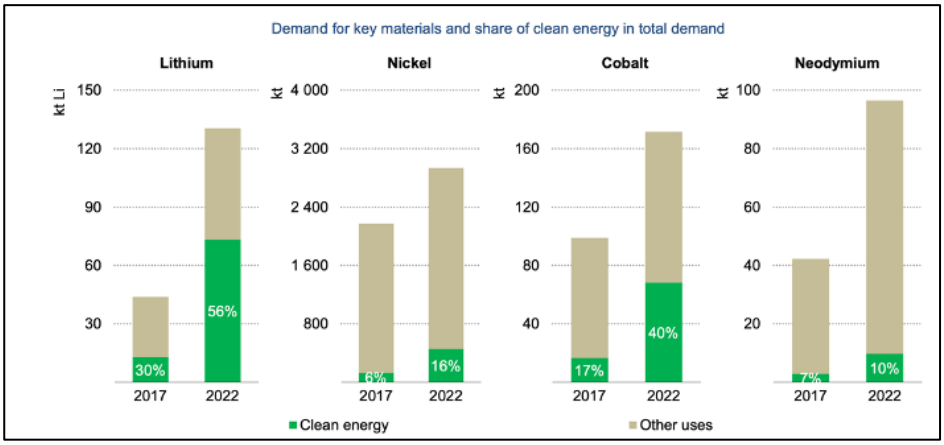
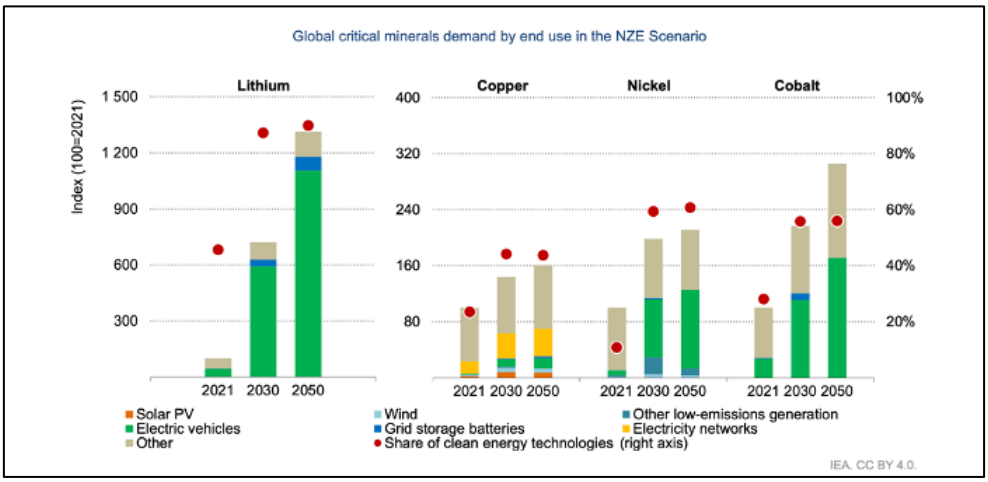


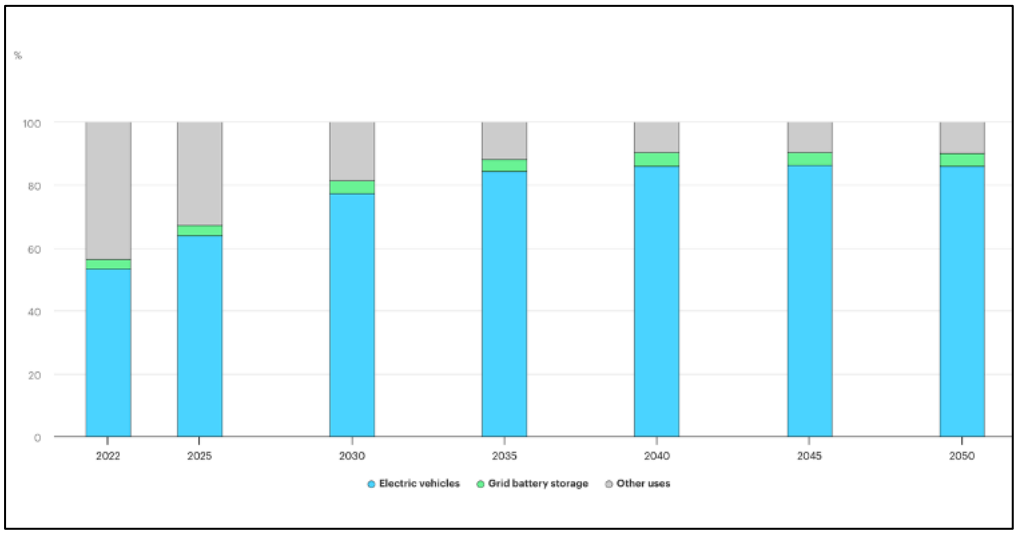
Figure 21: Clean Energy Technologies driving demand growth Critical Minerals Market Review, 2023)



As of 2035, a prevailing majority of the demand projections gravitate toward the EV sector, an insight that Figure 5 adeptly illuminates. The discerning presentation of growth in mineral demand for clean energy within Figure 5 seamlessly aligns with the refined depiction of clean energy technologies

fostering demand expansion captured in Figure 6 (Critical Minerals Market Review, 2023).

Figure 22: Total Demand for Lithium in the Announced pledges scenario(Lithium, IEA, 2023)



The global surge in battery demand, particularly for light-duty vehicles (LDVs) in the year 2022, prominently accents the discernible appetite for advancements within this sphere. As highlighted by Figure 6, the nexus of this escalating demand emanates from prominent regions, namely China, Europe, and the U.S., sequentially. Figure 7 augments this premise, revealing an upswing of 30% in critical mineral mining investment, underpinned notably by the participation of Chinese and Western multinational entities, notably Glencore. Enterprises specialising in Lithium development investment corroborate this trend, reporting a formidable 50% augmentation in expenditure within the confines of 2022 alone, in tandem with an exploration outlay that has burgeoned by 20%. This resounding crescendo in lithium exploration, notably across Latin American landscapes, as underscored by Figure 8, positions lithium as an unassailable pioneer in the domains of commodities, exploration activities, and financial commitment, with a commendable surge of 90% following a prior increment in 2021(Critical Minerals Market Review, 2023).

Figure 23: Battery demand in the clean energy sector by segment and region (Critical Minerals Market Review, 2023)

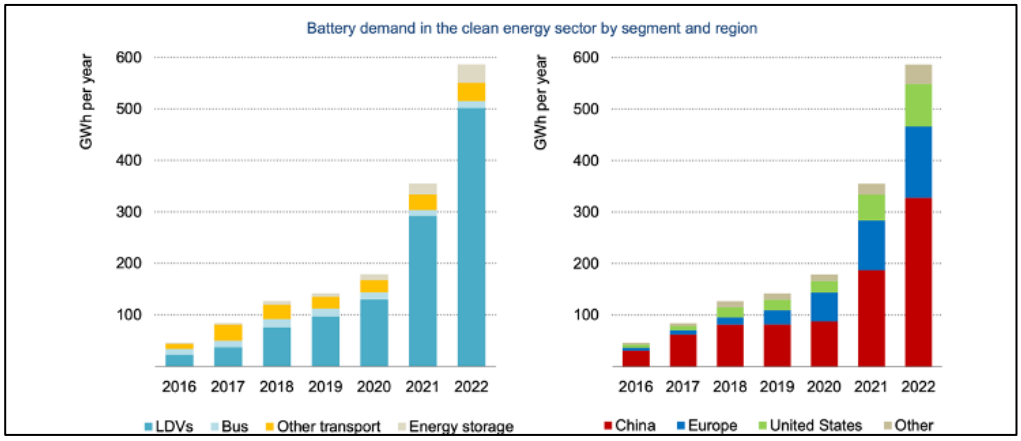


Figure 24: Investment in critical mining(Critical Minerals Market Review, 2023)

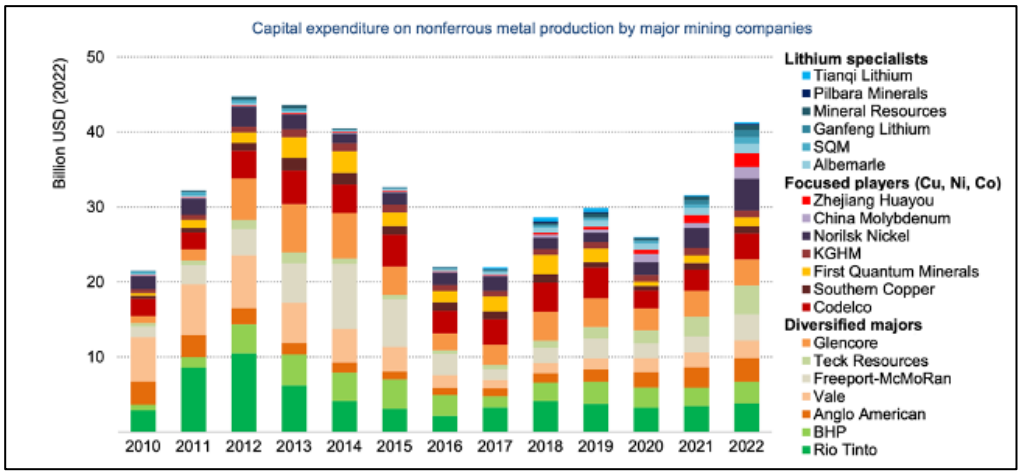
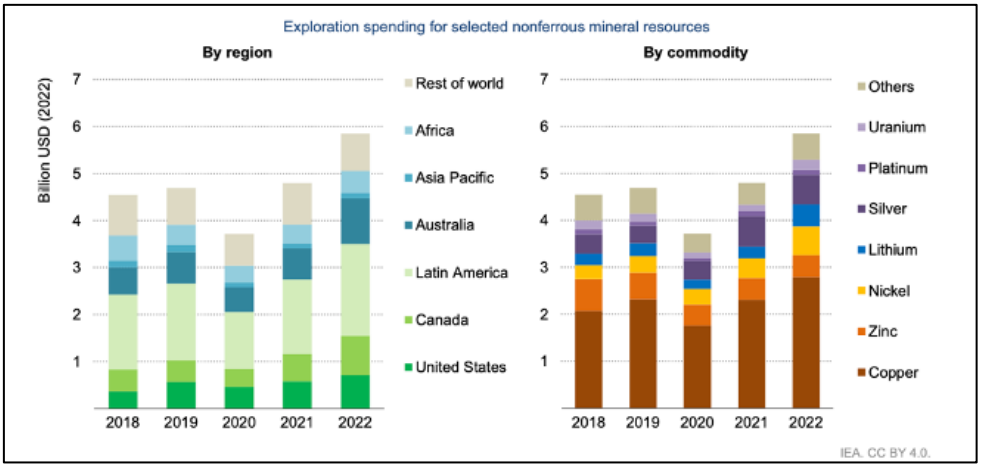


*Figure 25: Exploration spending by region and commod*ity (Critical Minerals Market Review, 2023)



Thus, the symphony of these intricate market dynamics, epitomised by the meteoric surge in global battery demand, the ascendancy of the EV sector, and the surging investments in lithium ventures, resonates with a nuanced global landscape marked by burgeoning explorations, technological advancements, and pronounced shifts in consumption patterns. Yet, beneath this façade of progress, a subtle disparity emerges. A more circumspect analysis, as encapsulated in Table 1, reveals that the epicentre of lithium demand rests predominantly within the Global North. Emanating from countries such as China, South Korea, Japan, the U.S., and prominent European nations, this fervent consumption narrative orchestrates a complex narrative. While the Southern Hemisphere boasts a preponderance of the largest lithium reserves and prodigious production, the economic dividends of this valuable resource predominantly accrue to the Global North (Jerez et al., 2021). This reality, embodied succinctly within Table 1, underscores the intricate lines of engagement, profitability, and resource appropriation within the international lithium market—a testament to the intricate interplay of geopolitical, economic, and developmental considerations. The tapestry woven by these intricate threads—comprising escalating demand, surges in exploration investments, and

North-South dichotomies—paints a vivid tableau of the multifaceted and evolving landscape that defines the global lithium narrative.

Table 5: A global production chain of green electromobility: lithium resources, lithium producers, lithium exporters and electric car consumers by country/region (Jerez et al., 2021).

Lithium resources by country (million/tons)	**Lithium reserves (million/tons)**	**Lithium producers**	**Lithium importers**	**Electric car consumers**
Bolivia: 37 Argentina: 17 Chile: 9 USA: 6.8 Australia: 6.3 China: 4.5	Chile: 8.6 Australia: 2.8 Argentina: 1.7 Others: 1.1 China: 1 USA: 0.630	Australia (54.4%) Chile (23.6%) China (9.7%) Argentina (8.3%) Zimbabwe (2.07%)	China: 24% South Korea: 20% Japan: 16% USA: 10% Belgium: 10%	China: 56% Europe: 23% (Norway, Germany, France, Netherlands, United Kingdom, USA-Canada (17%) Rest of the World (4%)

3. Environmental impact

According to the ND-Adaptation gain, Bolivia overall ranks 133 out of 185 in terms of climate vulnerability and readiness, ranging in the lower middle ranges of risk and resilience(ND-Gain, 2023). However increasingly, Bolivia is at risk particularly regarding water and food security, as droughts and floods jeopardise agricultural and livestock stability and equality. Overall, lithium deposits

especially those in the Lithium triangle are located in some of the driest locations on earth, making them particularly vulnerable to climate impacts and climate shocks. Although Bolivia is yet to engage in lithium expansion, Bolivia overall faces high risks of food and water insecurity and malnutrition concerning trends when taking mining and lithium processing into consideration through its excessive carbon emissions, water and land use methods (Early, 2011; Vander Molen, 2022)

3.1.Water Depletion:

In the lithium triangle, notably in Bolivia, the predominant extraction method involves the utilisation of brine extraction, in contrast to the hard rock mining technique. This procedure necessitates the creation of lithium pools, wherein the progression of lithium production is facilitated through the evaporation process (Grossman et al., 2023; Sanchez-Lopez, 2019). While this approach boasts lower carbon dioxide emissions, it is associated with substantial demands for both land and water resources. A salient concern intertwined with lithium extraction revolves around the substantial water consumption required in the processing of lithium. Approximately 500,000 gallons of water are needed for every ton of lithium produced, an amount sufficient for the fabrication of approximately 100 car batteries, each weighing approximately 2 metric tonnes. Consequently, this engenders significant strains on communities residing in the salt flat regions, particularly during periods of drought, thereby rendering access to clean and safe water a matter of grave apprehension (Lakshmi, 2023). Despite possessing the highest reserves of lithium, Bolivia has yet to assume a prominent role in the realm of lithium extraction. This dynamic renders the environmental implications of lithium extractivism yet to be fully realised. Nevertheless, given Bolivia's vulnerability concerning water resources, this aspect is likely to evolve into a pressing concern for local communities. Concurrently, plans are underway for the further expansion of lithium extraction

(Baxter, 2020; Vander Molen, 2022). While water stress has been experienced by local communities in the Bolivian lithium triangle, more pronounced evidence in Chile and Argentina signals considerable environmental degradation resulting from lithium extraction. This is characterised by the excessive depletion of water, which in turn aggravates the struggle for clean and safe water. Lithium extraction not only elevates water consumption but also leads to contamination, ultimately affecting the water supply to communities, livestock, and agricultural crops. Instances in Chile and Argentina underscore the ramifications of aquifer depletion, residual water pollution, and water dispossession (Jerez et al., 2021; Ortiz et al., 2014). In the context of Bolivia, the indigenous Aymara and Quechua communities rely on water not only for potable purposes but also for agriculture and livestock rearing. Although these indigenous communities successfully resisted water privatisation and exploitation during the Cochabamba Water War, the expansion of lithium mining poses renewed risks to their access and quality of water resources. Notably, rural communities in Bolivia have reported damages to fish and livestock, highlighting the early adverse consequences of traditional lithium brine extraction on local agricultural and rural (Baxter, 2020; Vander Molen, 2022).

3.2.Health, Pollution and Waste:

The risk assessment committee (RAC) of the European Chemicals Agency (ECHA) has supported proposals and calls for designating certain lithium salts as category 1A reproductive toxicants. This advocacy underscores the critical necessity to establish regulations and classifications for lithium due to its potential to adversely affect health, fertility, and the well-being of unborn children. The processes entailed in lithium's production and processing manifest instances reminiscent of chemical violence, involving the deployment of hazardous chemicals to inflict harm, even if inadvertently. This convergence is particularly evident in the creation of sacrifice zones, notably in the Atacama

desert of Chile, which serve as sites of lithium processing and its attendant environmental consequences (Weinberg, 2023). Though research on this aspect within the context of the lithium triangle remains limited, investigations into lithium pollution in China have unveiled its inhibitory impact on the viability and growth of human cardiomyocytes—essential heart muscle cells. Furthermore, it triggers a notable upsurge in cell apoptosis, a programmed process of cell death (Shen et al., 2020). Concerning biodiversity, elevated lithium concentrations not only contaminate soil and water reservoirs but also stymie plant growth and vitality. The prevailing method for extracting lithium from brine, characterised by its general approach, exhibits a destructive character due to the utilisation of evaporation pools, which effectively reshape the landscape. The escalation in lithium production and processing via evaporite methodologies generates substantial waste by-products that subsequently amplify soil alkalinity, adversely impacting agriculture, and biodiversity. It's imperative to note that comprehensive strategies for mitigating these effects are not yet fully developed nor sufficiently researched (Melendez, 2023).

4. Economic implications

4.1.Macroeconomics

Following the conclusion of the commodity boom in 2014, Bolivia embraced a strategy of heightened public expenditure and augmented domestic credit in a bid to sustain rapid economic growth (Beverinotti, 2018). This, however, yielded unintended outcomes as it elevated public debt levels and eroded the international reserves and fiscal savings accrued during the preceding boom (refer Figure 9). The repercussions of the Covid-19 pandemic further exacerbated this complex scenario, plunging the economy into a profound recession, accompanied by an increase of poverty rates. Subsequent to the pandemic-induced downturn, Bolivia demonstrated commendable economic

recuperation and a reduction in poverty levels, attributed to the relaxation of confinement measures and favourable international dynamics, notably the ascent in prices of key export commodities (refer Figure 10). Notwithstanding these advancements, the conspicuous presence of elevated public debt and limited international reserves imposes discernible constraints on endeavours to invigorate the economy. This is compounded by the relatively passive role of the private sector, a susceptibility to climatic shocks, and the concomitant exposure to an array of associated risks (Bolivia, World Bank, 2023). The government persists in its pursuit of a state-driven development strategy, characterised by an emphasis on import substitution, public investment, and state-owned enterprises. However, this strategic trajectory encounters challenges arising from constricted access to global capital markets, a waning trajectory in gas production, and the burgeoning cost of fuel and food subsidies (Beverinotti, 2018; Bolivia, World Bank, 2023). Despite the nation's mineral wealth and possession of the second-largest gas reserves in South America, Bolivia sustains its status as one of the region’s most economically challenged nations. A dearth of economic diversification persists, and the nation's economic trajectory continues to hinge significantly upon natural gas exports. After experiencing a notable 6.9% resurgence in 2021, a responsive reaction to the post-Covid shock of 2020, economic momentum waned to 3.1% in 2022 (see Table 2, Figure 10). This deceleration finds its roots in the interplay of private and public consumption, intertwined with an improved labour market environment and escalated commodity prices. Contributory factors encompass a decline in gas exports, sluggish public investment, intermittent diesel shortages, and sporadic social unrest that collectively contributed to a deceleration of growth beyond 2021. The fiscal deficit ameliorated, subsiding to 7.2% of the GDP, bolstered by heightened taxation and a stasis in public investment. Nevertheless, this favourable trajectory was offset by the decline in export volumes and the burgeoning undercurrent of fuel subsidies. The persistent adherence to fixed exchange rates, the stabilisation of fuel prices, and

government intervention in food markets collectively contributed to the maintenance of relatively subdued inflation levels (Bolivia, World Bank, 2023).

Figure 26: Public Debt(Bolivia, World Bank, 2023)

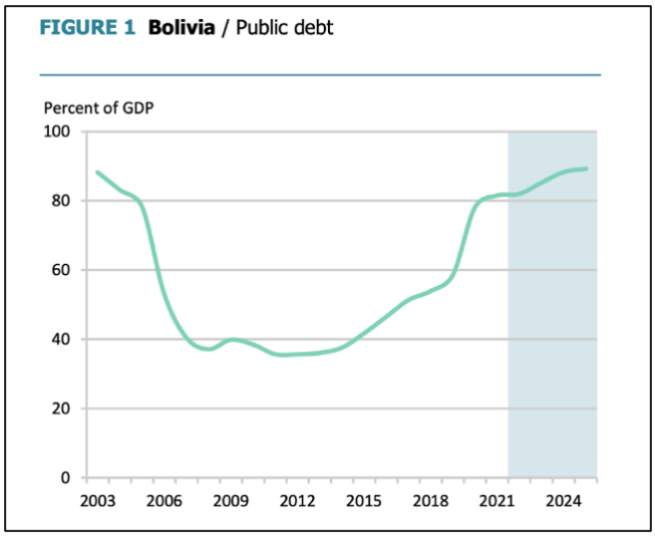


Figure 27: Actual and projected poverty rates and real GDP per capita(Bolivia, World Bank, 2023)

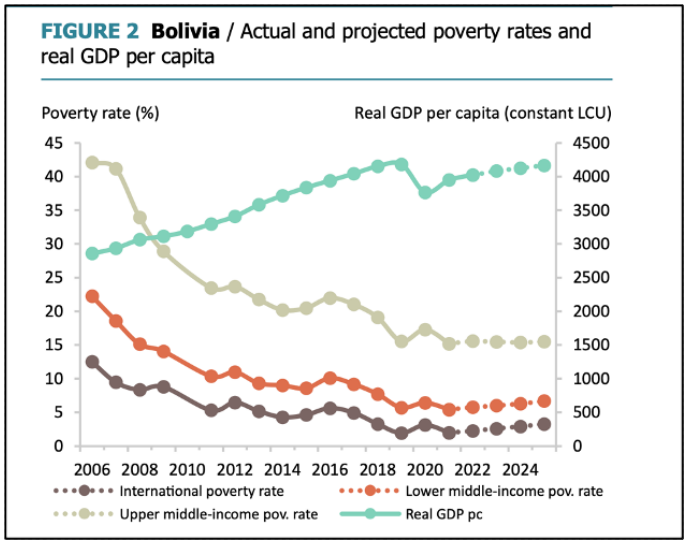


Table 6: Macro poverty outlook indicators(Bolivia, World Bank, 2023)

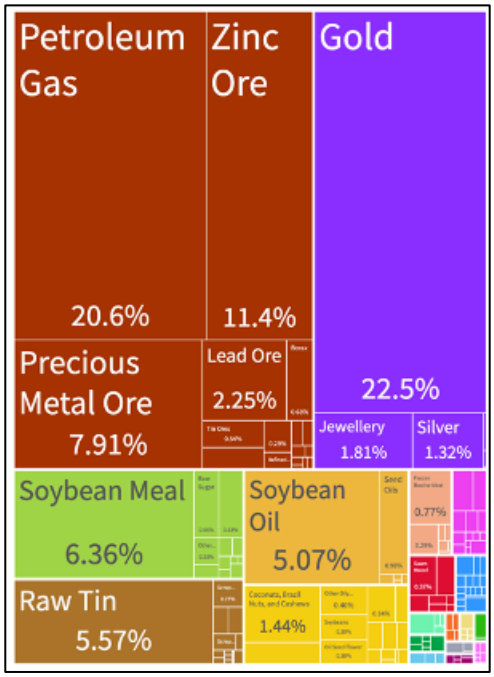
TABLE 2 Bolivia / Macro poverty outlook indicators (annual percent change unless indicated otherwise)

	2020	2021	2022e	2023f	2024f	2025f
Real GDP growth, at constant market prices	-8.7	6.1	3.1	2.7	2.1	2.1
Private Consumption	-7.9	5.3	4.1	3.3	3.1	2.9
Government Consumption	-2.8	5.4	0.8	0.3	0.3	0.3
Gross Fixed Capital Investment	-25.9	11.9	6.5	-1.2	-2.1	-1.3
Exports, Goods and Services	-18.8	15.4	8.3	5.6	2.9	2.9
Imports, Goods and Services	-25.0	15.7	11.5	3.3	2.1	2.1
Real GDP growth, at constant factor prices	-8.4	6.4	3.1	2.7	2.1	2.1
Agriculture	3.1	1.8	4.0	4.0	4.0	4.0
Industry	-11.8	9.6	1.3	2.5	2.5	2.4
Services	-9.3	5.8	4.1	2.3	1.1	1.2
Inflation (Consumer Price Index)	0.9	0.7	1.7	3.3	3.5	3.5
Current Account Balance (% of GDP)	-0.1	2.1	0.4	0.3	-0.6	-0.6
Net Foreign Direct Investment Inflow (% of GDP)	-2.8	1.2	1.7	1.7	1.8	1.8
Fiscal Balance (% of GDP)	-12.7	-9.3	-7.2	-6.5	-6.0	-5.0
Revenues (% of GDP)	25.3	25.1	27.2	27.4	27.0	27.0
Debt (% of GDP)	78.1	81.5	82.0	85.3	88.3	89.3
Primary Balance (% of GDP)	-11.2	-7.9	-5.6	-4.2	-3.6	-2.5
International poverty rate ($2.15 in 2017 PPP)[a,b]	3.1	2.0	2.2	2.6	2.9	3.3
Lower middle-income poverty rate ($3.65 in 2017 PPP)[a,b]	6.4	5.4	5.8	6.0	6.3	6.7
Upper middle-income poverty rate ($6.85 in 2017 PPP)[a,b]	17.3	15.2	15.6	15.5	15.4	15.5
GHG emissions growth (mtCO2e)	-2.6	0.7	0.5	0.5	0.5	0.5
Energy related GHG emissions (% of total)	12.8	12.9	13.1	13.3	13.4	13.6

4.2.Extractive sector significance

The Bolivian economy exhibits substantial dependency on the outcomes of its extractive sector. Exports from these sectors represented estimated 69% of the total Bolivian exports (Trend Economy, 2022). Encapsulated in Figure 11, predominant among the extractive commodities are gold, gas, zinc, and ore (OEC, 2021). Noteworthy however, is the emergent dynamism within other sectors, notably the agricultural domain, which has demonstrated a commendable export surge of 27%, as stipulated by the U.S State Department, (2023).

Figure 28:Bolivia, Trade Overview (OEC, 2021)



5. Social and Human Rights

5.1.Human rights and mining:

Bolivia, distinguished by its diverse and multi-ethnic populace, stands as a testament to the intricate connection between indigenous communities, the environment, and cultural preservation. These indigenous groups not only function as stewards of the region's biodiversity and guardians of its natural resources but are also intricately interdependent with the environment for their survival and cultural heritage. A pioneering nation in this regard, Bolivia has made a ground-breaking stride by conferring nature's rights an equivalence to human rights. This landmark advancement materialised through the enactment of the Law of Rights of Mother Earth, referred to as Pachamama. This legislation notably recognises the right of nature, the protection of indigenous peoples and their territories within the constitutional framework (Berros, 2021). Nevertheless, the looming spectre of peril to indigenous lands and ecological

harmony remains unabated. Specifically, governmental concessions, particularly within the domain of gold mining, have paved the way for a surreptitious infiltration into nearly half of the nation's national parks, which serve as the lifeblood for entire communities. However, this penetration, in both lawful and unlawful forms of mining, has fomented a rampant deforestation spree. In addition, ecosystems have been tainted with the insidious presence of toxic mercury, imperilling local communities' health and well-being. This dual paradigm of mining, whether sanctioned or covert, is underscored by an alarming undercurrent of exploitation, a stark reality extending its sinister grasp even to encompass children, culminating in instances of child (sex) trafficking (Booyzen, 2022). Within this intricate tapestry of intertwined challenges, indigenous communities have emerged as victims, ensnared in a web of exploitation, violence, and trafficking. Notably, those championing the cause of environmental preservation, particularly women, are ensnared in a disconcerting cycle of intimidation, harassment, and arbitrary arrests. These acts of repression often unfold under the ominous veil of impunity, a disquieting commentary on the prevailing landscape. The contours of indigenous protest reverberate with the echoes of state-sanctioned violence, epitomised by the lamentable Chaparina incidents, wherein the national police inflicted violence upon indigenous demonstrators. This troubling state of affairs extends its grip to encompass the judiciary, where legal proceedings are marred by allegations of political persecution, serving to stifle critical voices, curtail journalistic autonomy, and silence human rights advocates. This disturbing narrative of suppression has even escalated to accusations of government officials masquerading as protesters, employing subterfuge to quell advocacy for environmental and indigenous justice (Booyzen, 2022).

Furthermore, the harrowing spectre of child labour casts a long shadow over the extractive industry, particularly within the Bolivian highlands. Here, children, enmeshed in perilous toil, are consigned to the depths of zinc, lead,

and silver mines, subject to conditions that defy humane standards. A sombre reality unfurls as children join familial ranks within the subterranean tunnels, temporarily forsaking education in a bid to contribute to survive impoverishment. The pandemic, serving as a crucible of adversity, has wrought a convergence that suspended academic pursuits, propelling children into the vortex of harsh labour conditions. Within this crucible, the vulnerability of these children becomes starkly evident, as the rigours of labour and the perils of hazardous conditions compel even those as young as eleven to seek medical intervention due to accidents or pollution-related ailments (Freedom Collaborative, 2020). Available data from the UNICEF data warehouse provided insights into the attendance rates (data available only for 2016) (Figure 12) and child labour rates of 2019 as can be seen in Figure 13. Overall, attendance in 2016 was high, and pandemic and post-pandemic rates of attendance are likely lower, however, the attendance rate overall provides insights into the subsequent development and potential. Overall, attendance rates decrease in lower and upper secondary school age by more or less 20% transition from primary school attendance, suggesting young adolescents already drop out of school to work (UNICEF, 2016). The rate of children involved in child labour is equally high, an aggregated 12.3% of children involved in economic activities, and 13.6% involved in economic activities and household chores, the numbers slightly diverging between girls and boys in the latter an indicator of unmonetised contributions of girls (UNICEF, 2018)

Figure 29: School attendance rate Bolivia 2016(UNICEF, 2016)

Sex	Female	Male
Indicator		
Adjusted net attendance rate for children of primary school age	95.669	95.316
Adjusted net attendance rate for adolescents of lower secondary school age	71.731	71.719
Adjusted net attendance rate for youth of upper secondary school age	75.377	71.2

Figure 30: Percentage of children (5-17 years) engaged in child labour (economic and household chores) Bolivia (UNICEF, 2018)

Sex	Female	Male	
Indicator			
Percentage of children (aged 5-17 years) engaged in child labour (economic activities)	(*) 11.7	(*) 13	(*) 12.3
Percentage of children (aged 5-17 years) engaged in child labour (economic activities and household chores)	(*) 13.2	(*) 14	(*) 13.6

5.2.Lost Lithium Promise:

Lithium mining has been subject to local resistance, exemplified in 1990 when the Lithium Corporation of America (LITHCO) received a direct proposition from the then neoliberal government to engage in lithium extraction. This endeavour, however, was met with vehement opposition from civil society organisations and grassroots movements, compelling LITHCO to redirect its pursuits to Argentina instead (Sanchez-Lopez, 2019). Bolivia's ambitions for

lithium industrialisation came to the fore in the aftermath of former President Morales' ascendancy to power in 2006, marked by the emergence of the MAS movement. The administration ardently championed the pursuit of sovereign dominion over the lithium resource, consistently endeavouring to cultivate it autonomously or with restricted external influence. Commencing from 2008, the government channelled nearly $1 billion into the establishment of an industrial complex dedicated to lithium. The conventional extraction methodology entails the diversion of brine into evaporation ponds, where the crystallisation of lithium salts takes place. Bolivia's investment of approximately $800 million in this method resulted in the creation of an assemblage of ponds and a partially constructed facility poised to yield an annual lithium output of 15,000 tonnes, positioning the country as a modest contributor to the global market. Nonetheless, the effectiveness of this approach, demonstrated in neighbouring countries, has encountered challenges stemming from the heightened levels of impurities present within Bolivia's brine resources (Baxter, 2020; Sanchez-Lopez, 2019). Under Morales' governance, the government hailed lithium as a panacea for Bolivia's multifarious challenges, articulating a vision of uplifting the Bolivian populace from impoverishment. Central to this vision was a plan characterised by complete state ownership, encompassing endeavours for education and technological training of Bolivians, along with the cultivation of skilled labour in tandem with lithium extraction. This multifaceted blueprint can be distilled as follows: a fusion of sovereign proprietorship, state administration, value addition, strategic partnerships, civic participation and consultation, alignment with ecological equilibrium, and equitable redistribution, all culminating in a paradigm of novel and equitable development. This plan included training Bolivians in science and technology as well as the skilled jobs that accompany lithium extraction setting out a development formula as follows: *sovereign ownership* + *state management* + *added value* + *strategic partner* + *citizen participation and consultation* + *harmony with nature* + *redistribution* = **new and just**

development (Solón, 2022).The tangible outcomes however have not borne out these promises. To date, the establishment of lithium production centres has not included or redounded to the benefit of the indigenous communities inhabiting the vicinity, and crucial consultations with these communities have been conspicuously absent. Instead, the workforce predominantly hails from larger urban centres such as the capital, thereby side-lining the local Aymara communities within Bolivia's Lithium triangle. Scarce opportunities have materialised for unskilled labourers, and the clamour for educational and training avenues for the Aymara population has largely gone unanswered. Over the course of the past decade, societal influence over the exploitation of these resources has been markedly limited, and the mechanisms envisaged for inclusive participation have remained largely elusive, despite the legal mandate to that effect (Baxter, 2020; Solón, 2022).

In 2018, a collaborative endeavour was initiated with ACISA, a German company, but was subsequently nullified in the wake of protests erupting in Potosí, a focal point of the lithium reserves. Local civic committees orchestrated a concerted strike to challenge the terms of the agreement, an event closely preceding the 2019 elections, which were marred by allegations of electoral malfeasance. This period bore witness to a series of protests that culminated in the ousting of former President Morales, a sequence he characterised as the "lithium coup," attributing it to the influence of international stakeholders, particularly U.S. interests, that stood in stark contrast to his advocacy for state-driven lithium extraction (Lunde Seefeldt, 2020). In tandem, proponents heralded sanguine prospects of employment opportunities and economic prosperity engendered by lithium extraction. However, this narrative faced its antithesis in the scepticism of local indigenous communities, who raised probing questions regarding the veracity and sustainability of these purported benefits (Baxter, 2020).

Subsequent to the upheaval given the intricate challenges inherent in lithium extraction, the state-owned entity, Yacimientos de Litio Bolivianos (YLB), under the aegis of the new administration, embarked on a strategic move by extending invitations to foreign corporations to present innovative technologies for the direct extraction of lithium. These cutting-edge methodologies, if successful, hold the potential to curtail water consumption and reduce reliance on unpredictable weather patterns. Nonetheless, it is imperative to note that these technologies remain largely untested and their prospective adoption entails a measure of reliance on foreign expertise (Lunde Seefeldt, 2020). Subsequently, a series of protests have materialised in Potosí, compelling for the appropriation of proceeds stemming from lithium, encompassing augmented royalties, and articulating opposition to privatisation. This movement has been conspicuously orchestrated under the auspices of the FRUCTAS union, with its leader Ramiro Huayta vociferously advocating for the reinstatement of a state-led industrialisation initiative (Baxter, 2020).As of January 2023, YLB entered an agreement with the Chinese consortium CBC to introduce a novel direct lithium extraction method, potentially ushering in a period of economic prosperity (Bouchard, 2023).Whether this will develop inclusively is unclear however given the history of indigenous exclusion is questionable.

5.3.Constitutional right ignored:

In extension to the aforementioned, citizen participation stands as a pivotal motif within Bolivia's political constitution, ratified in 2009. Further bolstering this commitment, Law 341 on citizen participation and control was promulgated in 2013, envisioning the establishment of enduring arenas for citizen engagement and oversight within state-owned enterprises, at least in principle. However, a notable divergence from this theoretical framework is observed in practice. Instead of fostering an environment of comprehensive deliberation and responsive engagement with concerns voiced by local representatives,

particularly indigenous communities, the prevalent approach is characterised by sporadic public consultations conducted primarily to fulfil the formal prerequisites necessary for acquiring environmental licences. In theory, these consultations should encompass the tenets of free, prior, informed, and bona fide consent, a constitutionally enshrined status that necessitates implementation prior to any actions affecting the concerned communities. In practice, the implementation of such consultations has remained a conspicuous void, particularly in contexts susceptible to impact by projects such as evaporation ponds, industrial installations, and water supply facilities. Consequently, indigenous communities find themselves bereft of their constitutional prerogatives, relegated to the margins of the decision-making process even as they bear the weight of resultant (HRW, 2023; Solón, 2022).

5.4.Water wrenching, thirst quenching?

In spite of deploying their profound environmental wisdom and practices rooted in ancestral Andean principles, traditional hydro-cosmologies, and water knowledge as alternative frameworks, indigenous communities find themselves marginalised. Firstly, colonial and postcolonial contexts have engendered disproportionate water allocations and distributions, with transnational corporations predominantly holding water rights, particularly within the sphere of extractive endeavours earmarked for exportation, notably in Chile and Argentina (Bauer, 2015; Jerez et al., 2021; Molina Otárola & Yañez Fuenzalida, 2011). Indigenous communities have engaged in multi-scaled climate justice demands, regarding water injustice, primarily through their call for the cessation of extractive projects. The colonial definitions of water considerations and selective interpretations of sustainability empower (foreign) enterprises to extract vast quantities of fresh and saline water daily, all while ostensibly upholding sustainability ideals. This practice's impacts reverberate particularly within the agricultural sector, discouraging and hindering traditional farming

methods, effectively expelling many to seek livelihood elsewhere. Meanwhile, indigenous communities bear the brunt of these repercussions and, constrained by legal barriers, remain silenced, notably in the regions of the lithium triangle (Jerez et al., 2021). Water insecurity and injustices deteriorate the prospects and living conditions of indigenous communities, precipitating fragmentation and even the abandonment of cultural practices. Many are forced to forsake their ancestral lands, a phenomenon perpetuated by the combined forces of colonial inequalities, lack of state support, and escalating socio-environmental degradation, exemplified in the Case of Chile. Once acclaimed as the agricultural oasis of the region, San Pedro de Atacama has undergone a significant transformation due to the depletion of water resources, multinationals having consumed 65% of the region's water supply culminating in a palpable sense of insecurity for the indigenous farmers who once thrived in this locale (Bauer, 2015; Graham et al., 2021; Jerez et al., 2021; Lempert & Nguyen, 2011). This unsettling reality, undoubtedly, constitutes a wellspring of insecurity as narratives, and calls for low-carbon resources to continue to proliferate. The entwining of postcolonial inequities, the absence of robust state backing, and the escalation of socio-environmental degradation have perpetuated impoverishment, thus fostering an environment conducive to incentivising the continuation of such (Jerez et al., 2021).

In the case of Bolivia, lithium extraction has been low, thus producing less instances of reported water inequalities compared to Chile and Argentina. Particularly the case of the Salar de Atacama exemplifies this, whereby the extraction of lithium has not only triggered the depletion of aquatic ecosystems, but facilitated desertification, and soil contamination. It has further acted as a catalyst for the division and fragmentation of indigenous communities who were and continue to be forced to leave their cultural heritage as a means to survive (Jerez et al., 2021).These divisions arguably are illustrative of the growth and consumption paradigm not aligned with degrowth as well as climate

justice. Quenching the thirst of lithium in the cases of Chile and Argentina have produced more water disputes and injustices in the instance of lithium compared to Bolivia. Thus, future development practices given the current exploration and incorporation invitation of foreign expertise in the case of Bolivia arguably present a threat to the indigenous communities in Bolivia.

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