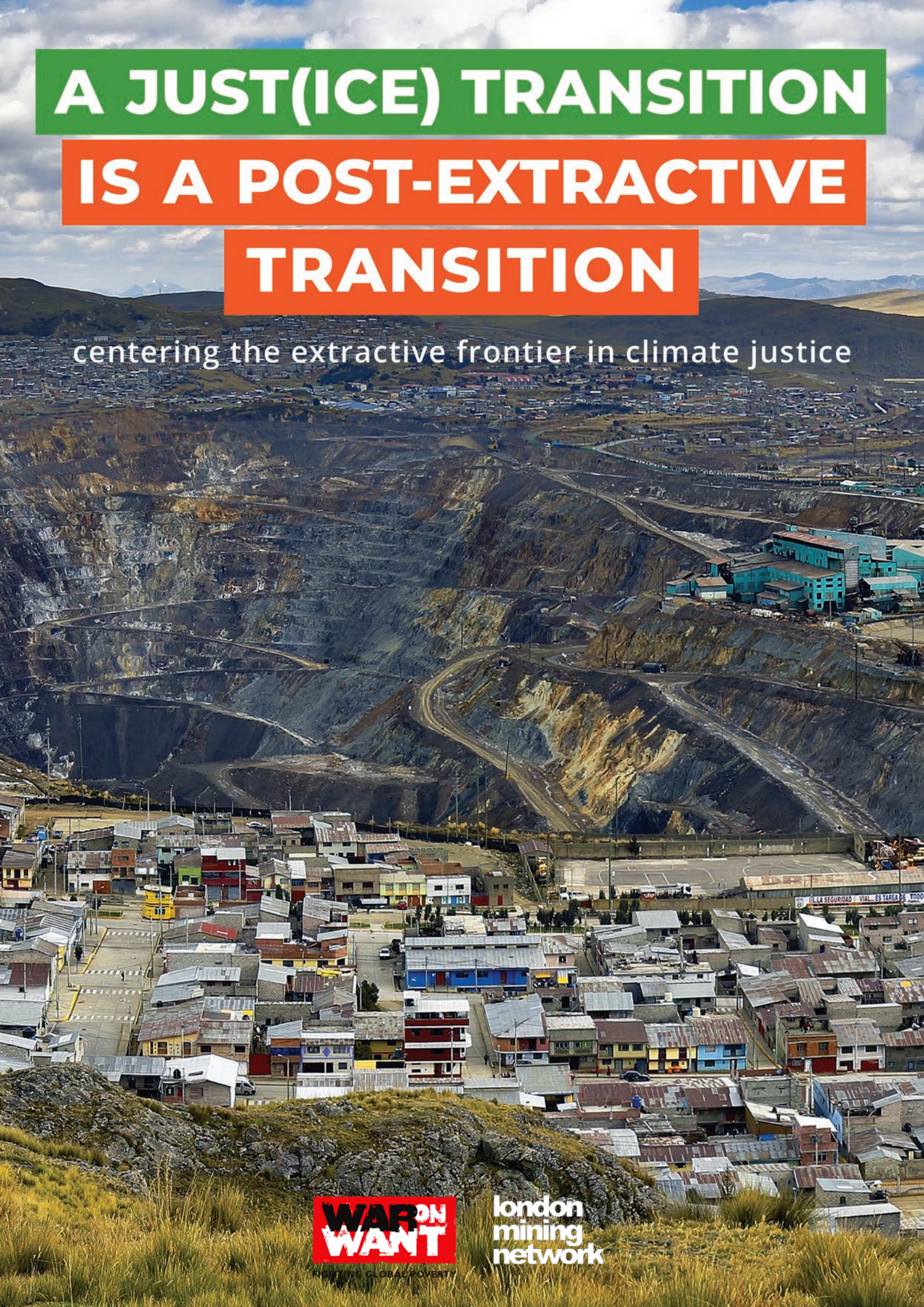
A JUST(ICE) TRANSITION IS A POST-EXTRACTIVE TRANSITION

centering the extractive frontier in climate justice



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- raising public awareness of the root causes of poverty, inequality and injustice, and empowering people to take action for change

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London Mining Network is comprised of 20 member organisations and 9 associate member organisations. Its mission is to:

"undertake research and action for human rights and environmental justice in partnership with communities resisting, or affected by, the operations of London-based or London-financed mining companies around the world. [The network] aims to tackle impunity and hold the mining industry to account, end unethical corporate practice, and to create an alternative narrative which respects the diverse cultures and cosmologies of the people with whom we work."

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FRONT COVER: THE RAÚL ROJAS OPEN-PIT MINE IN CERRO DE PASCO, THE PIT STRETCHES FOR 1.2 MILES AND IS OVER 1,000 FEET DEEP. CREDIT: JONATHAN CHANCASANA / ADOBE STOCK; OPPOSITE: ANTI-MINING PROTEST IN HONDURAS'. CREDIT: MATYAS REHAK

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EXECUTIVE SUMMARY

While the global majority disproportionately suffer the impacts of the climate crisis and the extractivist model, the Global North's legacy of colonialism, the excess of the world's wealthiest, and the power of large corporations are responsible for these interrelated crises.

The climate change mitigation commitments thus far made by countries in the Global North are wholly insufficient; not only in terms of emissions reductions, but in their failure to address the root causes of the crisis – systemic and intersecting inequalities and injustices. This failure to take inequality and injustice seriously can be seen in even the most ambitious models of climate mitigation.

This report sets out to explore the social and ecological implications of those models with a focus on metal mining, in six sections:

1. **Climate justice, just(ice) transition** locates the report's contributions within the broader struggle for climate and environmental justice, explains the reasoning for the report's focus on mining and emphasizes the social dimension of energy transitions.
2. **Extractivism in the decades to come** discusses projections for total resource extraction over the next four decades and raises concerns about the interconnected ecological impacts of increased resource extraction.
3. **The transition-mining nexus** section places in perspective the significance of renewable energy technologies in driving demand, by examining the share of critical metal end-uses that renewable energy technologies account for relative to other end-uses.
4. **Greenwashing, political will and investment trends** expose how the mining industry is attracting investment and justifying new projects by citing projected critical metals demand and framing itself as a key actor in the transition.
5. **Metal mining as a driver of socio-environmental conflict** offers a sense of the systemic and global nature of the social and ecological impacts of metal mining.
6. **Moving beyond extractivism** offers a sense of possibility in suggesting different ways forward, by addressing both the material and political challenges to a post-extractivist transition.

This report finds that:

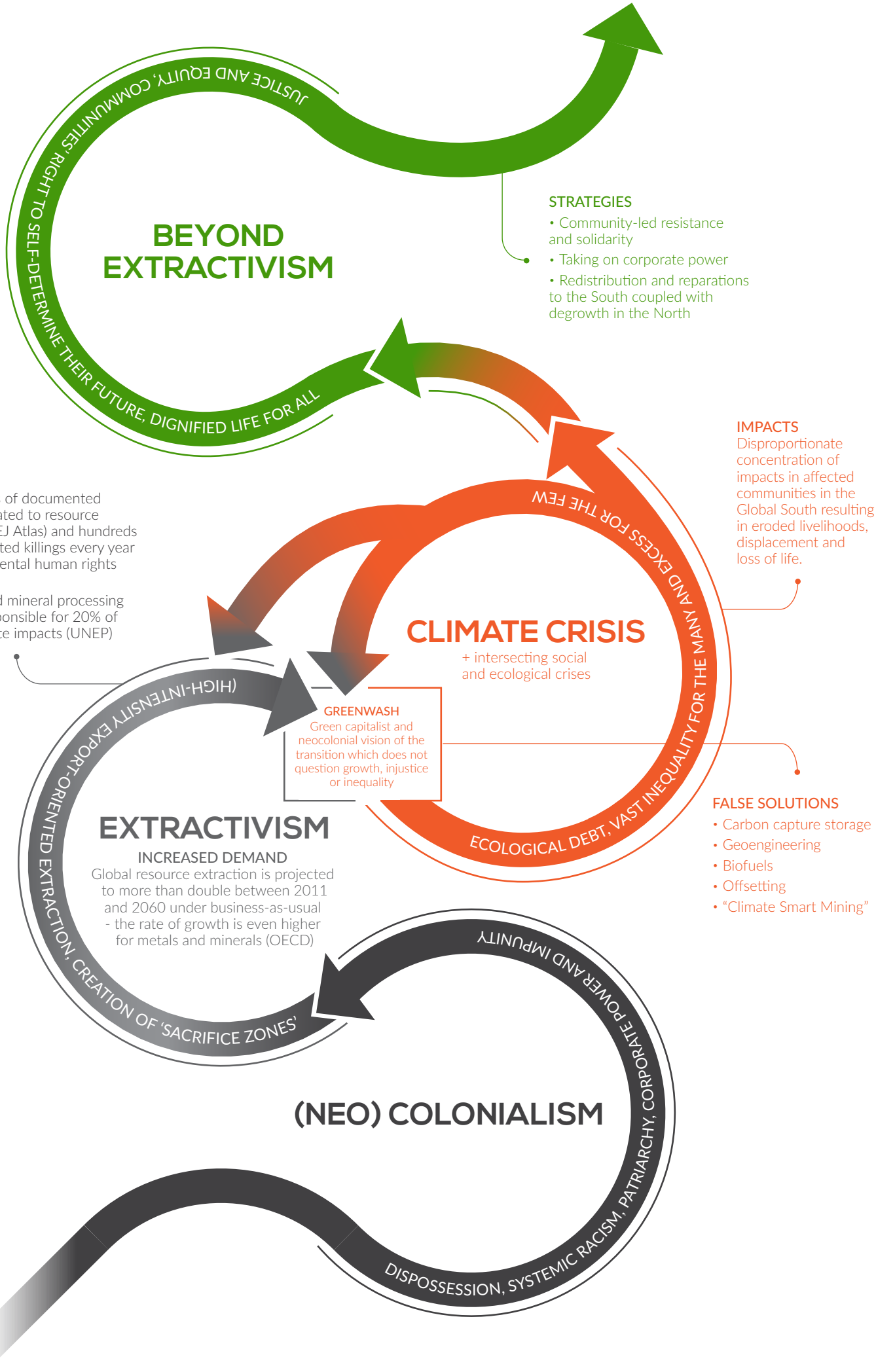
- Current models project that as fossil fuels become less prominent in the generation of energy, metal-intensive technologies will replace them. The assertion that economic growth can be decoupled, in absolute terms, from environmental and social impact is deeply flawed.
- Central to these models is the unquestioned acceptance that economic growth in the Global North will continue unchanged, and as such, will perpetuate global and local inequalities and drive the demand for energy, metals, minerals and biomass further beyond the already breached capacity of the biosphere.
- The assumption that economic growth is a valuable indicator of

THE LA PALOMA GLACIER LOCATED IN THE YERBA LOCA PARK, ABOUT 50KM FROM SANTIAGO, CHILE'S CAPITAL. THIS GLACIER IS ALLEGEDLY UNDER THREAT FROM THE CURRENT UPGRADE PLANS OF ANGLOAMERICAN'S LOS BRONCES PROJECT. CREDIT: JAIME VALDIVIA

wellbeing must be challenged. Scarcity is the result of inequality, not a lack of productive capacity. Redistribution is the answer to both social and economic injustice and the threat that extractivism and climate breakdown pose.

- Reducing fossil fuel energy dependence on its own is not a sufficient response to the intersecting socio-ecological crises, the extractivist model as a whole must be challenged.
- There is a need to address the extractivist model because mineral, metal and biomass extraction threaten frontline communities and the interconnected ecologies that sustain life and wellbeing.
- This need is particularly urgent because the mining industry is driving a new greenwashing narrative by claiming that vast quantities of metals will be needed to meet the material demands of renewable energy technologies.
- This greenwashing narrative serves to obscure and justify the inherently harmful nature of extractivist mining. International financial institutions and sectors of civil society that have embraced these assumptions are complicit in the mining industry's greenwashing efforts.
- Increased investment and political will for large-scale mineral and metal extraction is not an inevitable consequence of the transition, it is one of the fundamental contradictions within a vision of climate change mitigation which fails to understand extractivism as a model fundamentally rooted in injustice.
- Around the world, frontline communities are pushing back the expansion of extractivism and offering solutions to social and ecological injustice. But unfortunately, their voices, demands and visions are far too often absent in climate policy and campaigning spaces and agendas.
- Justice and equity need to be understood as cross-cutting issues that touch every aspect of the transition. These principles are fully compatible with ecological wellbeing and mutually enhance one another. Increasing access to energy, food and public services goes hand-in-hand with reducing excess consumption through processes of redistribution. The solutions are fundamentally social; technical fixes and increases in efficiency do not bring about justice or ecological wellbeing on their own.

POST-EXTRACTIVE TRANSITION



1 Climate Justice, Just(ice) Transition

The urgency to mitigate climate change and its impacts grows greater with the passing of every day. For many in the Global North, this urgency was made palpable following the publication of the most recent IPCC report.[1] But for the global majority, this urgency is often felt in the ever-worsening and increasingly unstable climatic conditions which erode livelihoods and threaten those most directly impacted.[2]

In a recent article calling for a Global Green Deal, Asad Rehman makes clear how the impacts of the climate crisis are already manifest in the lives of many:

> *"Warming of just 1°C has been enough to unleash killer floods, droughts and famines. In every corner of the world climate violence has already been exacting a heavy toll on the poorest and most vulnerable. [...] The most conservative estimates are that each year close to a million lives in the global south are already being claimed by the violence of climate change with many more millions losing their homes and livelihoods. The climate crisis also fans the existing flames of economic inequality and poverty, resulting in a deepening crisis of hunger, increased conflict and deepening existing racial and gender inequalities. All of which determine the very ability of people to survive climate impacts and to adapt to, and respond to, the realities of the climate crisis."*[3]

While the global majority disproportionately suffers the impacts of the climate crisis, the Global North and the world's wealthiest have a vastly disproportionate role in generating the climate crisis. The wealthiest 10% are responsible for nearly half of all global lifestyle emissions.[4]

The disproportionate distribution of carbon emissions closely mirrors, and is bound up with, the global distribution of wealth.

The specific ways in which an increasingly destabilised climate is experienced are determined by the material conditions and power dynamics that shape the ability to be resilient, adapt, recover or migrate in the face of these impacts.[5]

Inequity and injustice are at the heart of the climate crisis, its causes and impacts. The transition to an energy system no longer dependent on fossil fuels presents an opportunity to transform these power relations and reduce this vast global inequity. However, the dominant vision put forth by industry, international financial institutions, Northern states and many Northern NGOs threatens to simply displace emissions from the North while generating greater impacts in the South through offsetting and market mechanisms, as well as increased metal mining and extractive projects. This is bound up with the fact that in even some of the most ambitious scenarios of transition towards a less carbon-intensive world, the total volume of extracted resources is projected to grow significantly.[6]

Dangerously, a subset of these growth projections is emerging as the basis of the widespread greenwashing of metal mining projects. This greenwashing narrative is based on the claim that a substantial increase in metal mining is necessary to meet the material needs of renewable energy technologies and associated infrastructure. This report contributes to the broader aims of climate and environmental justice by taking a critical look at the expanding

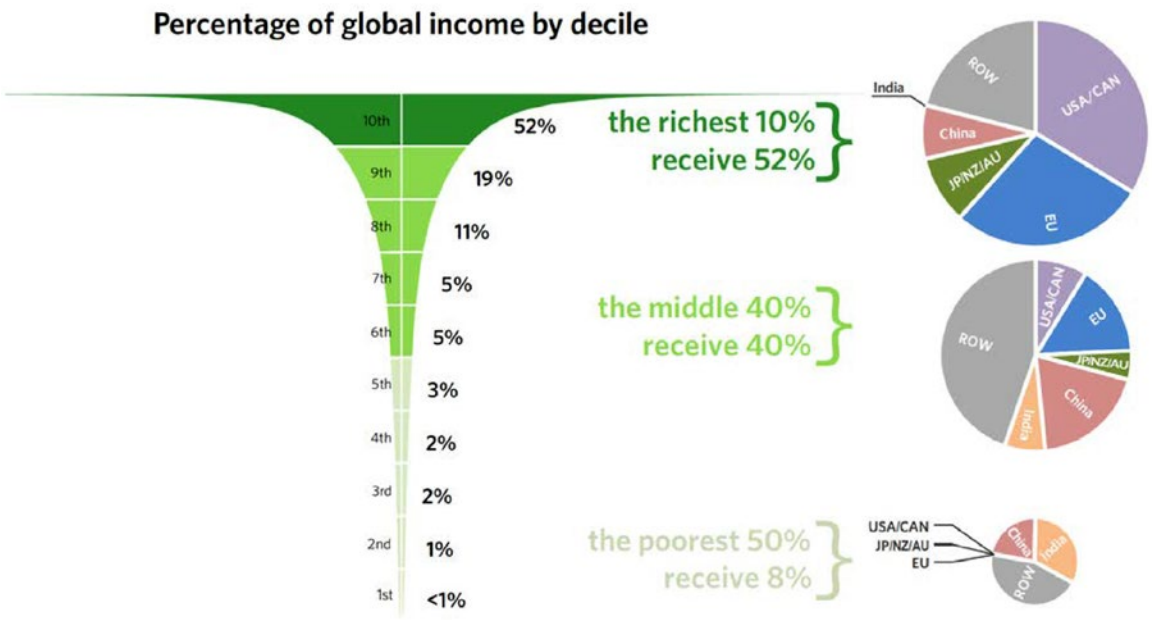


FIGURE REPRODUCED FROM AFTER PARIS: FAIR SHARE, INEQUALITY AND THE CLIMATE CRISIS

extractive frontier, deconstructing these emerging greenwashed narratives and ultimately argues that the communities and ecosystems on the frontlines of metal mining need to take a central place in climate justice.

Why focus on mining?

Discussions about the relationship between extractive industries and climate change tend to focus on the burning of fossil fuels. Occasionally deforestation driven by agro-extractive interests appears in policy discussions, but metal and mineral mining rarely feature as a central issue. Yet these industries are responsible for a fifth of global emissions and the same share of global health impacts from particulate matter.[8] In some countries, such as Chile, the mining sector is the largest consumer of electricity.[9]

Most climate and energy policy agendas, iterations of a 'Green New Deal' in the US and the UK, and the demands of many movements and organisations which identify with climate justice principles do not explicitly address metal mining. Nor do most divestment campaigns or most 'ethical' investment funds screen for mining companies in their determination of what constitutes harmful investments.

For all of these reasons, the voices of communities impacted by mining must be brought to the fore of debates and visions of an energy transition rooted in justice.

The challenges highlighted in this briefing raise key questions:

Will climate movements in the Global North broaden their scope, beyond a focus

CARBON INTENSITY refers to carbon emissions per unit of production. Given that production is expected to increase, the relative decoupling of carbon emissions from production are cancelled out by the total increase in projected production.

GREENWASH: "The phenomenon of socially and environmentally destructive corporations attempting to preserve and expand their markets by posing as friends of the environment and leaders in the struggle to eradicate poverty." *(CorpWatch definition)* [7]

on fossil fuels, to build solidarity with the communities and ecosystems on the frontlines of metal mining?

Or will the procurement of 'critical metals' be left in the hands of the same mining companies responsible for socio-ecological crises around the world?

Will a collective silence allow mining companies' bottom line and corporate image to benefit as these territories become new zones of sacrifice and the extractivist model expands, now masked behind the veil of meeting the material needs of the transition?

This report sets out to engage with these questions and help us find ways to integrate the concerns of mining-affected communities upstream of the supply chains of these technologies into the climate justice agenda and progressive energy policy.

The intention of this report is not to cast doubt on the value or necessity of renewable energy technologies; we must urgently break away from fossil fuel dependence while ensuring the demands for energy access and energy justice are met. Instead, this report sets out to raise concerns about the 'green growth' ideology which is driving dominant visions of the transition, coupled with how the mining industry stands to benefit from an uncritical and unjust transition. If the world's largest mining companies are allowed to position themselves as key partners in the transition, communities will suffer the consequences while other dimensions of the ecological crisis become more acute.

A Just(ice) Transition?

The process of winding down the fossil fuel energy system and developing a new system based on renewable energy technologies, along with the storage and transmission infrastructure to accompany them, is most commonly referred to as the 'transition'. But visions of the transition, and how we might get there, are as varied as those imagining it.

This report is concerned with ensuring that the transition is rooted in justice. The term 'just transition' is most often associated with a series of proposals, born out of collaborations between trade unions and environmental NGOs.[10] These proposals have centered on 'green jobs' for workers currently employed in the fossil fuel sector and related industries as a way of ensuring that the labour rights and conditions of workers in the fossil fuel and mining industries are not sacrificed in the transition. While this is a vital issue, and an inspiring case of collaboration between interests whose (potential) antagonism has been a point of leverage for corporate interests, this preoccupation with a very specific matter of justice in the transition has largely monopolised use of the term.

Other actors concerned with questions of justice in the transition[11] are using a much broader and more inclusive framework,

EXTRACTIVISM: high-intensity, export-oriented extraction of common ecological goods rooted in colonialism and the notion that humans are separate from, and superior to, the rest of the living world.

"***A CRITICAL METAL*** is a metal of high economic importance that faces supply risks (i.e. geographical and/or geopolitical constraints) and for which there is no actual or commercially viable substitute. It is a relative concept, and the list of critical metals will vary depending upon the needs of industry, especially those of emerging technologies." *(International Resource Panel)*[12]

NOTE: The author does not favour this term, due to the geopolitical values ('strategic resource', 'metals important for national security') it is often associated with. However, due to its widespread use in the literature, has chosen to use it in this piece.

whilst others are adopting the term 'justice transition'[13] to make this distinction clear.

Communities on the frontlines of extractivism, indigenous peoples, peasant movements and their allies are raising important questions about what shape this transition ought to take for it to be truly just:

- Who will guide the transition?[14]
- Who will have access to renewable energy?[15]
- How much energy is really necessary?
- Who stands to benefit from a transition led by major fossil fuel[16] and utility companies?[17]

Will the transition perpetuate:

- Structural racism?
- Gendered oppression?[18]
- Is a just transition compatible with capitalism[19] and an economic model predicated on infinite growth?[20]
- Will it account for the ecological and colonial debt[22] between the Global North and South?
- Will renewable megaprojects displace communities[23] and damage ecosystems?

Theorising energy transitions and climate justice

Energy transitions have always been shaped by social, political and economic structures, rather thansimply and linearly driven by increases in efficiency or cost savings. Transitions have occurred when political, economic and ideological interests intersected with certain means of energy production or storage.[24] The lessons of previous energy transitions offer insight and help us to re-imagine the current transition.

The power structures that gave rise to a fossil fuel-dependent economy are based in colonial, patriarchal and capitalist relations. An industry-led transition threatens to reproduce these power relations. This is important to bear in mind, as the dominant industry and mainstream environmental narrative posits that technological efficiency and market dynamics, imagined as somehow being detached from their material, ecological, political and social underpinnings, will positively conspire to guide us away from ecological crisis.

CLIMATE JUSTICE is an approach that centres the systemic, root causes of the climate crisis, often understood as the intersection of dominant power relations.

COLONIALISM is often defined as the process by which a nation-state or empire establishes control, nearly always through violence and imposition, over peoples and lands outside its formal territory. The processes of colonization by European powers over the past five centuries throughout the Americas, Africa and Asia have left profound and painful legacies of violence, displacement, destruction and dependency which largely shape the global inequalities and injustices that characterise the contemporary world.

It is important to note that "Colonialism was not a monolithic process, but one of diverse expressions, stages and strategies." However, it can be broadly characterised "as a triple violence: cultural violence through negation; economic violence through exploitation; and political violence through oppression." [25]

NEOCOLONIALISM can be understood as an extension and reproduction of these forms of violence beyond formally defined colonial power relations.

2 Extractivism in the decades to come

The global economy relies on a system of production and consumption that has a massive material footprint. Over the coming decades this footprint is projected to more than double, while shocking degrees of inequality in material consumption are projected to persist.

Under 'business-as-usual' projections, such as the OECD's Global Resources Outlook to 2060[26] which models for global GDP to triple by 2060, even with substantial leaps in efficiency and recycling, the global economy will require a greater share of minerals, metals, fossil fuels and biomass to maintain this model predicated on indefinite growth and persistent inequality.

To put this into quantitative perspective, the total mass of extracted resources is expected to grow from 79 to 167 billion tonnes per annum (a 111% increase) between 2011 and 2060.[27, 28]

This increase is disaggregated as follows:

- 14 to 24 billion tonnes of **fossil fuels (a 71% increase)**;
- 8 to 20 billion tonnes of **metals (a 150% increase);**
- 37 to 87 billion tonnes of **minerals (a 135% increase); and**
- 20 to 37 billion tonnes of **biomass (an 85% increase).**

There are multiple reasons for the dissonance between business-as-usual projections and the stated intention of the party members of the UNFCCC to not breach a 1.5C average global temperature rise by the end of this century. The nationally-determined contributions (NDCs) of countries in the Global North have been wholly insufficient; these are also voluntary, rather than binding commitments. False solutions are at the heart of many mitigation plans, these approaches envision the ability to continue extracting and burning fossil fuels by placing unfounded hope in sequestration technologies, offsetting mechanisms and geoengineering.

But these numbers also reveal another troubling trend: the share of mineral and metal extraction relative to fossil fuels will increase significantly over time. More progressive models which reflect the ambition necessary to phase out fossil fuels as quickly as possible often end up shifting the material burden of energy production even further onto other sectors, particularly metal mining and biomass extraction for renewable energy technologies and biofuels. In other words, reducing fossil fuel energy

(ECO-ECONOMIC) DECOUPLING refers to the separation of the material basis and environmental impact of productive activities from economic growth. Relative decoupling takes place when the resource, carbon or energy efficiency in the generation of a unit of value increases, but at a slower rate than the production itself. Absolute decoupling takes place when resource, energy or carbon inputs fall in absolute terms while economic activity increases.

There is ample evidence that while relative decoupling is possible in some cases, its ability to reduce absolute environmental impact and the material and energy footprint of economic activity is limited. Reliance on decoupling as a strategy for 'green growth' has the potential to distract from the underlying causes of the ecological crisis and bolster growing demand in the Global North. *See: Decoupling Debunked* [29]

dependence on its own is not a sufficient response to the intersecting socio-ecological crises: instead, the extractivist model as a whole must be challenged.

Ths model of extraction will continue to wreak ecological and social violence, and in doing so it will aggravate many of the threats which proponents of the transition set out to resolve.

This is true even under the current best practice model laid out on page 69 of a report by the Heinrich Boell Foundation entitled "Green Economies Around the World" which projects global annual material consumption to reach 93 billion tonnes by 2050.[30]

On the following page of the report, hypothetical factors of reduced consumption in the Global North and greater redistribution of resource consumption show how these values might translate into a much smaller, more ecologically viable and socially just level of extraction. This dual approach of reduced demand from the world's wealthiest and largest corporations coupled with greater equity and access is the only viable way out of the intersecting social and ecological crises.

The global ecological crisis is not just about climate, and the climate crisis is not just about carbon

Mining projects often entail the rerouting, contamination and depletion of water bodies, the destruction of habitats, deforestation,[31] ecosystem fragmentation and the resulting loss in biodiversity.

The OECD measures nine factors of environmental impact that metal and mineral mining are responsible for. These factors are: acidification, climate change, cumulative energy demand, eutrophication, freshwater aquatic ecotoxicity, terrestrial ecotoxicity, photochemical oxidation, land use and human toxicity.

These impacts also undermine the social and ecological fabric which enables communities and ecosystems to be resilient to the impacts of climate change. By destroying habitats and biodiversity, by contaminating and depleting freshwater bodies, and by eroding land-based livelihoods, mining projects increase the threat that an unstable climate already poses.

ANTOFAGASTA - 'MINE IN COQUIMBO REGION, CHILE, WHERE LOS PELAMBRES MINING SITE IS LOCATED'. PHOTO CREDIT: FXEGS JAVIER ESPUNY

3 The transition-mining nexus

Which metals play a key role in the supply chains for renewable energy generation, transmission and storage?

Dozens of metals are employed in renewable energy technologies. However, the role they play, scale at which they are consumed, availability and ability to be substituted, vary widely. As such, there is little consistency among the studies cited in this section as to the scope of metals covered by their projections.

The column (left), from a recent report[32] prepared for Earthworks by the Institute for Sustainable Futures, University of Australia (ISF-UTS), offers a good sense of the metals used in renewable energy technologies, their application and relative importance to these technologies.

What insights do projections of demand for these minerals and metals offer?

There is a growing body of literature attempting to determine the volume of key metals and minerals necessary to develop a renewable energy matrix. These studies employ different methodologies and vary widely in their conclusions. The variations are primarily due to the scope of the study (range of metals and range of end-uses) and the assumptions made about the future energy mix, total energy demand, potential improvements in efficiency, recycling and substitution. None of these studies question the assumption that total economic activity and overall energy demand will continue to increase. It is particularly concerning that they do not consider the possibility of a reduction in the disproportionate consumption of the Global North.

	! Importance to renewable energy
Aluminium	High – used for wind, PV & batteries
Cadmium	Low – CdTe small share of PV market
Cobalt	Medium – Li-ion dominant battery technology
Copper	High – used for wind, PV & batteries
Dysprosium	High – used for wind & batteries
Gallium	Low – CIGS small share of PV market
Indium	Low – CIGS small share of PV market
Lithium	Medium – Li-ion dominant battery technology
Manganese	Medium – Li-ion dominant battery technology
Neodymium	High – used for wind & batteries
Nickel	Medium – Li-ion dominant battery technology
Silver	Medium – cSi large share of PV market
Selenium	Low – CIGS small share of PV market
Tellurium	Low – CdTe small share of PV market

REPRODUCED WITH PERMISSION FROM INSTITUTE FOR SUSTAINABLE FUTURES, UNIVERSITY OF TECHNOLOGY SYDNEY. NOTE: THIS FIGURE HAS BEEN CROPPED, THE FULL FIGURE CAN BE SEEN ON PAGE 16 OF THIS REPORT: https://earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

A common element throughout this literature is the concern over a supply bottleneck for certain critical metals. Yet the current and even projected material demand for minerals and metals generated by the renewable energy sector are, and will remain, a minor factor in overall extractive demand. The following section suggests that the most urgent link to be brokenis discursive, rather than material.

Critical metal end-uses

Contrary to the narrative advanced by mining companies, the reality of critical metal end-uses is more varied than their greenwashed claims would suggest.

Renewable energy is currently not the primary driver of demand for any given critical metal, and the projected share of renewable energy technologies within overall end-uses varies considerably from one metal to another. Construction, aviation, nuclear technology, electronics and the arms industry are among the diverse, and often destructive, range of critical metal end-uses.

Buccholz and Brandenberg (2018:150)[33] explore the primary drivers of demand for the critical metals examined in their study. For copper, they found that demand is closely tied to overall economic growth. This is consistent with other research on copper demand,[34] which, despite growth in demand coming from renewable energy technologies (electric vehicles in particular), projects that the construction industry will remain copper's primary driver of demand.

However for other metals¬– cobalt and lithium in particular – projected demand is much more closely tied to 'emerging technologies'. Among these technologies, electric vehicle batteries feature prominently.

The table below shows that for the commonly greenwashed copper, in even the highest demand scenario, the renewable energy sector will under no circumstances consume the majority of this metal's annual production. For the key battery metals: lithium, cobalt and nickel, demand figures are startling, however this projected demand is largely driven by the private electric vehicle market, rather than the demands for energy access and the provision of public transit.[35]

It is important to disaggregate projected demand further and critically evaluate which of these end-uses most contributes to meeting the demands of energy justice and access, rather than the continuation of a model of excessive and unjust consumption driven by the Global North and the world's wealthiest.

Regardless of the accuracy of these projections, these figures are driving increased investment, concerns over bottlenecks are shaping policy concerns, and these trends have concrete impacts on communities and ecosystems.

	Annual demand in 2050 compared to current production	Cumulative demand compared to reserves & resources
Aluminium	< 5% of production in all scenarios	< 5% of reserves in all scenarios
Cadmium	< 5% of production in all scenarios	< 5% of reserves in all scenarios
Cobalt	> 500% of production in all scenarios	> 100% of reserves in all scenarios and resources in total demand scenario
Copper	< 50% of production in all scenarios	< 20% of reserves in all scenarios
Dysprosium	> 500% of production in all scenarios	< 20% of reserves in all scenarios
Gallium	< 50% of production in all scenarios	< 5% of reserves in all scenarios
Indium	< 50% of production in all scenarios	> 50% of reserves in highest scenario
Lithium	> 100% of production in all scenarios	> 100% of reserves in most scenarios
Manganese	< 50% of production in all scenarios	< 20% of reserves in all scenarios
Neodymium	> 500% of production in all scenarios	< 20% of reserves in all scenarios
Nickel	> 100% of production in all scenarios	> 100% of reserves in highest scenarios
Silver	< 50% of production in all scenarios	> 50% of reserves in highest scenario
Selenium	< 20% of production in all scenarios	< 20% of reserves in all scenarios
Tellurium	> 100% of production in all scenarios	> 50% of reserves in highest scenario

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THE FULL FIGURE CAN BE SEEN ON PAGE 27 OF THIS REPORT: https://earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

4 Greenwashing, political will and investment trends

Mining companies stand to benefit by positioning themselves as key actors in the transition. They are taking advantage of the projected increase in critical metals to greenwash and justify new operations, regardless of whether their output will be used in renewable energy technologies or not. This greenwashing strategy serves to mask the harm, abuses and human rights violations that are systemic in the extractivist model.

Old guard mining companies

The London-based multinational mining company, Anglo American, states on its website:

> *"Our products are essential to almost every aspect of modern life and are critical to a successful transition to a low-carbon economy. From the platinum group metals needed for catalytic converters and fuel cells, to the copper needed for intelligent buildings and renewable energy, the low-carbon economy is relying upon responsible miners to take action."* [36]

Yet, the company's opportunism is on display in an internal assessment of various energy scenarios set out in a climate change plan[37] the company published in 2017.

On page 15 of the document, the company demonstrates that in all four of the scenarios outlined (three of which are not consistent with the globally agreed targets on emissions reductions) there will be high demand for the metals in their portfolio. It is evident that their concern, as is true of any publicly-traded corporation, is to provide shareholders with the confidence that they have made a sound and profitable investment, regardless of the future energy mix or the state of the climate.

In the same report they justify their coal operations and investments, claiming that greater efficiency in coal burning and carbon capture and storage (CCS) technologies will ensure a long future for this fossil fuel, despite the resounding criticism and lack of evidence surrounding CCS's viability.[38]

GREENWASHING BASED ON ASSUMPTIONS OF INJUSTICE AND MATERIAL IMPOSSIBILITY: the demand for metals that are closely tied to projected demand for renewable energy technologies: cobalt, lithium and nickel, is driving assumptions that are unjust and unsustainable, such as the ambition of having one billion, mostly private, electric vehicles on the road by 2050. Such ambitions reflect the inequalities and ideology of growth which led to the climate crisis, rather than the demands to provide energy access and public transit.

GREENWASHING BASED ON DECEPTIVE CLAIMS: much of the metal demand being cited to justify the expansion of metal mining is not closely tied to renewable energy technologies. This is true for copper, iron and aluminum which are used overwhelmingly in construction and other sectors - including very damaging industries such as the arms trade.

This rhetoric does not only have the effect of increasing shareholder confidence and the company's external image, it manifests itself in concrete impacts. Anglo American is marketing the massive Quellaveco copper mining project in the Moquegua region of southern Peru by highlighting the mine's potential contribution to electric vehicle production. The company expresses Quellaveco's reserves as a figure equivalent to the amount of copper required for the manufacture of 90 million electric vehicles.[39]

BHP,[40] another London-based mining giant, also cites projected demand for copper[41] in the transition as a key justification to increase its copper output.

Yet, when it comes to practice, the company's CEO, Andrew Mackenzie, has been vocal in his criticism of the partially renewable energy mix supplying power to the company's operations in Southern Australia.

An article from Energy and Mines entitled "BHP knocks renewables after $100m loss", opens by quoting Mackenzie:

> *"'Let's talk about affordability, reliability and emissions reduction, as opposed to having some secondary target about just having more renewables, which might deny you all three,' Mackenzie said. 'We have lost $US100m in this period because of the intermittency of power in South Australia, and also we are facing more expensive electricity, frankly, than we budgeted for at this time last year.'*[42]

A planned expansion of Olympic Dam to produce 450,000 tonnes of copper a year may not occur if the reliability and cost of energy doesn't improve, Mackenzie cautioned. He noted that he believes:

> *"carbon capture and storage is the best way to address emissions, rather than renewables."*

In line with its counterparts, the Anglo-Swiss multinational, Glencore, states:

> *"We support the development of green technology and renewable energy sources by supplying copper, cobalt and nickel for use in engines and batteries which will power the electric vehicle revolution."*[43]

It is worth noting that Glencore's coal mining and commodities trading activities rank it among the world's highest-emitting companies, alongside BHP.[44, 45]

The three aforementioned multinationals collectively own the massive open-cast Cerrejón coal mine in La Guajira, Colombia. The health, spiritual and economic impacts suffered by indigenous, peasant and Afro-descendant communities, as well as the region's water systems and dry tropical forest are well-documented. War on Want's report 'The Rivers are Bleeding' summarises many of these impacts.[46]

Emerging ventures

Canadian deep-sea mining company, DeepGreen Metals,[47] is perhaps the ultimate expression of the 'metals-for-renewables' greenwashing phenomenon which is rapidly spreading across the industry. Deep-sea mining exploration is already facing opposition[48] for the potential damage it will cause to livelihoods and ancestral waters of fisher folk in Papua New Guinea. The degree of potential destruction that this new extractive method would cause is unknown, but many have raised grave concerns[49] about these potential impacts on deep-sea ecosystems. Yet, the language of the company's CEO, Gerard Barron, frames deep-sea mining as a solution to the problems posed by terrestrial mining:

> *"Earth is our home, and future generations need its resources in order to survive and thrive. It's crucial we*

move off of reliance on dirty energy and towards renewable energy. To create the physical resources for battery, wind and solar power, we need metal, but common metal mining practices cause huge negative impacts." (interview)[50]

London's Alternative Investment Market (AIM)[51] is home to younger and smaller mining companies, such as the lithium miner Savannah Resources.[52] The company's mine in Portugal faces community opposition[53] over its potential impact to the region's agricultural livelihoods.

International institutions

Mining companies are not the only actors promoting their role in the transition. A 2017 World Bank report, 'The Growing Role of Minerals and Metals for a Low Carbon Future', defines its target audience, and its hopes, in the following way:

"While the study's intended audience is the World Bank Group and relevant client governments, it is also meant to engender a broader dialogue between the mining and metals constituency and the climate change and clean energy community. Too often, effective collaboration between the two has been hampered by perceptions of conflicting interests: ***this study is an attempt to break through that logjam, effectively demonstrating that a low carbon energy shift will be very much dependent on a robust, sustainable, and efficient mining and metals industry."***[54]

Following on from their report, the World Bank has launched a new program, 'Climate-Smart Mining', which they describe as follows:

"Climate-Smart Mining supports the sustainable extraction and processing of minerals and metals to secure supply for clean energy technologies by minimizing the social, environmental, and climate footprint throughout the value chain of those materials by scaling up technical assistance and investments in resource-rich developing countries."[55]

The International Council on Mining and Metals (ICMM), an organisation comprised of large mining companies and industry associations, promotes a similar vision for the role of mining in the advancement of renewable energy technologies:

"The mining and metals industry also has a vital role in enabling a swift transition to a low-carbon economy. Minerals such as lithium and cadmium, for example, are essential for renewable energy technologies, alongside steel, copper and aluminium." (ICMM)[56]

A narrative that reinvents itself

The claim that mining brings economic development is central to the industry's public image and serves as a justification for much of its activity. This narrative has evolved in the second half of the twentieth century with the rise of the developmentalist discourse, and more recently the advent of "Corporate Social Responsibility". While it has taken on different shades, from populist resource nationalism to a neoliberal race to the bottom to attract foreign direct investment: the common assumption of these strategies is that mining brings macro-economic benefits which can be used for the long-term benefit of a country's economic development.[57]

The vulnerabilities that dependency on primary resource extraction-for-export to which national economies are exposed has been well documented in recent decades.

RESOURCE CURSE refers to the counter-intuitive tendency for countries with significant endowments of natural resources to suffer greater economic instability, conflict and corruption.

DUTCH DISEASE is an economic phenomenon in which a sudden increase in a currency's value (often due to the increase in volume or value of resource exports) reduces the competitiveness of other sectors, particularly agriculture and light manufacturing, and leads to increased import dependence.

The resource curse, Dutch disease, and other theories have been developed and their implications observed in numerous cases of crisis, hyperinflation and instability.

The response of international financial institutions to these contradictions and failures has focused on institutional capacity building for mineral export-dependent countries to benefit from extractive industries through increased royalties, taxes and employment.

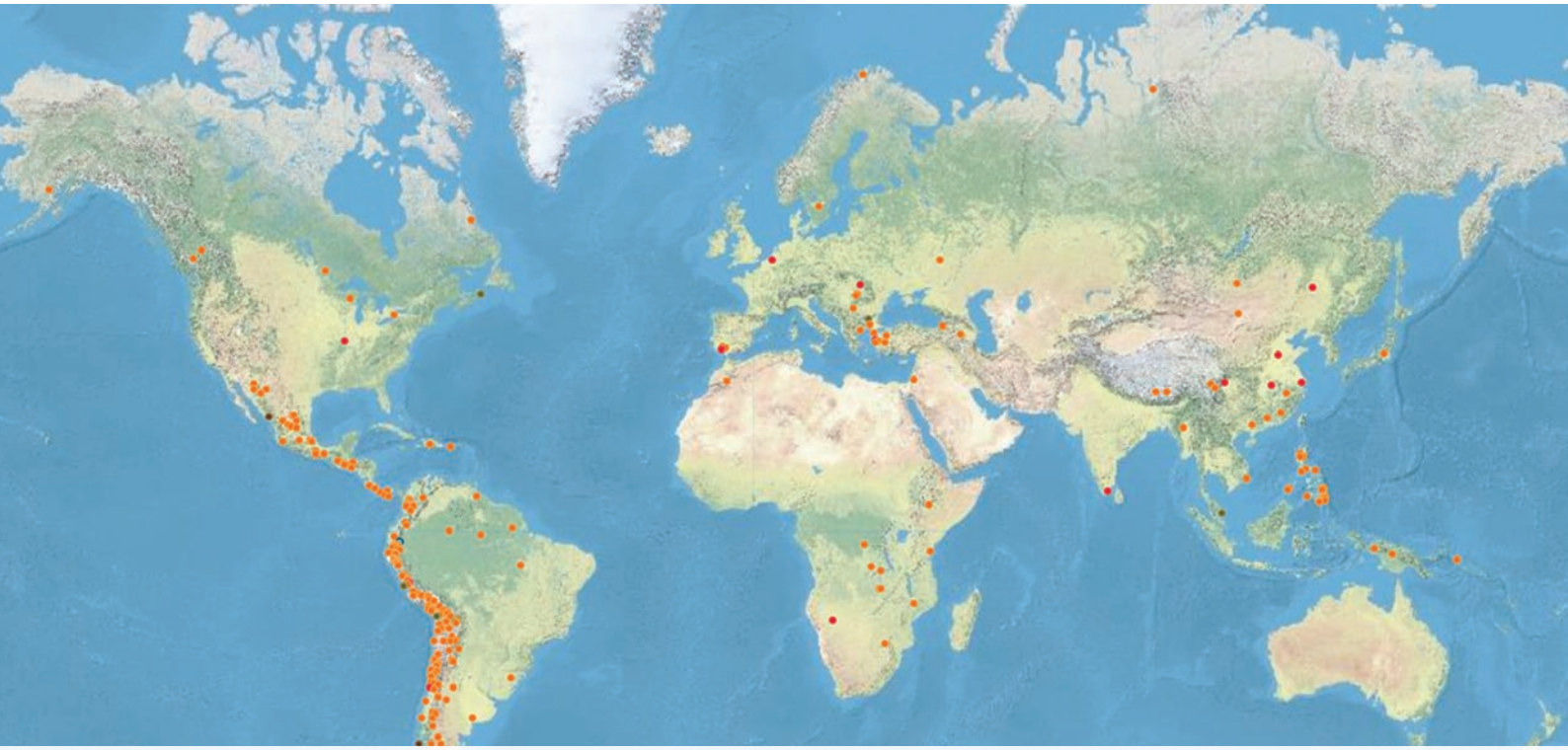
These efforts have not brought justice or reparations to mining-affected communities, nor have they helped to resolve the structural problems that mineral export-dependent nations face. They have, however, created a powerful PR narrative for the industry, providing it with the license to continue generating harm.

Development-oriented programmes and industry-led initiatives based on voluntary principles and guidelines have a long history of failure and disappointment. By promoting or engaging in these initiatives, civil society organisations and policymakers lose sight of what should be our common goal: solid, enforceable regulatory mechanisms that guarantee the rights of affected people and their territories.

In a 'double-movement', the same corporations and financial institutions backing these initiatives and praising their participation in them, actively seek to dismantle and block regulation that threatens to slow or roll-back extractive projects.

CAMILA MENDEZ OF COSAJUCA CHALLENGES THE MINES AND MONEY CONFERENCE IN LONDON' IN SOLIDARITY WITH COMMUNITIES CREDIT: GO TO FILMS

5 Metal mining and socio-environmental conflict



SCREENSHOT FROM THE EJ ATLAS ON 3.5.19 FILTERING FOR SILVER, COPPER, LITHIUM AND RARE METALS CONFLICTS.

Systemic impacts

Mining companies and the state actors who support them generate harm at every stage of a mining project. State support is often conditioned by explicit or implicit political interests, corruption, bribery and the 'revolving door' phenomenon. This proximity and entangled interests often obstruct the ability for decisions to be taken in the public interest, limit the scope of effective oversight, compliance with regulation and recourse to justice for those impacted.

Common impacts that frontline communities experience[58] across modes of extraction are displacement, internal and external conflict (including threats and killings of land defenders and social leaders), eroded livelihoods, contaminated air, soil and water, lack of access to arable land and freshwater, economic dependence and severe health impacts. Some of the most profound damage to communities is experienced in the cultural disarticulation and spiritual loss that comes through the severing of people from their land and the relationships that existed before large-scale mining.

An annex can be found at the end of this report which offers links to resources and publications that have documented these impacts in detail, taking into the account the specific dynamics that condition these impacts and the way people experience and navigate them in a diversity of contexts.

Indeed, there is evidence to suggest that mining is a leading cause of socio-environmental conflict globally. The EJ Atlas,[59] an ambitious database and interactive mapping project coordinated by the Autonomous University of Barcelona's Institute for Environmental Science and Technologies with contributions from organisations and communities around the world, has documented (as of 21 August

2019) 2,865 cases of socio-environmental conflict. Of these, the mining of mineral ores and building materials extraction represents 587 of these cases, more than any other category listed in the EJ Atlas.

Of these documented conflicts, at least 260 are related to the extraction or processing of critical metals.[60]

This number of conflicts is fewer than those related to the extraction and processing of fossil fuels – with 279 documented oil conflicts, 212 for coal and 153 for gas. However, metal mining conflicts could well overtake fossil fuel-related conflicts if the extractive frontier expands in line with the aforementioned projections.

In another mapping effort, The International Institute for Sustainable Development has overlaid data which indicates state fragility and perceptions of corruption with critical metal reserves across the globe in a mapping exercise of "green conflict minerals".[61]

PROTEST TO DENOUNCE BRUMADINHO DISASTER IN RIO DE JANEIRO. CREDIT: RODRIGO S COELHO

6 Moving beyond extractivism to promote a justice transition

Identifying causes of the crises: picking apart false narratives and underlying truths

In order to address the systemic causes of these crises, we have to come to a collective understanding of what these causes are. Misleading narratives abound, while some fundamental truths remain at the margins of the dominant story of what has generated these intersecting crises of inequality and ecological breakdown.

Challenging neocolonial narratives within eurocentric environmentalism

The greatest factor in human impact on ecosystems and planetary ecology is economic growth. While improvements in technological efficiency help reduce the material and energetic intensity of economic activity, these improvements have not succeeded in bringing about an absolute reduction in impact due to the rapid pace of economic growth.

Yet, this reality is often obscured by two dangerous discursive and conceptual trends within mainstream, eurocentric, pro-capitalist environmentalism.

The first, places a 'gospel'-like[62] blind faith in constant improvements in eco-efficiency and the ability of these improvements to significantly offset the negative impact of increased consumption in the Global North. This narrative draws attention away from the politically and historically-rooted systems at the heart of extractivism and climate change, and relies on highly contested assumptions about the viability of decoupling. The work of Ward et al. (2016)[63] is one of many rigorous critiques of the belief in the ability to achieve absolute decoupling through efficiency improvements.

This unquestioned faith in technology also echoes the arrogance of the eurocentric, patriarchal and capitalist attitudes which have helped form the extractivist and colonial rationale for centuries.

The second framing mistakenly places an emphasis on the role of population growth in understanding the causes of environmental impact, and in doing so reproduces a troubling and dangerous narrative. This narrative, places blame on population growth in the regions that have little-to-no historical responsibility for the ecological crisis, and where levels of consumption per capita are significantly lower than in the Global North. Suggestions that these growing populations are a cause for concern emerge from and promote, intentionally or not, a narrative that is rooted in racism, colonialism and horrific eugenicist policies which have been manifest in xenophobic migration laws, forced sterilisation and genocide. Women of colour, particularly in the Global South, are those who have suffered most from these forms of violence.

The global ecological crisis has not primarily been brought about by a growing population; it is the responsibility of the excess of the world's wealthiest and the largest corporations that consume a vastly disproportionate share of energy and non-renewable common ecological goods.

Both of these dangerous narratives leave the assumption that GDP must increase indefinitely unquestioned, even in regions where consumption is already excessive. These notions are manifest in the implicit and explicit assumptions of many researchers who have modeled the metal demand and resource consumption patterns cited earlier in this paper. No single

INDISPENSABLE EXTRACTION is a concept articulated by Eduardo Gudynas which proposes only the extraction of resources necessary to ensure wellbeing, while operating within ecological limits.

RESOURCE SUFFICIENCY is a similar vision based on equity and wellbeing within ecological limits, this concept is explored thoroughly in a report[64] by Friends of the Earth Europe.

projection thus far has cited models for an absolute decrease in energy consumption in the Global North. The lack of such studies reflects an inability or unwillingness to imagine a world where ecological limits and social justice take precedent over the arbitrary value attached to economic growth. These assumptions monopolise what is considered possible and leave us with the limited non-solutions mentioned in the first section of this paper.

Establishing limits

Collective ambition needs to extend beyond the demands to place limits on greenhouse gas emissions. Clear limits must be set on the extractivist model as a whole. The livelihoods, rights and cultural survival of thousands of frontline communities– and the integrity of countless ecosystems – depend on placing these boundaries on the extractive industries.

A proposal for an energy cap[65] at the European level, developed by the Resource Cap Coalition, is one example of a policy-oriented move towards a more structural approach to addressing the excess consumption of energy and materials in the Global North and among the world's wealthiest.

Such a cap must go hand-in-hand with a shift away from the use of GDP growth as an indicator of wellbeing and progress.

What can be considered just demand?

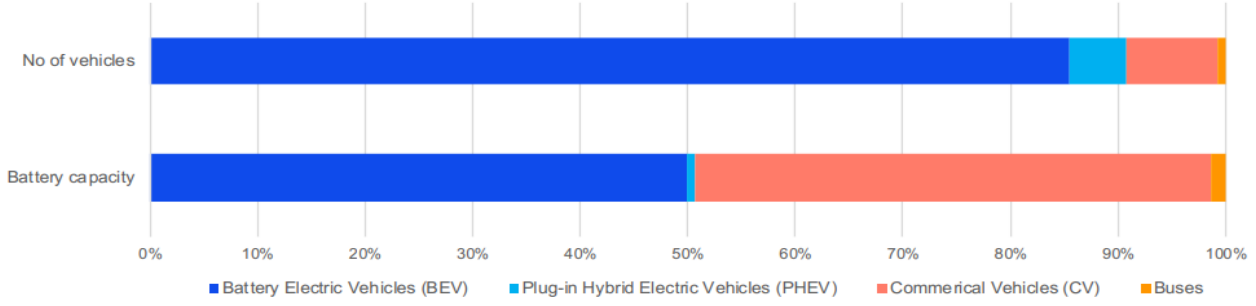
In relation to the points made above, a key question emerges: for whom and what will this demand serve?

Are the demand projections aimed at sustaining and expanding the excessive, imperial mode of living[66] experienced by the world's wealthiest?

To raise a more specific question: is it reasonable, just or necessary to deploy an estimated one billion electric vehicles[67] in the decades to come? Will most of these vehicles be privately owned, rather than dedicated to public transport or other vital services? Will most of them be used in the Global North?

This is particularly relevant because the electric vehicle industry is projected to be by far the largest driver of lithium and

Figure 5: Share of vehicles and total battery capacity between vehicle types in 2050



REPRODUCED WITH PERMISSION FROM INSTITUTE FOR SUSTAINABLE FUTURES, UNIVERSITY OF TECHNOLOGY SYDNEY.
THE FULL FIGURE CAN BE SEEN ON PAGE 18 OF THE REPORT: https://earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

Table 7: Summary of challenges to reducing demand

	Importance to renewable energy	Materials efficiency or substitution	Current recyclability
Aluminium	High – used for wind, PV & batteries	With some loss of performance (steel, plastic)	~70-80% recycled
Cadmium	Low – CdTe small share of PV market	Efficiency increasing, can shift to other PV types	~77% recycled
Cobalt	Medium – Li-ion dominant battery technology	Efficiency increasing, can shift with loss of performance (LFP)	90% recycled
Copper	High – used for wind, PV & batteries	Difficult to substitute in most applications	~34-95% recycled
Dysprosium	High – used for wind & batteries	Can shift to other magnet or motor types, or non-PMG wind	Not currently recycled
Gallium	Low – CIGS small share of PV market	Efficiency increasing, can shift to other PV types	Not currently recycled
Indium	Low – CIGS small share of PV market	Efficiency increasing, can shift to other PV types except flexible	Not currently recycled
Lithium	Medium – Li-ion dominant battery technology	Efficiency increasing, but used for all Li-ion and Li-S	~10% recycled
Manganese	Medium – Li-ion dominant battery technology	Efficiency increasing, can shift to other battery types (LFP, NCA)	Very limited recycling
Neodymium	High – used for wind & batteries	Can shift to other magnet or motor types, or non-PMG wind	Not currently recycled
Nickel	Medium – Li-ion dominant battery technology	Efficiency increasing, can shift with loss of performance (LFP)	90% recycled
Silver	Medium – cSi large share of PV market	Efficiency increasing, copper possible but not commercialised	Not currently recycled
Selenium	Low – CIGS small share of PV market	Efficiency increasing, can shift to other PV types	Not currently recycled
Tellurium	Low – CdTe small share of PV market	Efficiency increasing, can shift to other PV types	~77% recycled

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THE FULL FIGURE CAN BE SEEN ON PAGE 16 OF THIS REPORT: https://earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

cobalt usage. As discussed earlier, these two metals are projected to experience the most severe supply shortages.

Solutions: the material

Even with a decrease in consumption in the Global North and the implementation of mechanisms for the global redistribution of wealth and energy access, some metals will be needed to meet the demands of energy justice and energy democracy mentioned in the first section of this paper. Given this material reality, structural transformations of power relations must be coupled with alternative material sourcing strategies.

Urban mining

Urban mining is an approach to secondary sourcing which actively seeks to repurpose above-ground metal stocks by "reclaiming compounds and elements from any kind of anthropogenicstocks, including buildings, infrastructure, industries, products (in and out of use) [...] The stocked materials may represent a significant source ofresources, with concentrations of elements often comparable toor exceeding natural stocks."[68] Urban mining's role in offsetting primary demand is growing and has significant potential to reduce primary demand.

One of the challenges facing this emerging sector is the lack of data and mapping of above-ground metal stocks. The International Resource Panel, part of the United Nations Environment Programme, published a report in 2010 compiling previous studies of metal stocks from around the world. The report highlights the lack of available data; it reveals the need for better accounting of above-ground stocks and the vast disparities among the

per capita concentrations of different metal stocks from region to region.

Prospecting Secondary raw materials in the Urban mine and Mining wastes (PROSUM)[69] is a Europe-wide initiative aimed at improving the available knowledge of above-ground metal stocks. It is vital to support this project and similar initiatives around the world in an effort to reduce primary demand.

Circular economy and end-of-life

There are substantial economic, technical and regulatory challenges to achieving the highest potential rates of metal recycling. A 2013 publication by the International Resource Panel[70] outlines many of these challenges, as does the ISF-UTS report prepared for Earthworks.

A key step to overcoming these challenges lies in developing strong regulatory frameworks which oblige industry to take responsibility for the end-of-life of their products. The EU's Waste Electrical and Electronic Equipment Directive (WEEE) passed in 2003, marks a step, although incomplete and imperfect, in this direction.

The cost of recycling is expected to decrease by roughly 15% over the coming decades, while the cost of mining is expected to increase by approximately 10%. Additionally, recycling is more labour-intensive and less capital-intensive than mining.[71] These characteristics make recycling less favourable than mining to the interests of investors, yet more favourable for generating employment, and of course to those impacted by the mining industry.

Relating to the secondary metal stocks mentioned above, it will be necessary to redistribute above-ground stocks of metals more equitably around the world in order for a circular economy to be viable globally, not just in the regions where there are already high concentrations of above-ground stocks to feed this circular system.

Solutions: the social

The issues at the heart of the climate crisis and extractivist model are fundamentally rooted in social relations of power, injustice and inequity. A truly just transition must transform these dynamics by empowering those who have been systematically dispossessed and limiting the destructive power of corporations and political actors who seek to maintain the status quo.

Solidarity with communities resisting mega-mining

Around the world, communities are rising up and pushing back the frontiers of extractivism. From Colombia[72] to Finland,[73] from South Africa[74] to Spain,[75] there are thousands of documented cases of people defending their water, land and livelihoods, and too often being forced to risk their lives and freedom in the process.

These communities, and the movements that have developed to support them, best understand the challenges and solutions to the conflicts they face. The first step in supporting these affected communities is to listen to the specific demands and visions they hold, which are diverse, specific to context and vary widely within and among communities.

This report is not framed in a way that clearly centres the voices of those most impacted. However, the work of London Mining Network, Yes to Life, No to Mining and their member organisations, among many other organisations and networks, offer concrete models of solidarity that prioritise and are guided by those most affected.

Calling the bluff on mining companies: they don't have solutions, communities do

The greenwashing power of the critical metal-transition narrative pushed by

mining companies, international financial institutions and even progressive governments, poses a real threat to frontline communities.

Our collective ability to challenge and invert this narrative is a key element in the movement towards a post-extractivist world.

Communities and peoples whose livelihoods and identities are intrinsically linked to their territories are not only holding back the extractive frontier, their livelihoods and worldviews point the way beyond and outside of extractivism. Defending, celebrating and learning from[76] (without appropriating, romanticising or essentialising) the great plurality of non-extractivist ways of living and knowing must be at the heart of overcoming these intersecting socio-ecological crises. Extractivism has gone, and continues to go, hand-in-hand with epistemicide. Breaking out of the extractivist framework also requires us to fight against a singular, universal understanding of wellbeing and how we define and value ways of knowing.

ATACAMA DESERT, CHILE - TERRITORY THREATENED BY COPPER AND LITHIUM MINING. CREDIT: DELPIXE

EPISTEMICIDE is the systemic destruction of knowledge systems. This has occurred on a massive scale as an integral part of the violence and imposition of European colonialism.[77]

CONCLUSION

COMMUNITIES AFFECTED BY THE SAMARCO DISASTER MARCH ALONG THE BASIN OF THE RIO DOCE ONE YEAR AFTER THE EVENT THAT CAUSED BRAZIL'S WORST EVER ENVIRONMENTAL DISASTER. CREDIT: ISIS MEDEIROS, JORNALISTAS LIVRES

There is a collective responsibility, particularly among NGOs working on climate and energy issues, to take the greenwashed framing out of the hands of mining companies and their promoters. We must reiterate the simple truth that these companies are structured solely to generate profits – the way in which they achieve this is ultimately extraneous to fulfilling this objective. Claims to respect the rights or wellbeing of those affected and to consider environmental impacts holistically are often hollow, and have only come about through decades and centuries of resistance by workers, affected people and their allies. Voluntary frameworks and industry-friendly certification schemes risk propping up the extractive industries, and have the potential to create schisms between NGOs, frontline communities and their allies. Instead, binding mechanisms which defend the rights of affected people and limit the power of corporations must be a key part of the way forward.

The mining industry is aware of the popular opposition it faces, and often struggles to obtain the 'social license to operate' from those affected. The rising tide of resistance from the edges to the centre of the extractivist model will make it challenging, if not impossible, to extract the volumes of metals cited in the second section of this report.

A full and rapid transition away from fossil fuels is desperately needed, but it will not succeed, nor will it bring about justice or ecological wellbeing if it is predicated on indefinite economic growth among the world's wealthiest and persistent inequality globally. The damage that would be brought on by the scale of projected material extraction to meet the demands of growth would be deleterious to the aims of the transition.

A transition rooted in justice will only come about hand-in-hand with the redistribution of energy and material access, decreased consumption among the world's wealthiest, and the systemic transformations needed to tackle the root causes of our intersecting social and ecological crises: the persistence of colonial, patriarchal and capitalist power relations.

RECOMMENDATIONS

These recommendations align with the most progressive calls for a Global Green Deal for People.[78] This plan will seek to deliver a major step change in the current discourse around the climate crisis. It will open up the political space for other policy solutions as the axis of debate and solutions shifts. It will propose a set of transformational policy demands that are easy to communicate, that can engage movements and organisations and start to populate the new wave of climate politics. The breadth and ambition of these recommendations reflect the radical and systemic changes needed to address these crises in a holistic and justice-oriented way.

This section highlights inspiring policies, campaigns and movement strategies, which embody "non-reformist reforms"[79] aimed at facilitating structural change. These recommendations first present major challenges, gaps and failures in current policy and practice, and then offer suggestions for new policy and action to address these failures. They should be understood as indications of directions to explore, rather than a definitive set of demands. Similarly, the examples cited serve to offer a sense of possibility and precedent, rather than to be necessarily interpreted as ideal models for policy.

STOPPING CORPORATE POWER

The power and influence of corporations, particularly multinationals, is a threat to both social justice and ecological wellbeing. The need for effective and binding mechanisms to ensure the respect of human rights, and the lack of an international justice system to hold transnational corporations to account for crimes has created a vacuum in which corporations can act with near impunity.

Parallel to these serious gaps and failures in corporate accountability policy are the legal, political and economic tools which have been designed for corporate actors to pay less tax, be less transparent, have the power to sue sovereign states and to finance private and state security for their benefit.

Recommendations

- NGOs and social movements – advocate for a meaningful Binding Treaty on Transnational Corporations and Human Rights at the UN to create binding and enforceable mechanisms to hold transnational corporations to account for corporate crimes and rights violations. **Example: Global Campaign to Reclaim Peoples' Sovereignty, Dismantle Corporate Power and Stop Impunity**[80]
- NGOs and social movements – campaign for a new public duty to be imposed on the extractive and fossil fuel sectors to tackle inequality and contribute a 'fair share' of the effort to prevent a breach of 1.5°C. **Example: Climate Damages Tax**[81]
- State actors and multilateral institutions – end the use of investor state dispute settlement (ISDS) courts: this mechanism in trade deals has enabled corporations to sue countries for pushing any kind of regulation that places their (projected) profit in danger, including environmental and financial regulations. These corporate courts are a key obstacle to governments being able to adopt transformative policy changes to energy, food and resource extraction. **Example: Stop ISDS campaign**[82]

Corporate power and accountability in the UK context

London bears a unique historical responsibility as a former colonial seat of power and today as a global centre of finance. Most of the world's biggest mining companies, and many smaller mining companies, are listed on the London Stock Exchange, and its Alternative Investment Market (AIM). The mining industry's key lobbying organisation, the International Council on Mining and Metals (ICMM) is also based in London. So are the world's most important metals price fixing mechanism, the London Metal Exchange, and the leading precious metals trader, the London Bullion Market Association (LBMA). The UK Government often gives UK-based mining companies diplomatic support overseas, even when their activities face opposition and are known to cause harm to communities and ecosystems.

- State actors and the London Stock Exchange – introduce a duty on all companies to prevent human rights abuses and an offence of failure to prevent human rights abuses for all companies, including parent companies, similar to relevant provisions of the Bribery Act 2010.[83,84]

INTERNALISING EXTERNALITIES

The activities of mining companies harm communities and ecosystems in deep and often irreversible ways. Nearly all of this damage is external to the cost calculations of a mining project. Negative impacts include: the state and communities are often left with the costs of increased healthcare provision for workers and other affected people; the local, regional and national economy suffers the loss of productivity and competitiveness in non-extractive sectors; and those directly affected often face displacement and lost livelihoods. The damage done to the rest of the living world, to waterways and soils, and to the profound connections many affected communities have with their territory are incalculable. The model of industrial mining is predicated on displacing the costs of operation onto the state, other economic sectors, communities and ecosystems. Any attempt to internalise the cost of these damages helps bring this unjust reality into the quantifiable language of cost, which regulators, companies and investors are accustomed to, and to which they react and make decisions upon.

Recommendations

- State actors – implement a mechanism that can ensure the maintenance of tailings storage facilities and the treatment of wastewater from acid mine drainage; this mechanism could be funded through a duty imposed on mining companies. **Example: implementation of the proposed requirements for the hardrock mining industry under section 108b of the Comprehensive Environmental Response, Compensation,[85] and Liability Act (CERCLA) in the US and chapters 2.6, 4.1 and 4.2 of the Initiative for Responsible Mining Assurance (IRMA) standard[86]**
- State actors and multilateral institutions – manufacturers must be made responsible for the afterlife of their products. More rigorous regulation for manufacturer end-of-life responsibility is needed to ensure that recycling becomes a viable practice for all metals, market dynamics and innovation alone will not be sufficient. **Example: a broader and more rigorous version of the EU's WEEE Directive[87]**

- Investors – challenge companies on the basis that investor risk is not properly accounted for – litigation, community resistance and future regulation could result in greater risk. Investments in areas where mining projects face resistance or are unlikely to comply with urgently needed improvements in regulatory standards should be considered re-evaluated. **Example: class-action lawsuit brought by BHP investors in Australian court following the Samarco disaster**[88]

SOLIDARITY WITH COMMUNITIES

At the heart of a transition rooted in justice is the need to ensure that the people most affectedby extractive projects have the right to determine their future, the nature of their livelihoods, their right to remain in their territories, to have access to clean water, air and soils, to not be forcibly displaced and not suffer the multiple forms of violence that mega-mining entails.

Around the world, communities and the alliances they form have been leading the way[89] in making these rights a reality, with, or in most cases without the support of the state.

This work goes hand-in-hand with the strengthening of non-extractivist livelihoods that are already well-established or emerging as new alternatives. Ensuring the economic and political conditions for these livelihoods to thrive must happen alongside with the struggle to stop the expansion of extractivism.

Recommendations

- NGOs – build links of solidarity with those most directly affected; allow the demands and vision of those on the frontline guide strategies and agendas. **Example: London Mining Network,**[90] **WoMin,**[91] **among others' work with mining-affected communities**
- Social movements, NGOs, state actors and multilateral institutions – implement binding mechanisms to ensure the right of communities to determine the future of their territories. **Example: Right to Say No to Mining Campaign in South Africa and**[92] **the Popular Consultation in Colombia**[93]
- State actors – respect customary and indigenous land rights, and restore lands dispossessed through colonial and neocolonial land-grabs.
- State actors – ensure access to water as a fundamental right; water for domestic and agricultural use should always be prioritised over extractive and industrial activities.
- State actors – devolve the responsibility for the management of subsoil resources to regional, local and/or customary governance structures.
- State actors – promote non-extractivist economies, diversify economic activity and the public revenue base. **Example: conclusions from the report "Development alternatives in Peru's mining regions"**[94]
- State actors and multilateral institutions – ensure context-specific protection measures for environmental and human rights defenders and social leaders being threatened and killed for their opposition to extractive projects.

JUSTICE, EQUITY AND REDISTRIBUTION

The overwhelming majority of climate campaigning currently focuses on the

rejection of dirty energy. Many of the world's poorest people are rightly demanding that they are provided with access to energy as the foundation to realise their right to a dignified life. In the global South, three billion people currently lack access to electricity and clean cooking, and many governments are under pressure to meet these demands. This lack of energy access is just one dimension of a much broader set of inequities and injustices that are bound up with the systemic causes of the climate crisis, and condition how the impacts of an increasingly destablised climate are experienced by those most affected. A transition rooted in justice must create the conditions for everyone to live a dignified life.[95]

An alternative pathway is technically and financially viable, it simply lacks the necessary political will. The need to transform the energy system, from extraction, production and delivery is crucial. However, to shift an economy powered and built on fossil fuel extraction to one powered by renewable energy will require industrial policy and external intervention in the energy market. The rapid transformation of the energy system within the timeframe for 1.5°C requires reframing energy as a public good, and for a global plan to build energy alternatives. A people-owned decentralised energy system remains the only viable option that can meet energy demands whilst also addressing energy poverty, both in the global North and South. Democratic ownership models are an essential part of the new energy systems needed.

Recommendations

- State actors – guarantee public transit for all. **Example: free municipal public transit**[96]
- State actors – treat energy as a public good, not a commodity - guarantee access for all, while eliminating excessive and disproportionate consumption and promoting decentralised energy systems. **Example: Labour's proposal to bring the UK's national grid back into public ownership while ensuring access for all, decentralizing management and decarbonising**[97]
- State actors and multilateral institutions – develop mechanisms for global redistribution so that states, by levying duties on the extractives and fossil fuel sectors, pay their fair share[98] to finance the development of energy and transport infrastructure necessary to meet the demands of a justice transition.[99]
- Multilateral institutions – apply a framework of differentiated and historic responsibility[100] to metal stocks and create mechanisms for redistribution of these stocks; this is necessary in ensuring viable circular economies throughout the world, not just in regions which have accumulated disproportionate secondary metal stocks.
- NGOs and researchers – develop new models and projections based on scenarios of greater equity and justice in the distribution of wealth, energy access and resource consumption to more accurately illustrate the material demands of a transition rooted in justice.

ANNEX:

Recommended reading on extractivism, frontline impacts of metal mining and strategies of resistance

Lithium in Argentina: *Lithium extraction in Argentina: a case study on the social and environmental impacts* by FARN[101]

Cobalt in Katanga, Democratic Republic of the Congo: *Cobalt blues* by SOMO[102]

Deep Sea Mining in the Pacific: Publications Collection by Deep Sea Mining Campaign[103]

Rare earth elements in Inner Mongolia, China: *Short Circuit* by the Gaia Foundation[104]

Copper in Chile: *Living Under Risk* by War on Want and CATAPA[105]

Copper in Zambia: *Copper with a cost* by Swedwatch[106]

Copper in Bougainville: *Growing Bougainville's Future: Choices for an Island and its peoples* by Jubilee Australia[107]

Women, Gender and Extractives: Publications Collection One by WoMin[108]

Alternative Investment Market-listed companies: *AIM-traded companies and human rights* by London Mining Network[109]

Investor-state dispute settlement (ISDS) cases in Latin America: *Extraction Casino, Mining companies gambling with Latin American lives and sovereignty through supranational arbitration* by Mining Watch Canada, Center for International Environment and Law, and the Institute for Policy Studies[110]

Regional analysis – Latin America: *Conflictos mineros en América Latina: Extracción, saqueo y agresión - Estado de situación en 2018* by the Observatorio de Conflictos Mineros en América Latina (OCMAL)[111]

Regional analysis – Africa: Publication Collection Two by WoMin[112]

Inspiring stories of resistance and revival from around the world: Yes to Life, No to Mining emblematic case series[113]

REFERENCES

1. IPCC, *2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

2. Nathan Thanki, *Let Them Burn, Capitalism Sets Fire to the World and Blames Us for Dying*, 26 July 2017, https://worldat1c.org/let-them-burn-5e754c57e802

3. Asad Rehman, *A Green New Deal must deliver global justice*, 29 August 2019, https://www.redpepper.org.uk/a-green-new-deal-must-deliver-global-justice/

4. Oxfam, *Extreme Carbon Inequality*, 2 December 2015, https://www-cdn.oxfam.org/s3fs-public/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf

5. Voskoboynik, Daniel Macmillen. The Memory We Could Be: Overcoming *Fear to Create Our Ecological Future. New Society* Publishers, 2018.

6. Dominish, E., Florin, N., and Teske, S., 2019, *Responsible minerals sourcing for renewable energy*. Report prepared by the Institute for Sustainable Futures, University of Technology Sydney for Earthworks. https://earthworks.org/cms/assets/uploads/2019/04/MCEC_UTS_Report_lowres-1.pdf

7. Corpwatch, *Greenwash Fact Sheet*, March 22, 2001, https://corpwatch.org/article/greenwash-fact-sheet

8. IRP (2019). *Global Resources Outlook 2019: Natural Resources for the Future We Want*. Oberle, B., Bringezu, S., Hatfield-Dodds, S., Hellweg, S., Schandl, H., Clement, J., and Cabernard, L., Che, N., Chen, D., Droz-Georget , H., Ekins, P., Fischer-Kowalski, M., Flörke, M., Frank, S., Froemelt , A., Geschke, A., Haupt , M., Havlik, P., Hüfner, R., Lenzen, M., Lieber, M., Liu, B., Lu, Y., Lutter, S., Mehr , J., Miatto, A., Newth, D., Oberschelp , C., Obersteiner, M., Pfister, S., Piccoli, E., Schaldach, R., Schüngel, J., Sonderegger, T., Sudheshwar, A., Tanikawa, H., van der Voet, E., Walker, C., West, J., Wang, Z., Zhu, B. A Report of the International Resource Panel.United Nations Environment Programme. Nairobi, Kenya.

9. Ministerio de Energía (Chile), *Consumoporsetcor*, https://www.aprendeconenergia.cl/consumo-por-sector/

10. Greener Jobs Alliance, *Joint Statement on Just Transition in the UK*, March 2018, http://www.greenerjobsalliance.co.uk/wp-content/uploads/2018/07/JustTransitionJointStatement-FINAL.pdf

11. Climate Justice Alliance, *Just Transition, A Framework for Change*, https://climatejusticealliance.org/just-transition/

12. International Respource Panel, *Glossary*, https://www.resourcepanel.org/glossary

13. Asad Rehman and SimmoneAhiaku, *Why climate change is a racist issue*, 5 February 2019, https://sustainability.nus.org.uk/divest-invest/articles/why-climate-change-is-a-racist-issue

14. Rosa Luxemburg Stiftung Brussels Office (2016), *Strategies of Energy Democracy*, James Angel, https://www.rosalux.eu/fileadmin/media/user_upload/energydemocracy-uk.pdf

15. Matthew J. Burke, Jennie C. Stephens, *Political power and renewable energy futures: A critical review*, Energy Research & Social Science, Volume 35, 2018, Pages 78-93, ISSN 2214-6296, https://doi.org/10.1016/j.erss.2017.10.018

16. Adam Vaughan, *BP aims to invest more in renewable and clean energy*, 6 February 2018, https://www.theguardian.com/business/2018/feb/06/bp-aims-to-invest-more-in-renewables-and-clean-energy

17. Jessica Leber, *Just a Few Utilities Supply Most of the Renewable Energy Sales in The U.S*, 28 June 2016, https://www.fastcompany.com/3061326/just-a-few-utilities-supply-most-of-the-renewable-energy-sales-in-the-us

18. Majandra Rodriguez Acha, *Women's equality will not come after the environmental revolution*, 7 September 2016, https://www.opendemocracy.net/en/5050/women-s-equality-will-not-come-after-environmental-revolution/

19. C. J. Polychroniou, *Interview - Climate Change Is the Product of How Capitalism "Values" Nature*, 19 November 2018, https://www.globalpolicyjournal.com/blog/19/11/2018/interview-climate-change-product-how-capitalism-values-nature

20. Philippe Gauthier, *The limits of renewable energy and the case for degrowth*, 25 September 2018, https://canadiandimension.com/articles/view/the-limits-of-renewable-energy-and-the-case-for-degrowth

21. Daniel Macmillen Voskoboynik, *To fix the climate crisis, we must face up to our imperial past*, 8 October 2018, https://www.opendemocracy.net/en/opendemocracyuk/to-fix-climate-crisis-we-must-acknowledge-our-imperial-past/

22. Acción Ecológica, 'Deuda Ecologica', n.d., http://www.accionecologica.org/deuda-ecologica

23. Elizabeth Kim, *Wind Energy Development in Mexico: At What Cost? Investigating social acceptance of wind farms in Oaxaca and Yucatán, Mexico*, 27 March 2018, https://articulacionyucatan.files.wordpress.com/2018/10/ekim_pae_27mar18_final.pdf

24. Malm, Andreas, *Fossil Capital: the Rise of Steam Power and the Roots of Global Warming*, Verso, 2016.

25. Daniel Macmillen Voskoboynik, 'To fix the climate crisis, we must face up to our imperial past', 8 October 2018, https://www.opendemocracy.net/en/opendemocracyuk/to-fix-climate-crisis-we-must-acknowledge-our-imperial-past/

26. OECD (2019), *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, OECD Publishing, Paris, https://doi.org/10.1787/9789264307452-en

27. OECD (2018), *OECD HIGHLIGHTS Global Material Resources Outlook to 2060 – Economic Drivers and Environmental Consequences*, https://www.oecd.org/environment/waste/highlights-global-material-resources-outlook-to-2060.pdf

28. This data was taken from the according to the *OECD's Global Resources Outlook to 2060 Highlight*s document published prior to the full report's launch, see endnote 25 for the full report.

29. Parrique T., Barth J., Briens F., C. Kerschner, Kraus-Polk A., Kuokkanen A., Spangenberg J.H., 2019. *Decoupling debunked: Evidence and arguments against green growth as a sole strategy for sustainability.* EuropeanEnvironmental Bureau. https://mk0eeborgicuypctuf7e.kinstacdn.com/wp-content/uploads/2019/07/Decoupling-Debunked.pdf

30. Monika Dittrich, Stefan Giljum, Stephan Lutter, Christine Polzin: *Green economies around the world? Implications of resource use for development and the environment*. Vienna. 2012. https://www.boell.de/sites/default/files/201207_green_economies_around_the_world.pdf

31. Laura J. Sonter, Diego Herrera, Damian J. Barrett, Gillian L. Galford, Chris J. Moran, Britaldo S. Soares-Filho. *Mining drives extensive deforestation in the Brazilian Amazon*. Nature Communications, 2017; 8 (1) https://doi.org/10.1038/s41467-017-00557-w

32. Report prepared by the Institute for Sustainable Futures, University of Technology Sydney for Earthworks.

33. Buchholz, P. and Brandenburg, T. (2018), *Demand, Supply, and Price Trends for Mineral Raw Materials Relevant to the Renewable*

Energy Transition Wind Energy, Solar Photovoltaic Energy, and Energy Storage. ChemieIngenieurTechnik, 90: 141-153, https://doi.org/10.1002/cite.201700098

34. Branco W. Schipper, Hsiu-Chuan Lin, Marco A. Meloni, KjellWansleeben, ReinoutHeijungs, Ester van der Voet, *Estimating global copper demand until 2100 with regression and stock dynamics, Resources*, Conservation and Recycling, Volume 132, 2018, Pages 28-36, ISSN 0921-3449, https://doi.org/10.1016/j.resconrec.2018.01.004

35. Note: the 'lowest scenario' accounts for greater recycling and changes in metal composition of renewable energy technologies. Metals considered available for recycling in this study are only those employed in renewable energy technologies, not metals potentially sourced from other above-ground stocks.

36. *Climate Change: a need for Resilience and Innovation*, 9 May 2017, https://www.angloamerican.com/about-us/our-stories/climate-change-a-need-for-resilience-and-innovation

37. Anglo American, *Climate change: our plans, policies and progress*, https://www.angloamerican.com/~/media/Files/A/Anglo-American-PLC-V2/documents/climate-change-supplement.pdf

38. Simon Holmes à Court, *It'd be wonderful if the claims made about carbon capture were true*, 16 February 2018, https://www.theguardian.com/commentisfree/2018/feb/16/itd-be-wonderful-if-the-claims-made-about-carbon-capture-were-true

39. Anglo American, *Quellaveco in a nutshell*, https://www.angloamerican.com/~/media/Files/A/Anglo-American-PLC-V2/documents/quellaveco-factsheet.pdf

40. *Our copper is helping build a cleaner world*, https://www.bhp.com/our-approach/think-big/copper

41. Marcus Leroux, *Copper is golden prospect in BHP Billiton search*, 2 November 2017, https://www.thetimes.co.uk/article/copper-is-golden-prospect-in-bhp-billiton-search-5qz2lfqxk

42. Andrew Slavin, *BHP knocks renewables after $100m loss*, 24 February 2017, https://energyandmines.com/2017/02/bhp-knocks-renewables-after-100m-loss/

43. Glencore, *Sustainability, Climate change*, n.d., https://www.glencore.com/en/sustainability/climate-change

44. Glencore and BHP were ranked 26th and 27th, respectively, in the CDP's 2015 data of the Scope 1+3 emissions of the world's largest fossil fuel companies. For reference, Chevron was ranked 20th and Total 30th.

45. CDP Worldwide (2017), *The Carbon Majors Database, CDP Carbon Majors Report 2017*, https://6fefcbb86e61af1b2fc4-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf?1501833772

46. War on Want, *The Rivers are Bleeding, British Mining in Latin America*, April 2019, Mark Curtis, https://waronwant.org/sites/default/files/the-rivers-are-bleeding-updated.pdf

47. Deep Green,n.d., https://deep.green/

48 *Why the rush with Nautilus PNGeans?*, 12 September 2012, https://www.youtube.com/watch?v=4b2VrubJfjE

49. Helen Davidson and Ben Doherty, *Troubled Papua New Guinea deep-sea mine faces environmental challenge*, 11 December 2017, https://www.theguardian.com/world/2017/dec/12/troubled-papua-new-guinea-deep-sea-mine-faces-environmental-challenge

50. Daniel Schmachtenberger, *Environmental sustainability: an Earth friendly way to get the resources we need*, 10 January 2019, https://neurohacker.com/environmental-sustainability-an-earth-friendly-way-to-get-the-resources-we-need

51. The Alternative Investment Market is a less-regulated alternative to the London Stock Exchange, where often smaller and lesser known companies are listed.

52. Savannah Resources, n.d., http://www.savannahresources.com/home/

53. Lusa, *População de Covas do Barroso quer travar mina de lítio a céu aberto*, 15 January 2019, https://www.noticiasaominuto.com/pais/1179605/populacao-de-covas-do-barroso-quer-travar-mina-de-litio-a-ceu-aberto

54. Emphasis added.

55 *Climate-Smart Mining: Minerals for Climate Action*, n.d., https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action

56. ICMM, *Climate change: meeting a critical global challeng*e, n.d., https://miningwithprinciples.com/climate-change-critical-global-challenge/

57. Understandings of 'development' vary widely, and its utility as a concept is highly contested. The author uses this term to illustrate one of the driving logics of the extractivist model, rather than to attach value or legitimacy to its use as a term.

58. Yes to Life No to Mining, *YLNM emblematic cases*, 2019,https://www.gaiafoundation.org/ylnm-emblematic-cases/

59. EJ Atlas, *Mapping Environmental Justice*, n.d., https://ejatlas.org/

60. 159 for copper, 117 for silver, 27 for rare metals, and 9 for lithium. Some of these conflicts overlap; therefore the total (260) is smaller than the sum of these four figures (302).

61. IISD, *Green Conflict Minerals*, n.d., https://iisd.maps.arcgis.com/apps/View/index.

62. Friends of the Earth Europe (2018), *Sufficiency, moving beyond the gospel of eco-efficiency*, http://www.foeeurope.org/sites/default/files/resource_use/2018/foee_sufficiency_booklet.pdf

63. Ward JD, Sutton PC, Werner AD, Costanza R, Mohr SH, Simmons CT (2016) *Is Decoupling GDP Growth from Environmental Impact Possible?* PLoS ONE 11(10), https://doi.org/10.1371/journal.pone.0164733

64. Friends of the Earth Europe (2018), *Sufficiency, moving beyond the gospel of eco-efficiency*, http://www.foeeurope.org/sites/default/files/resource_use/2018/foee_sufficiency_booklet.pdf

65. CEEWeb, *Energy Budget Scheme for Europe*, 2016, http://www.ceeweb.org/wp-content/uploads/2017/02/EBS_2016_en.pdf

66. Wissen M. and Brand U. (2018), Imperial Mode of Living, Krisis Issue 2. https://krisis.eu/imperial-mode-of-living/

67. Giles Parkinson, *One billion electric vehicles on road by 2040, predicts oil body*, 13 November 2018, https://thedriven.io/2018/11/13/one-billion-electric-vehicles-on-road-by-2040-as-price-parity-reached/

68. Cossu, R. and Williams, I. (2015), *Urban mining: Concepts, terminology, challenges*, Waste Management, Vol. 45, pages 1-3, https://doi.org/10.1016/j.wasman.2015.09.040.

69. *Prospecting Secondary raw materials in the Urban mine and Mining wastes*, Objectives, n.d., http://www.prosumproject.eu/objectives

70. UNEP (2013) *Metal Recycling: Opportunities, Limits, Infrastructure, A Report of the Working Group on the Global Metal Flows to the International Resource Panel*. Reuter, M. A.; Hudson, C.; van Schaik, A.; Heiskanen, K.; Meskers, C.; Hagelüken, C. https://www.resourcepanel.org/reports/metal-recycling

71. *Primary production is energy and capital intensive whereas secondary production is much more labour intensive* (OECD, 2019:106).

72. Mariana Gómez Soto, *Resistance to the 'La Colosa' gold mine – A success story from Colombia*, April 2018, https://www.karibu.no/newsletter/2018/04/resistance-to-the-la-colosa-gold-mine-a-success-story-from-colombia/

73. Our Place on Earth, *Collaborative management: Governance for the New Normal*, n.d., http://casestudies.ourplaceonearth.org/Finland/

74. Thom Pierce, *Postcards from Xolobeni*, 20 April 2018, https://www.dailymaverick.co.za/article/2018-04-20-postcards-from-xolobeni/

75. *A Península Ibérica: unha gran mina a ceo aberto*, 23 July 2019, http://www.contraminaccion.org/

76. Yes to Life No to Mining, *YLNM emblematic cases*, 2019, https://www.gaiafoundation.org/ylnm-emblematic-cases/

77. Santos, Boaventura de Sousa, *Epistemologies of the South Justice against Epistemicide*, Routledge, 2016.

78. Asad Rehman, *A Green New Deal Must Deliver Global Justice*, 29 April 2019, https://www.redpepper.org.uk/a-green-new-deal-must-deliver-global-justice/

79. Gorz André, *Strategy for Labor: a Radical Proposa*l, translated from French by Martin A. Nicolaus and Victoria Ortiz, Beacon Press, 1971.

80. *Dismantle Corporate Power*, n.d., https://www.stopcorporateimpunity.org/

81. Stamp Out Poverty, *How to make polluters pay*, n.d., https://www.stampoutpoverty.org/climate-damages-tax/

82. *Stop ISDS*, n.d., https://stopisds.org/

83. Joint Committee on Human Rights, *Human Rights and Business 2017: Promoting responsibility and ensuring accountability, Sixth Report of Session 2016–17*, para.193, https://www.parliament.uk/business/committees/committees-a-z/joint-select/human-rights-committee/inquiries/parliament-2015/inquiry/

84. London Mining Network (2018), *AIM-listed mining companies and human rights*, Miles Litvinoff

85. Environmental Protection Agency, *Financial Responsibility Requirements Under CERCLA § 108(b) for Classes of Facilities in the Hardrock Mining Industry*, 2017, https://www.federalregister.gov/documents/2017/01/11/2016-30047/financial-responsibility-requirements-under-cercla-108b-for-classes-of-facilities-in-the-hardrock

86. *Initiative for Responsible Mining Assurance, 'IRMA Standard for Responsible Mining IRMA-STD-001*, June 2018, https://responsiblemining.net/wp-content/uploads/2018/07/IRMA_STANDARD_v.1.0_FINAL_2018.pdf

87. Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) Text with EEA relevance, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02012L0019-20180704&from=EN

88. BBC, *Brazil dam disaster: BHP Billiton faces lawsuit in Australia*, 23 July 2018, https://www.bbc.co.uk/news/world-australia-44919859

89. Yes to Life No to Mining, *YLNM emblematic cases*, 2019, https://www.gaiafoundation.org/ylnm-emblematic-cases/

90. London Mining Network, n.d., https://londonminingnetwork.org/

91. WoMin, n.d.,https://womin.org.za/

92. Clara, *We want the Right to say NO! Alternatives to mining and extractivism*, 15 February 2018, http://aidc.org.za/want-right-say-no/

93. *Movimiento Nacional Ambiental*, n.d., https://co.boell.org/sites/default/files/cartilla_movimiento_nacional_ambiental.pdf

94. *Alternativas de desarrollo en las regiones mineras de Perú*, Vargas Koch, Camilo;Bittner, Constantin; Dreier, Vanessa; Fichtl, Moritz;Gottmann, Annika;Thomas,Wiebke; 2018, spa Humboldt-UniversitätzuBerlin, http://dx.doi.org/10.18452/18767, https://edoc.hu-berlin.de/bitstream/handle/18452/19483/SLE-272 2%20Alternativas%20de%20desarrollo%20en%20las%20regiones%20mineras%20de%20Peru.pdf?sequence=1

95. Notions of dignity and wellbeing are diverse; therefore they should be understood as plural, flexible and context-dependent.

96. Kim Willsher, *"I leave the car at home": how free buses are revolutionising one French city*, 15 October 2018, https://www.theguardian.com/cities/2018/oct/15/i-leave-the-car-at-home-how-free-buses-are-revolutionising-one-french-city

97. Labour Party, *Labour will take the national grid out of the hands of private shareholders and use it to make heat and electricity a human right and tackle climate change*, 16 May 2019, https://labour.org.uk/press/labour-will-take-national-grid-hands-private-shareholders-use-make-heat-electricity-human-right-tackle-climate-change/

98. Civil Society Review, *After Paris, Inequality, Fair Shares, and the Climate Emergency*, December 2018, http://civilsocietyreview.org/files/COP24_CSO_Equity_Review_Report.pdf

99. LDC REEEI (2018), *The Least Developed Countries Renewable Energy and Energy Efficiency Initiative for Sustainable Development Framework*, http://ldcreeei.org/wp-content/uploads/2018/10/LDC_REEEI_Framework_English.pdf

100. CISDL (2002), *The Principle of Common But Differentiated Responsibilities: Origins and Scope*, https://cisdl.org/public/docs/news/brief_common.pdf

101. FARN (2019), *Lithium extraction in Argentina: a case study on the social and environmental impacts*, PíaMarchegiani, Jasmin Höglund Hellgren and Leandro Gómez, https://farn.org.ar/wp-content/plugins/download-attachments/includes/download.php?id=26733

102. SOMO (2016), *Cobalt blues,Environmental pollution and human rights violations in Katanga's copper and cobalt mines*, Fleur Scheele in collaboration with Emmanuel Umpula Nkumba (Afrewatch), Donat Ben-Bellah (ACIDH) and Christian Bwenda (Premicongo), https://www.somo.nl/cobalt-blues/

103. Deep Sea Mining Campaign, a series of reports on environmental, social and legal aspects of deep sea mining, http://www.deepseaminingoutofourdepth.org/report/

104. Gaia Foundation (2013), *Short Circuit: The Lifecycle of our Electronic Gadgets and the True Cost to Earth* Philippe Sibaud, https://www.gaiafoundation.org/wp-content/uploads/2013/04/FULL-PDF_Short-Circuit-Report.pdf Note: p. 24-42 discusses a range of relevant metals, see p. 34-36 for a discussion of rare earth metals.

105. CATAPA and War on Want (2019), *Living under risk: Copper, Information and Communication Technologies (ICT) and Human Rights in Chile*, Sebastian Smart, https://drive.google.com/file/d/16KrE-huUwavHLljADa0PlGZPrsvZV-EG/view

106. Swedwatch (2019), *Copper with a cost, Human rights and environmental risks in the mineral supply chains of ICT: A case study from Zambia*, Linda Scott Jakobsson, https://swedwatch.org/wp-content/uploads/2019/05/94_Zambia_uppslag.pdf

107. Jubilee Australia (2018), *Growing Bougainville's Future: Choices for an Island and its peoples*, https://www.jubileeaustralia.org/_literature_163735/Growing_Bougainville's_Future_2018

108. WoMin (2015), *Collection 2 –The impacts of extraction on women in Africa*, October 2015, https://womin.org.za/collection-two.html

109. London Mining Network (2018), *AIM-listed mining companies and human rights*, Miles Litvinoffk. http://londonminingnetwork.org/wp-content/uploads/2019/03/LMN-AIM-advocacy-paper-April-18.pdf

110. Mining Watch Canada, Center for International Environmental Law, and the Institute for Policy Studies (2019), *Extraction Casino, Mining companies gambling with Latin American lives and sovereignty through supranational arbitration*, Jen Moore and Manuel Perez Rocha, https://miningwatch.ca/sites/default/files/isds_report_final_0.pdf

111. OCMAL (2019), *Conflictos mineros en América Latina: Extracción, saqueo, y agresión Estado de situación en 2018*, https://www.ocmal.org/wp-content/uploads/2019/05/informe-final.pdf

112. WoMin (2013), 'Collection 1 – A synthesis of the available literature addressing key themes and questions related to women, gender and extractives' https://womin.org.za/collection-one.html

113. Yes to Life No to Mining, *YLNM emblematic cases*, 2019, https://www.gaiafoundation.org/ylnm-emblematic-cases/

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WAR ON WANT

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