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Who pays for the transition? Critical minerals, carbon offsets and social reproduction in Southern Africa

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Abstract

Carbon offset projects and critical minerals are advanced by several actors as solutions to the climate crisis and as suitable vehicles for attaining just transition. This study provides in-depth insights on how carbon projects and critical mineral extraction (lithium) initiatives unfold in Zimbabwe and Malawi. The study draws heavily on political economy and political ecology frameworks. Through extensive field work in the two countries these findings reveal how, in most cases, the perceived benefits of these projects are elusive to the agrarian class, and how the climate crisis is used by capital and state to advance accumulation. The findings reveal how states in the global South that are keen to transform their economies seek foreign direct investments (FDIs) including those delivered via critical minerals and carbon offset projects. Critical mineral extraction and carbon offset projects resemble a form of green extractivism that undermines efforts for agrarian justice and that render social reproduction precarious and with varying outcomes on the labour dynamics – these being largely negative. However, the findings also provide a departure from common narratives of physical land dispossession. At the same time, the same climate change measures lead to new economic activities in host areas, albeit in localised and miniature forms. The study demonstrates how the achievement of just transition strongly needs a serious critique of the modernisation development model.

Keywords: social reproduction; labour; green extractivism; just transition; global South

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Introduction

In the context of the rising climate change crisis, several mitigation and adaptation measures have been proffered as solutions. Among these measures is a turn to green projects, more specifically exploration of critical minerals and carbon sequestration projects. However, numerous criticisms have been made about these programmes. It is argued that these market-based mechanisms are a way of asking capitalism to reform itself (Böhm et al., 2012). It is noted that these initiatives are ineffective and are a form of green environmentalism that undermines genuine efforts to address climate change. In essence, the clean development mechanism (CDM) that undergirds carbon offset presents an opportunity for big business (Böhm et al., 2012). At the same time, the ecological crisis goes unabated prompting scholars to note the colonial continuity of ecological destruction in developing countries by northern countries (Backhouse et al., 2025).

Countries in the global South present an opportunity for some climate change mitigation measures, largely because of their low emissions and weak governance frameworks (Nel and Hill, 2014). We focus on Malawi and Zimbabwe where carbon projects and critical minerals – mainly lithium extraction – have been established, respectively. These have been pursued as means to attract foreign direct investments (FDI) and address the climate crisis (Winkler et al., 2005). African states racing to complement their own investments with FDI consider carbon projects and critical minerals as important for transforming their economies and addressing deindustrialisation (Phimister and Pilossof, 2017). For instance, during the recent G20 held in South Africa (22–23 November, 2025), emphasis was put on the need to invest in transition minerals. The Al Jazeera news network hailed this as a victory for the African continent. Worldwide, carbon offsetting is looked at as an appealing initiative in the eyes of policy makers and businesses in the mitigation of climate change. Conversely, demand for critical minerals is driven by the urgent need for energy transition to net zero carbon emission (ZELA, 2023). As such, the state quest for investment, global drive for addressing climate crisis and northern-based firms' drive for accumulation coalesce to undergird the rise of critical minerals and carbon projects in several countries, particularly in the global South (Dunlap, 2023).

Although carbon offsetting has potential, it often comes with trade-offs, and it is riddled with injustices and unintended consequences (Carton, 2020). For instance, Behuria (2025) points out the labour injustice on the African continent that arises from just transition efforts by northern countries. In addition, climate change is also used as an avenue for political rhetoric by some African leaders (Nyamwanza and Bhatasara, 2025). All these concerns trigger responses and agrarian struggles among rural communities (Hakizimana, 2024; Streck, 2021). Malawi and Zimbabwe find themselves in this conundrum of being the basis for carbon projects and critical minerals while at the same time widely affected by climate change.

Governments in these two countries have pursued carbon markets and green energy (lithium mining) under the banner of climate justice, just transitions and FDI. In this regard, CDM, with its many variations including carbon offsetting projects, has become a capital preferred tool to address climate change. These mechanisms have varying impacts on agrarian communities in terms of labour, land tenure and social reproduction. This study examined the rise of critical mineral (lithium) and carbon offset projects in Malawi and Zimbabwe. The study further examined the effects of these climate change intervention mechanisms on social reproduction, labour, agrarian struggles and resource tenure in the agrarian communities where these projects are located.

While the two – carbon projects and critical minerals – are distinct enterprises, we regard these as interlinked and interrelated due to how they are conceived and promoted by the capitalist system as climate change intervention mechanisms (Dunlap, 2023). This study contributes to emerging literature on just transition, carbon offsets and critical mineral extraction in the global South.

Paper outline

The following section provides a discussion of the theoretical foundations of the study and an overview of the cases and contextual backgrounds for Malawi and Zimbabwe. The next section contains the methodological section of the study. This is followed by the fourth section that details findings on the role of the state, capital and institutions in just transition mechanisms. The same section also discusses social reproduction and labour dynamics that evolve as a result of carbon offset projects and lithium mining in Zimbabwe and Malawi. In addition, a discussion of the livelihoods and social reproduction processes in the two cases at hand is offered. The section further explains how carbon offsets – lithium mining – configure resource access, especially land-based resources in the two countries. Lastly, the section examines the agrarian struggles and just transition efforts at play in the two countries. The final section provides conclusions to the study that focus on how carbon offsets and lithium mining are implemented and how this entrenches existing capitalist relations in the countryside, albeit with few trickle-down effects on agrarian communities.

Theoretical framework: Green extractivism, social reproduction, labour–land tenure nexus

Green energy transition mechanisms are implemented to achieve structural transformation and address the effects of climate change. Transformation is the reduction of the population surviving on agriculture and is central to modern day development (McMillan and Rodrik, 2011). For instance, to achieve

transformation productivity must be high and there must be labour movement from agriculture to industry (McMillan and Rodrik, 2011). Investments including FDI are critical for sectoral transformation. Mijiyawa (2017) argues that FDI leads to structural transformation. Transformation then results from increased urbanisation, the development of a strong manufacturing sector and a strong domestic market. The manufacturing sector is important; however, at times it cannot absorb more people than the primary sectors (McMillan and Headey, 2014). The importance of manufacturing is also proven by the transformation in the global North that occurred due to industrialisation. Within the African continent, it is also pointed out that agriculture has the potential to lead to transformation but the productivity of smallholder farmers is at times very low (Senbet and Simbanegavi, 2017). Facing this dilemma, African states turn to critical minerals and carbon projects to achieve transformation. In addition, they focus on FDIs in both carbon projects and critical minerals because these two drive the technological advancements that are necessary for transformation (McMillan and Rodrik, 2011).

Through the CDM, companies sell the greenhouse gas emissions as offsets in the global carbon markets. Through this voluntary mechanism, organisations and individuals buy carbon credits to offset their carbon footprint (Davies, 2018). It is argued that the African region can generate more than US$ 200 billion from CDMs while simultaneously lowering carbon emissions (Davies, 2018). CDMs, it is reported, can provide technological opportunities for developing countries to leap frog into economic prosperity (Burian and Arens, 2014). These technological opportunities are also envisaged to provide employment and energy security to a host nation. However, these CDMs are critiqued for failing to provide gains for African countries despite their high potential (Winkler et al., 2005).

Bruna (2022a) argues that green extractivism is ingrained in financialisation and appropriation of nature. At the same time, Dunlap et al. (2024) note that green extractivism is "a system of extractive development that harnesses climate change and other socioecological crises as profit-generating and re-branding opportunities". In understanding green extractivism, it is imperative to locate it as a feature of global capitalism. Green extractivism deprives communities' access to nature and also undermines their right to carbon emissions (Bruna, 2022b). We locate carbon projects and critical minerals within green extractivism. These climate mitigation processes are based on the appropriation of nature in efforts to address climate change. Green extractivism is accompanied by nature and labour exploitation (Bruna, 2022b). Green extractivism leads to a deepening commodification of rural life and nature and sparks crises in rural Africa (Mazwi et al., 2022). Among these crises is the reduction of arable land due to climate change (Bryceson, 2019). These crises further worsen the precarity of rural households and accentuate calls for just transition.

The state, capital and international governance system play a central role in green extractivism. The state facilitates and creates the regulatory and operational framework for capital's accumulation. At the same time, international governance provides the legitimacy for the carbon offset and critical minerals as measures for combatting climate change and ensuring sustainable development. Historically the state–capital alliance is a common feature of capitalism (Byres, 1997). The state plays a pivotal role because it can constrain or promote the nature of change. The state has authority to make rules that bind all people (Amin, 1976; Byres, 1997; Marongwe, 2011). Marx, in his letter to Vera Zasulich in 1883, notes that there is a type of capitalism fostered by the state at the peasantry expense (Shanin, 2018). The state accumulates through taxation, price policy and, at times, through actual production (Preobrazhensky, 1965). In actual fact, the state and ruling class control land. An examination of the relationship between the state and capital enables us to untangle the narratives and intentions of climate responses such as carbon projects and critical minerals.

According to Bernard et al. (2017), proponents of carbon trading tout the benefits it offers to the poor in Africa, but evidence suggests otherwise. Africa offers a very attractive site for these renewable sources for sustainable energy and carbon offsets because of its vast lands and potential to grow trees (Seidu and Queku, 2025). Financial inflows of carbon finance to Africa and developing countries has been low. Carbon trading has also been linked to land grabbing, also termed green grabbing (Scoones et al., 2012). The most important carbon sinks are on land inhabited by indigenous communities. Hence, carbon projects are under criticism for encroaching on the lands and undermining local perspectives on climate justice (Bello, 2009; Böhm and Dabhi, 2009; Smith, 2009). Others claim that carbon projects, if implemented, offer smallholder farmers benefits of rural poverty alleviation (Jindal et al., 2008). However, carbon market projects face the challenge of balancing the objectives of greenhouse gas mitigation and providing benefits for poverty alleviation. This is because, often, carbon credit buyers and carbon credit producers (smallholder farmers) operate at different spatial and temporal scales (Lee et al., 2016). Buyers often operate at global scale, responding to opportunities for financial speculation and commercialisation scale.

Carbon offset projects and critical minerals are implemented in the countryside, hence their impact on agrarian communities' social reproduction. According to Naidu (2023), social reproduction does not only include wage labour but also considers multiple labours such as those related to capitalist production, non-capitalist commodity production and subsistence production. These processes go beyond the workplace into the households; they include the education system, medical system and social system that produce the worker who is employable (Bhattacharya, 2017). There is a general tendency of capitalism to acknowledge only the work done at the production site and to overlook work that brings up a complete worker (Bhattacharya, 2017). In its accumulation, capitalism maintains "Exploitation into the peasants' necessary

consumption" (Shivji, 2017). Understanding these circuits of social reproduction enables us to identify not only the sources of survival, but also the basis for exploitation and resistance in zones where carbon projects and critical mineral extraction take place. Ossome and Naidu (2021) note that the survival and sustenance of the agrarian class in the context of a large surplus population is a key dynamic shaping the participation of women in the labour force in the global South. In this analysis, women as workers in the global South, generally, must ensure social reproduction within and outside the circuit of production. Their main responsibility is to ensure that land and the commons produce food, which they may then use, accumulate or sell. These informal economies of care bring the totality of social reproduction into existence (Bhattacharya, 2017).

Green extractivism impacts on the labour processes by expropriating nature from the rural inhabitants and absorbing only a few of them into the projects as labourers (Bruna, 2022a). At the same time, these same households are disenfranchised from accessing much needed resources for their livelihoods. For instance, the Democratic Republic of Congo (DRC) in the wake of cobalt has emerged as a centre for exploitation of child labour. In other instances, corridors where critical minerals are extracted make promises of job offers that are barely met. This demonstrates how the extraction of critical minerals and carbon offsets fails to meet its labour promises for agrarian houses (Dunlap et al., 2024). In other instances, the rise of decarbonisation – green extractivism – has become a handy tool for countries in the global North to maintain countries in the global South as centres of labour exploitation, including child labour, and massive natural resource extraction (Dunlap et al., 2024).

In mining towns, we observe the rise of racial capitalism (Ashman, 2023). This then gives rise to varying forms of labour exploitation ranging from racialised to migrant labour formations. Delgado Wise and Veltmeyer (2016) argue that migration is a result of precarity and deepening neoliberalism and globalisation. The dynamic of migrant labour presents at its core the spatial fragmentation of social reproduction (Pattenden, 2023). This paper focuses on the crisis of social reproduction which, as argued by Fraser (2016), occurs through poverty as communities spend more time on carbon projects and critical mineral extraction but also through social depletion (Federici, 2019).

Description of the case studies

Malawi

Just like the case of Zimbabwe, capitalist developments in Malawi can be traced to the colonial era. The country was known to have coal but these minerals were not explored in colonial times (British Geological Survey, 1989). Instead, it was agriculture that was pursued and efforts during colonial times were made to develop agriculture (Kettlewell, 1965). Despite the native indigenous people already being involved in

farming activities before the European settlers, the introduction of a small tax by the British during the protectorate forced the people to grow cash crops, or seek employment on estates or even as migrant labourers (Knorr et al., 2007). The country formally known as Nyasaland was a purely peasant economy with farmers growing food primarily for their family's needs until the white settlers arrived and introduced cash crops and labour tenancy. Governments pursued policies that supported dualism in agriculture that comprised both the smallholder and estate sectors. The colonial government subsidised cash crop production with the aim of extracting surplus. After independence, the dualism of agriculture continued, but this time, more African farmers entered the estate subsector to grow tobacco. However, most of these were political elites and the smallholder subsector continued alongside the estate subsector, with the estates enjoying more advantages than the smallholder sector.

Agriculture to date still remains the single most important sector for the economy of the country and the livelihoods of the people, contributing almost 30% to the gross domestic product (GDP), about 65% to employment and about 63% to foreign earnings (GoM, 2018). Tobacco remains the main export crop followed by sugar, tea, coffee and cotton. Crop production is concentrated on maize as a food crop and tobacco as an export crop. Maize is the main dominant crop grown by almost every farmer in Malawi. It accounts for about 50% of the total planted area. Due to the dominance of maize and tobacco, it renders the country vulnerable to production and marketing risks associated with these two crops, hence the need to promote diversification. Among the food crops, the main crops being promoted for diversification include cassava, sweet potatoes, Irish potatoes, groundnuts, beans, cowpeas, pigeon peas, rice and vegetables. Among the export crops are sugarcane, tea, cotton, coffee, macadamia nuts, soya beans, oil seed crops and chilies. Despite the agricultural sector being the important sector, agricultural commercialisation has not really taken off as the sector is characterised by low agricultural productivity, low levels of improved input use, low private investment and low levels of mechanisation (GoM, 2018). Agricultural growth has been highly unstable mainly due to climatic conditions, macroeconomic imbalances due to the devaluation of the Kwacha since 2012, reduced donor budgetary support and unfavourable economic policies that restrict private investment in an export-oriented agriculture.

Malawi is a country that is heavily vulnerable to climate impacts. Since the country relies on agriculture for its economy, the sector is vulnerable to the impacts of climate change. As a result, the government is open to initiatives that promise to address climate-related risks. One of these initiatives is the carbon trading projects. Furthermore, in its quest to address the economic challenges that cripple the country, the government is open to the FDI that comes with the carbon trading projects – it is akin to killing two birds with one stone. While addressing climate change, the country could benefit from revenue generated through carbon projects. Carbon trading in Malawi is connected to international climate agreements, particularly the Kyoto Protocol and Paris Agreement. Activities are associated with CDM and voluntary

carbon markets, such as renewable energy, household energy efficiency and forestry (GoM, 2025b; UNDP, 2025).

The government launched the National Carbon Market Framework to formalise carbon project registration, authorisation, monitoring and benefit sharing. The Ministry of Natural Resources was mandated to provide national oversight, transparency and to ensure communities benefited from carbon trading. The major types of carbon trading project in Malawi include forest conservation and REDD+; improved cookstove and clean energy projects; reforestation, agroforestry and landscape restoration; and agricultural and soil carbon (GoM, 2016; GoM, 2025a; GoM, 2025b). Some of the major concerns and controversies in the carbon trading projects include issues of land tenure and carbon rights, and who has authority to claim carbon benefits between customary land holders, individuals and communities, and the state; benefit sharing and how benefits are shared with communities and households; gender inequalities in land rights and control of carbon benefits; land-use restrictions and activities that constrain farming; and transparency in contracts, carbon credit calculations and benefit sharing agreements (CIJM, 2026; GoM, 2016).

Malawi faces high poverty and high vulnerability to the impacts of climate change (Kafumbata et al., 2018). To cope and adapt to the impacts of climate change, the country has embarked on several efforts including carbon offsetting. Despite these efforts, the concern has been that the benefits from the sale of these carbon credits rarely trickle down to the local communities (Mpaka, 2024).

This vulnerability of the economy to shocks also hinders efforts to increase the labour share of the national income and the minimum wage (Danish Trade Union Development Agency, 2024). Conversely, the country reformed legal labour frameworks to align with international standards, enacting several laws, including the Employment Act (Minimum Wages) (Amendment) Order 2019 (GoM, 2019). The unemployment rate reached 6% overall, 9.5% for youth and 20% underemployment in 2020 (Dunga, 2022). Broadly, the majority of the "working people" live below the poverty line (see Shivji, 2017). This idea of working demonstrates the importance of wages for agrarian households in the epoch of deepening commodification of rural lives. Yet at the same time, land access remains central to these rural households for the production of food and raising of future generations of worker. The importance of the working people as a concept enables us to override the binaries of the worker–peasant alliance in that the "working people" is an all-encompassing concept and takes note of the lives of the people living on the land. This includes those in the formal and informal sectors (Shivji, 2017). The majority of rural households in the global South straddle agriculture–mining as they seek to gain access to wages and complement their incomes (see Bryceson et al., 2014; Ellis, 1998).

Carbon trading has been practised for some time in Malawi. However, in recent days the state has legislated the practice. As a result, several projects have been implemented through which carbon credits are generated, such as low energy cook stoves, and tree planting for carbon sequestration. Self-Help Africa implemented a livelihood Chitetezo project aimed at providing cleaner cooking technologies to over 50 000 households in Dedza, which realised over one million credits, and another project, Chitetezo Mbaula Carbon South Pole Project on similar cleaner cooking technologies in Mzimba.

Zimbabwe

The genesis of capitalist development in Zimbabwe can be traced to colonialism. During the colonial period, colonial powers set up mines and commercial farms (Phimister and Pilossof, 2017). They then relocated black African citizens to work on the farms and the mines under exploitative labour regimes that ranged from corvée labour to forced labour. At the same time, they also relied on migrant labour from present day Malawi, Mozambique and Zambia. In addition, the labour was highly racialised with the minority white workers occupying better positions and earning higher wages than black African workers. These racialised labour practices are also observable in post independent Zimbabwe (Ncube and Chigeda, 2025). At the same time, this colonial mining and the industrial complex relied on communal areas for wageworkers, a tendency that often resulted in semi-proletarianisation of rural households (Neocosmos, 1993; Pilossof, 2014). Conjecturally, the labour class was hugely exploited, and the workers' rights were hugely undermined by the state and capital. Overall, in the agrarian landscape the precarity of labour is characterised by its short termism and low wages (Shonhe et al., 2022).

The advent of independence resulted in the economy being controlled by Africans and some firms leaving the country. Despite this, the tendency of a reliance on migrant labour and exploited local labour has persisted (Chambati 2022; Phimister and Pilossof, 2017). However, the labour structure has changed from being dominated by mining and agriculture alone to one characterised by agriculture, manufacturing, service industry and mining. Mining and agriculture dominate with about 14% and 70%, respectively, of the labour force (World Bank, 2025). The large number of workers employed in agriculture is also composed of paid and unpaid labour. And the number of rural inhabitants in Zimbabwe increased after the Structural Adjustment Programme (SAPs) of the 1990s and the Fast Track Land Reform Programme.

Salaried employees have remained in a precarious position due to the high cost of living, wages that are below the poverty line and limited trade union representation. Reports note that trade unionism in Zimbabwe made several gains in the 1990s when they resisted SAPs and the state's drive for a one-party state. However, post 2000s the state has gained control over some of the trade unions and the growth of several splinter unions has undermined trade unions (Chinguwo, 2022; Sutcliffe, 2013). A point in case was the undermining of the Zimbabwe Congress of Trade Unions and alleged brutal attacks against mining

workers and trade unions by the state and companies (Bond and Saunders, 2005; Mlambo, 2022). In recent times the mining sector has also become informalised due to the high growth of artisanal mining. This has led to a reliance of communal households on mining for livelihoods and it has triggered new dynamics in local accumulation and politics (Chigumira, 2018; Mkodzongi, 2023).

In addition, deindustrialisation has led to a fall in trade unionism and some have marked this as a period of de-proletarianisation characterised by a reduction in the number of working class citizens (Phimister and Pilossof, 2017). These processes have all undermined the chances of reducing precarity for the working class. This calls on us to rethink the idea of labour and employment in the context of changing labour regimes. In the mining sector, new sectors such as lithium remain largely without a direct union but they join other unions such as Zimbabwe Diamond and Allied Workers Union (ZDAMWU), which represents diamond workers.

The Zimbabwean labour landscape has been uneven for more than two decades. Reports note that as of 2020 the economic growth rate was at 8.9% and the employment growth declined at 4.5% per year (ILO, 2020). As a result, about 63% of the population was living below the poverty line and a high number of workers had limited access to social and labour protection (ILO, 2020). The Zimbabwean state in its attempts to drive development tries as much as possible to focus on FDIs but these have not been forthcoming, especially considering the polarisation that the country was subjected to after the land reform (Moyo and Yeros, 2007). Even during colonial times, the Smith regime relied on multinational corporations pouring FDI into the mining and manufacturing sector (Seidman, 1982). The Zimbabwean government also actively searches for such FDI, despite these FDI sometimes resulting in few gains for the majority (Yimer, 2023). At the same time, there is huge competition for FDI between the developing and the developed world (Sikwila, 2015). Reports suggest that developed countries draw more investments because of their well-developed regimes and well-developed infrastructure and governance systems. It is within this breadth of FDIs, development and environmental sustainability that the state promotes investments in critical minerals and carbon offset projects. These are then regarded as ways of augmenting domestic financial resources (Sikwila, 2015) and they are seen as clear ways of ensuring FDI inflows in the country. This has been demonstrated in several policy support documents as well as the total embrace of the discourse of these CDMs as sources of investment and sustainable development (Timilsina et al., 2010). Following these narratives of gains from CDMs, the Zimbabwean state has embraced lithium mining in several locations, such as Bikita, Gwanda and Goromonzi, and it has setup several carbon offset projects, such as REDD+ in Kariba and in carbon credit projects in Hauna and Binga (Chipato, 2025).

In Zimbabwe, Chinese-owned companies such as Prospect Lithium Zimbabwe (PLZ), acquired by Zhejiang Huayou Cobalt, and Bikita Lithium Mine, acquired by Sinomine Resource Group, have the

biggest portfolio of lithium mining projects in Zimbabwe. The lithium project area encompasses historical lithium, gold and beryl workings and is located within a predominantly agricultural zone. Spanning over 14 square kilometres, the project lies within the Arcturus formation, part of the Harare Greenstone Belt (HGB), and features greenstone rock units. Formerly known as Arcadia mine, the mine initially belonged to Australia's Prospect Resources. However, in April 2022, it was then sold to the Chinese investors Zhejiang Huayou Cobalt in a deal valued at approximately US$ 400 million. Huayou, the biggest producer of cobalt in 2020, is a leading Chinese new energy materials producer with major segments in research, development and production of cathode materials, battery precursor and battery metal resources. The Arcadia mine was granted National Project status by the Zimbabwean government in October 2017. The PLZ has a production capacity of 280 000 tons of concentrate as of 2024. In terms of capacity, the company can handle 4.5 million tons of ore per year and 450 000 concentrate per year at a US$ 300 million plant. As for the carbon marketing project, this is located in Binga, which lies on the north western part of Zimbabwe bordering Zambia. This region is home to several indigenous groups, such as the Tonga. The region is densely populated and has several forests and pristine sand beaches. The state has earmarked this region for carbon market projects for the last five years. And this region has witnessed several carbon marketing firms gaining access to the lands.

Methodological reflections

Methodologically, we drew from field work conducted in Malawi and Zimbabwe on carbon projects and lithium mining, respectively. The two cases provided us with insights on how capitalism strives to resolve the climate crisis. While the two cases cannot be directly compared, these cases enable us to understand the dominant mechanisms of carbon projects and critical mineral extraction as ways of resolving climate change. We conducted the field work from December 2024 to October 2025. The data gathering and analysis draw on the political economy questions proposed by Bernstein (2010): Who owns what? Who does what? Who gets what? What is done with the surpluses? In addition, we make use of the intersectionality approach, which looks at different social identities, such as race, gender, class and sexuality, and how they intersect and inform one another in the interlocking systems of oppression (Meer and Muller, 2017).

We draw from African scholarship on intersectionality, Oyewumi (2004) on African gender; Mkhize (2023) on intersection of gender and sexuality to challenge hetero-patriarchal biases; and others, such as Alidou (2005), Andrade (2007) and McFadden (2005) who focus on the intersecting oppression that African people face due to colonialism, neocolonialism and racism.

In Malawi, we focused on Dedza and Mzimba where carbon projects are implemented. We targeted the cook stove project under the Evangelical Association of Malawi and in Mzimba the tree planting under Total Land Care. In Zimbabwe, we focused on Binga and Goromonzi districts where carbon projects and lithium mining, respectively, are underway. In these areas, the critical mineral mining and carbon offsets evolved "before our very eyes" (Bernstein 2004).

We collected data using eight key informant interviews with project field officers, frontline agricultural extension workers and traditional leaders. We also gathered data from 100 carbon project beneficiaries consisting of 48 participants of the beneficiaries of the cooking stoves, and 52 beneficiaries of tree planting in Mzimba. In Zimbabwe, we focused on Binga and Goromonzi districts. Goromonzi District is in Mashonaland East Province. It forms a significant part of Harare's eastern peri-urban frontier. The district is characterised by prime agricultural land and rich mineral deposits (gold and lithium). We held key informant interviews with officials from the Ministry of Environment, Ministry of Land and Agriculture, Ministry of Environment, Ministry of Local Government, Rural District councils, chiefs, several non-government organisations (NGOs), academics and firms. As for the carbon offset projects, we focused on 16 firms trading in carbon. We conducted in-depth interviews with 100 households in Goromonzi where the lithium mine is located. These interviews centred on characterising the directions of change and causality of interlocking parts of the carbon offsets, resource access and social reproduction.

Table 1: Socioeconomic characteristics of the study participants

Characteristics	Description	Malawi (%)	Zimbabwe (%)
Sex	Men	77	61
	Women	23	39
Age	<18 years	1	0
	18-35 years	37	46
	36-60 years	38	35
	>60 years	24	19
Marital status	Single	6	23
	Married	77	51
	Separated	5	1
	Divorced	3	3
	Widowed	9	4
Education men	None	6	0
	Primary	66	9
	Secondary	24	31
	Tertiary	5	10
Education women	None	9	0
	Primary	70	11
	Secondary	19	17
	Tertiary	2	4

Source: Field data (2025)

Findings and discussions

The following sections provide a discussion of the findings that centre on the rise of critical mineral (lithium) and carbon offset projects in Malawi and Zimbabwe. The section also focuses on the effects of these climate change intervention mechanisms on social reproduction, labour, agrarian struggles and resource tenure for the agrarian communities where these projects are located.

State, capital and institutions in just transition mechanisms

Zimbabwe has the largest reserve of lithium on the continent and is ranked fifth in the world for lithium reserves. Besides Goromonzi, lithium is mined in other parts of the country, such as Bikita. The lithium subsector is expected to contribute in excess of US$ 500 million to the country's mining economy annually. PLZ's capacity surged due to the ban of artisanal mining in 2022. Although there was a lithium ore export ban, PLZ continued to export lithium. The mine has two shifts and each shift packs an average of 600 bags of lithium, each weighing 1.5 tonnes [interview with mine shift manager]. Companies setting up mining businesses do environmental assessments and community sensitisation programmes. Community leaders play a pivotal role in mediating between mining companies and residents. The PLZ Company has also invested in the community: "They pushed for the tarring of the road by the mine … the mine authorities did not like to do so. They said it is the role of the ministry responsible for roads" [village head].

The central state plays a role in the regulations concerning mining. It acts through government departments such as the Ministry of Transport and Goromonzi Rural District Council with regards to the infrastructure development in the locality. For instance, a tarred road was developed through the "Ministry of Transport … worked with other stakeholders to facilitate the tarred road" [local chief]. The ruling party ZANU PF is a key factor in how the mine intersects with the community. For instance, an informant revealed, "We thank the Party and government for bringing development to Goromonzi" [female community member]. At the same time, the local council assured the community that, "The mine will not displace us since it is far from our homes". At the local level, state collusion with capital is discernible through several schemes such as tax holidays on the mines, which cover as many as five years. Conversely, small poorly led businesses are taxed up to 20% on their incomes and are even criminalised.

The lithium industry is given priority, as are other incentives such as import duties and uplifting under the Strategic Industries framework, which is a priority set up by the government. Those undermined by the state–capital alliance, at times, undermine accountability (Böhm et al., 2012; Marongwe, 2011). In addition, the state performs regulatory tasks through various agencies. For example, "Sometimes agricultural

extension officers' visit, and we hear about the Environmental Management Agency (EMA) who monitor the level of dust pollution on the road".

The carbon markets are managed through Statutory Instrument 150 of 2023. However, since its promulgation it has led to tensions with other existing regulations such as the RDC Act (Chipato, 2025). The SI 150 of 2023 led to the halting of existing projects and registration of carbon projects. Through this, the state reasserted its control of the carbon market sector (Chipato, 2025). However, rural authorities through the RDC Act also claim jurisdiction over the forest resources.

As for the implementation of the carbon project in Binga, this is widely touted in national media and state announcements. The actual carbon projects have not been implemented in Binga as revealed in our field work visits to the area. However, the media largely reported that the state signed an MOU (memorandum of understanding) for a 7.5-million-hectare carbon deal in October 2023 in a US$1.5 billion transaction with Blue Carbon, a United Arab Emirates (UAE)-based firm (Zhakata, 2023). This transaction has not been operationalised on the ground as revealed by traditional leaders and state authorities in Binga. Therefore, ascertaining the effects of carbon offsets in Binga became largely constrained by this non-implementation of the project on the ground. However, in Binga we encountered REDAA+ projects that were halted when SI 150 of 2023 was introduced. Although not directly designated as carbon projects, to an extent these are aimed at forest conservation which, in essence, has the same modus operandi as carbon sequestration projects. Also, in Manicaland Province there are stove projects that had distributed stoves to 100 000 households through a private company Cicada with the aim of reducing deforestation (See Chipato, 2025).

In Malawi, the government regards climate change as a significant and serious threat to national development, national security and people's livelihoods (GoM, 2016). The government responded to a number of initiatives, such as the national adaptation plan and the Malawi Agenda 2063, to promote a transformative agriculture sector that is smart and resilient to climate change (NPC, 2020).

Through the Carbon Market Framework, the government has strongly embraced carbon offsets as a strategic tool to attract climate finance. For a long time, external investors and developers have been engaged in carbon projects but there was no framework to regulate these. However, the country now sees an opportunity to leverage its natural resources and sustainable development initiatives to generate carbon credits and attract foreign investments (GoM, 2025a). The framework does not mention assurance that benefits are equitably shared among the stakeholders.
For instance, an interview revealed the following:

> We were asked by Restore Africa through Total Land Care to urge my people to plant trees, which reduce carbon and restore natural vegetation. [KII with traditional leader in Mzimba]
>
> I encourage community members to plant trees and use cooking stoves, which have been promoted by organisations in my village. [KII with Village headman in Dedza]
>
> We work together with the land resource and forestry department where we encourage farmers to plant and take care of the trees, which includes the just planted, existing trees and shrubs. [KII with agricultural extension workers in Mzimba]

State and green extractivism

Findings reveal that there is indeed green extractivism as a key driver of lithium mining. Green extractivism is, in essence, capitalist rebranding of resource exploitation (Bruna, 2022a; Dunlap et al., 2024). As mines develop, environmental degradation and social exclusion are also recorded in the area. For instance, the PLZ exemplifies this as revealed in an interview: "The mine constructed a bridge and put tar on the road, which was a development in the community. Yes, they pollute the environment through noise and dust." [Male respondent]

This highlights the contradictions of green capitalism (Böhm et al., 2012). In Zimbabwe, the state is in the process of changing the old Mining Act through the Mines and Minerals Bill 2025. The current bill was drafted in 2015, but it was not signed in 2018 "for violating property rights". The state is pro capital in its mining endeavours. To demonstrate that the lithium industry is strictly for richer companies, the lithium sector is regarded as a strategic mineral sector where investors should have a minimum of US$ 1 million and must have a joint venture arrangement with the state. This pushes away small-scale miners and undermines the former gains of the Indigenisation and Economic Empowerment Act of 2007, which supported small-scale miners through low entry cost into the mining sector and other affirmative action interventions, such as allocation of shares to local indigenous people.

The lithium is exported in raw form. The lack of local beneficiation and continued export of raw lithium echoes neocolonial extraction (Ashman, 2023). Our discussion with some of the countries' importing the lithium revealed that the mineral is used for strategic industries. Therefore, it may not be easier to do beneficiation in source countries such as Zimbabwe as limited technological ecosystems hinder beneficiation in source countries. Hence, security wise, beneficiation does not align with the goals of the investors.

The government of Malawi recognises the challenges that are associated with climate change in the country. At both regional and international levels, the government is a signatory and has ratified several agreements and treaties. The recognition of the country's vulnerability to climate change is also one of the reasons the government adopts and encourages development partners to implement initiatives that reduce

greenhouse gases. Therefore, the country is positioning itself to take advantage of this opportunity and tap into international carbon finance. The Ministry of Natural Resources and Climate Change and the Environmental Affairs Department (EAD) deal with carbon offset projects. Newspapers reported that the potential amount of money from which the country could benefit from carbon trading is about US$ 600 million (K1.2 trillion) per year, from a potential of over 19 million metric tonnes of carbon credits per year if proper policies and regulations are in place (Lumwira, 2025). This necessitated the development of the framework to guide carbon trading. Malawi signed a carbon trading deal with a UAE-based company Green Economic Partnership (GEP). In 2024, the country earned approximately K150 million from the sale of about 75 000 carbon credits (Nations Newspaper, September 5, 2025). At the local level, traditional leaders are involved in mobilisation of the communities to participate in the project. This is a crucial part of gaining community trust. However, there is a high likelihood of passive participation, which could affect the sustainability of the project. Furthermore, the projects are pushed by local stakeholders, including NGOs and government extension workers, which forms vertical accountability and not horizontal accountability (Ribot, 2003). For Malawi, the idea of efficient cook stoves was first pushed due to concerns about health, livelihoods and climate change that the inefficient energy sources perpetuated (Lambe et al., 2015).

At a global level, initiatives such as the Global Alliance for Clean Cook Stoves pushed for this agenda from a health, livelihood and climate angle, and from a commercial angle. Therefore, the cook stove initiative was seen as one of the avenues to tap into international carbon finance. The cook stoves have been partly financed through the carbon projects because of their potential to reduce pressure on trees for firewood, hence generating carbon credits.

Social reproduction and labour dynamics

Lithium mining has varied impacts on the livelihoods of the community, either directly or indirectly. Those directly involved with mining are employed as labourers. Others deal with mining companies via an assortment of economic activities.

Generally, the community has diverse but largely precarious sources of income, with much of the income coming from activities such as vending and hawking. One man reported, "I do vend while my wife takes care of our kids". This demonstrates the centrality of women's unpaid labour. This is further demonstrated in one case where a man reported that, "My wife looks after the family and does most of the household chores" [male respondent]. Conversely, mining has also brought several economic opportunities for the community, such as increased customers for commodity trading. In one incident reports note that "The mine brought life to this area. We now have more customers" [local businessperson]. "Local communities

benefited through the establishment of ancillary business, with some local residents offering commuter/transport services to some of the workers who do not live on the mine. In addition, some established restaurants, bars and many other related services", said a local councillor, "I survive through poultry keeping and small-scale gardening on my family land and sell these to mine workers" [women respondent]. The PLZ also brought more benefits and few disadvantages, for example, "We lobbied for the drilling of a borehole in ward 16 which is a big plus as shown through the borehole drilling" [local chief]. Some of the ancillary businesses established in the area include another Chinese-owned Shengxiang Investments Private limited, which is involved in lithium buying and processing from other parts of the country.

The mining company created employment for 2 000 local workers. Most of these workers are Zimbabweans, including white Zimbabweans who occupy high-ranking positions. Most of the blue-collar workers are local citizens, although some hail from as far as Norton and Bindura.

> The local people are mostly lowly skilled, "unskilled" labourers vs experts and non-locals. The local youth are employed in unskilled positions because, as reported in focus group discussions most youths here did not complete O levels or vocational skills needed in the mine. This relegates them to unskilled jobs, which I'm sure do not pay well. So, to increase their chances of getting employed, local children should get education, training and skills for them to be employed. [male focus group discussion]

According to the manager, the company employs 180 Chinese workers, most of whom occupy senior management positions. All these Chinese workers stay in the mine's dormitories, and their families are all in China. Some of these workers had previously worked in the DRC for many years before coming to Zimbabwe. For local citizens, accommodation in the dormitories is only provided to those on standby or in critical roles. In addition, employment is highly gendered. The majority of the local workers are employed as general hands across several departments. And they earn an average of US$ 300 per month. This is against the poverty datum line of US$ 650 per family of four (World Bank, 2025). Field data demonstrate that "The wages are not enough; they are way too low given the amount of work I do." [male mine worker]

Much of the employment is eschewed towards men, with women having empowerment projects designated for them. One respondent noted that "a lot of youth and women are getting employed, a lot of employment is being created through the mine" [male youth in a focus group]. There are competitive labour conditions, possibly with skill-based gate keeping, as revealed by a local person who is employed as a mechanic. Whereas wages are paid, these are sometimes not paid on time and are often insufficient and delayed. This then deepens the precarity of the workers. To add to this precarity for the workers is the fact that there are several cases of safety concerns, and lack of off-days are common among the mining labour class. Some views which buttress this position were highlighted by some of the mine workers:

"Casual workers lack sick pay; unions exist but are weak; grievances include delayed salaries, poor safety." [mine worker]

The empowerment projects established by the mine range from sewing to gardening projects. These corporate social responsibility (CSR) projects were sponsored up to the tune of US$ 4 million. Vocational education was also offered to the youth. As for the sewn garments, some are bought by the mine. This is a departure from the direct employment creation promised by the mine when it was established. In addition, there is limited union activity and interactions across departments is also curtailed due to varied lunch hours. "Unions exist but are deemed ineffective; grievances include delayed pay, lack of compensation" [male mine worker]. There is low trade union participation, with the most active unions being Zimbabwe Diamond and Allied Mine Workers Union (ZIDAWU) and Associated Mine Workers Union of Zimbabwe (AMWUZ). These findings align with the argument that state–capital alliances perpetuate labour exploitation under green extractivism (Bond and Saunders, 2005; Dunlap et al., 2024).

In as much as employment is offered, much of the employment is short-term employment that affects social mobility and induces precariousness*:* "After termination of the contracts some end up staying in the villages without any meaningful livelihood with some resorting to stealing within the community." [local women respondent]

The casualisation of employment was reflected in some interviews: "I earn when I get hired, which depends on the demand" [male mine worker]. This tendency worsens the precariat of the labouring class because short-time employment does not offer labour unionisation and pension schemes. In addition, such employees are rarely afforded the safety and several benefits that are usually offered to the permanent workers. These labour trends reflect the informalisation, casualisation and lack of collective organisation that reflect broader trends in neoliberal labour restructuring (Helliker and Murisa 2020; Mlambo, 2022). Furthermore, the limited action by unions and formal protections undermines agrarian justice and worker agency. The rise of informal labour reflects semi-proletarianisation whereby rural households have to cover some of the costs of social reproduction in keeping the workers well nourished (Moyo and Yeros, 2005; Neocosmos, 1993; Pilossof, 2014).

Mining has reconfigured social reproduction, intensifying gendered labour burdens and informal livelihoods. These findings are in sync with social reproduction theory (Bhattacharya, 2017; Naidu, 2023). The gendered employment patterns are exemplified through "Mostly young men, especially those who are physically fit. Very few women are employed and it's mostly for cleaning or other roles that are not physically demanding." [female focus group discussion]

Some workers live in camp-like houses at the mine, signifying a labour tenancy framework that has its roots in the colonial mining industry. This precarity has historical patterns (Mlambo, 2022; Phimister, 1994). The majority of respondents from the community are not formally employed by mining firms; they rely on vending, farming or piece jobs around the mining community. Wages obtained from farming and remittances from relations outside the mining area do assist households in meeting some needs, but these are not always enough. Consequently, households have to focus on multiple income sources, such as part-time waged work on large-scale farms and petty commodity trading. By and large, informal networks assist households in sustaining livelihoods in the mining community. The main crops grown by the community include maize, tobacco and soya beans. Women and youth work includes weeding, harvesting, processing and selling. Men are also involved in similar processes, especially the selling of high value crops such as tobacco. Women perform unpaid work in household chores, caregiving and subsistence farming.

In Malawi, the majority of the study participants were farmers, involved in both crop production (94%) and livestock production (47%). They spend much of their time in agricultural activities. Some were employed (18%) and others were self-employed (13%), mostly in small-scale businesses or agricultural businesses. Therefore, the cook stoves help to reserve the time dedicated to these activities because the stoves use less firewood and less time spent fetching firewood. However, activities that the cooking stoves demand take away time and resources. For instance, women labour in sourcing the materials for constructing and maintaining the stoves on top of their already existing workload. If they are to buy the stoves, they spend money which could be used for other social reproduction activities.

The cooking stoves are made by different actors. In some cases, the companies or NGOs distribute already made cook stoves that have been made by local artisans. This offers employment to local artisans who dedicate most of their time to stove making, which leaves the farming work to women and children. Furthermore, the stove makers are not paid enough (about K1000/US$ 0.57 per stove) to sustain their households. This leaves women taking up all the roles that were supposed to be done jointly or by men, in addition to sustaining the family. The stoves are sold for K5 000/US$ 2.87, which is very high for community members who struggle with the rising cost of living. About 70% of Malawians live below the international poverty line of US$ 2.15/day (World Bank, 2025). “NGOs should consider distributing the stoves free of charge to those who are willing other than at a cost.” [KII with village headman in Dedza]

The supply of cooking stoves reduces the demand for firewood, which affects the livelihoods of those who relied on selling firewood. In as much as stove use is good for the environment, without proper planning and strategies to absorb these changes into the labour market or other economic activities, this puts pressure on social reproduction, which affects women who used to survive on selling firewood the most (Ossome, 2025). At the same time, the success of tree projects depends on how many trees are

planted and how long they are maintained. This takes time for beneficiaries to reap the benefits of these initiatives. Reforestation reduces land size in a context where land holding sizes are already small. The proliferation of carbon offset pushes poor households to sell their land in distress to maintain simple reproduction. In some cases, the decision to sell the land is made by male household heads who then grab the land from women and youth. "The land we used to plant soya and maize, we are now planting trees. I personally used to plant maize on four acres of land but currently, I only plant maize on three acres of land; the rest is under trees. This has affected food security." [Interview with male participant in Mzimba]

Coincidentally, the tree planting season is the same as the cropping season when there is high demand for labour on farms. Therefore, household members have to distribute their time and labour between planted trees and crop activities. This brings an increased work load, especially for women who fetch water to maintain trees. "Instead of us working on our farms we are busy with carbon offset activities. Instead of us working in maize fields, we found ourselves weeding in trees." [interview with male participant in Mzimba]

The benefits that study participants were able to mention when it comes to reforestation carbon projects included nutrient fixation, selling trees, trees protecting the environment, trees facilitating precipitation and reducing soil erosion, and trees acting as a wind shield, hence protecting homes. The anticipated rainfall as a result of the trees has potential to increase crop productivity. "The project started last year so there is not much change but we believe there will be an increase in yields as the project encourages planting of trees which add fertility to the soil." [KII with extension workers in Mzimba] "Yes, the trees will provide firewood, add soil fertility, and help in providing rainfall but we are not clear on whether we will get money from this initiative." [IDI female participant in Mzimba]

Elsewhere studies reveal similar tendencies of limited benefits (Hoffmann, 2021). Some participants benefited from the organisations implementing the projects through distribution of seeds, farming equipment and training, but the majority indicated that there were no other technologies or support provided. "I am satisfied because in the future, the trees will improve rainfall patterns" [female participant in tree planting project, Mzimba district]. "There is an opportunity of getting money from the project after trading in five years' time. The other thing is that we will put bee hives in these trees which will give extra cash." [KII with village headman in Mzimba]

Livelihoods and social reproduction

The shift from agrarian livelihoods to critical mining labour fragments traditional survival strategies and deepens precarity. The diversified activities for communities in the mining area range from crop farming

to livestock, vending and remittances. Monthly income ranges from US$ 150 to US$ 400. Farming is rain fed and seasonal, and poultry is a growing income source. Some respondents noted that the main use of income was for food. Apart from these survival mechanisms, there are also government and NGO cash transfers mainly for agriculture inputs. Respondents in Goromonzi rely on farming, poultry and remittances: "We do maize for subsistence and get as little as six bags. I use the money to take care of my family and parents, as well as investing in livestock." [male respondent]

Despite the strides of these households on the agricultural front, it is observable that the mining front has led to a reconfiguration of livelihoods from agriculture to mining, albeit with some high returns but these are highly exclusionary due to the limited number of households that mining supports. This supports the view that green energy projects disrupt circuits of social reproduction, creating time poverty and social depletion (Fraser, 2016; Federici, 2019).

In Malawi, participation in tree planting disenfranchises other family members from accessing customarily held land. At times land is sold to those who can afford to buy and use it for carbon projects. The ownership rights are then transferred from the entire family to well-off individuals, which could be considered land grabbing. Despite the trees being planted along the edges of the field, this reduces the land size that is already constrained, while overgrown trees affect plant growth and have a negative impact on yield. In addition, land previously meant for crops is also set aside for tree planting; "Some of the land has been set aside for tree planting to increase fertility." [male participant from Mzimba]

Most households are not very clear on the monetary benefits from these projects. This was demonstrated through lack of transparency among NGOs involved in the projects, such that some did not want to be interviewed. "We target all farmers and we follow the following criteria: the farmers should have land, should be citizens of this area, should accept and be willing to do it voluntarily, farmers should sign livelihoods and carbon development agreement forms witnessed by the village headman, and should fill registration forms to participate." [KII with extension workers in Mzimba]

Conversely, the positive outcomes for social reproduction include both those that are seen and those that are anticipated. The trees planted provide some livelihood benefits such as firewood, which reduces time, resources and labour spent on collecting firewood. Trees also provide soil fertility because some of the trees planted are agroforestry trees. There is the anticipation that the planted trees will help to facilitate precipitation and act as wind breaks. Community members anticipate that the trees being planted are likely to improve environmental conditions (water and soil fertility), which could improve crop production.

Apart from the project activities, households also engage in small-scale business such as ganyu and building. However, they split time and labour, which strains them further and which offers little benefits from the carbon projects for their social reproduction. Households spend time planting and taking care of the trees, including the already existing trees: "Being involved in carbon trading initiatives (tree planting) reduces time and labour involvement in crop production and household work." [male participant in Mzimba]. "Women are overburdened with work because they are taking up work that was considered men's work in taking care of trees." [in-depth interview with a man in Mzimba]

Gender and intersectionality

Climate change initiatives aimed at decarbonisation have disproportional impacts among different gender and social groups. Therefore, we argue that the so-called "just transition" is not just as some are left in more precarious positions than others. This is particularly true for women who from the carbon offsetting projects have to bear the implications of land grabs and labour shortage. The youth suffer lack of inheritance of land as the land is either commodified or used to plant trees for the carbon projects. Drawing on the intersectionality approach, we see the intersection of gender, class and age as the women suffer most, the youth are also disadvantaged and the poor are in even more precarious positions. There are differentiated impacts on women, youth and informal workers in critical mineral mining in Goromonzi. Field data show that "Most women are now spending their time at the mine, sometimes they may fail to do their routine activities. My wife looks after the family while myself doing the farm activities." [male respondent]

At times, some women are employed on the mines, which affects traditional roles. In this regard, employment is seen as empowering but also disruptive. At the mine, there are limited employment opportunities for women in mining; roles are often restricted to cleaning or catering. At the household and community level, single mothers and widows face heightened precarity and exclusion from decision making. Conversely, some women report increased economic activity through vending and small-scale agriculture. The findings reflect the gendered division of labour and the invisibility of reproductive work in capitalist accumulation (Bhattacharya, 2017; Mezzadri et al., 2024; Naidu, 2023; Ossome and Naidu, 2021). At the same time, women's participation in the informal economy and their exclusion from formal mining jobs underscore the intersectional disadvantages they face (Crenshaw, 1989; Mezzadri et al., 2024).

Carbon offsets – lithium mining and resource access

In Zimbabwe, the lithium mining did not result in direct land displacement because PLZ purchased the land on which the mine is situated from the Australian-owned Arcadia Lithium Mine. This mine sat on

the land owned by a former senior government official who is alleged to have been significantly paid for the land. Most respondents revealed that they retain access to land, as noted, "No, the mines didn't take anyone's land this side, people are still on their allocated lands" [focus group discussion]. Although land dispossession is not widespread, the encroachment of mining infrastructure and the fencing off of large tracts of land (for example, Arcadia Mine) reflects green-grabbing tendencies (Borras et al., 2022; Dunlap et al., 2024). In addition, the limited discussion of land ownership around the mine demonstrates a lack of transparency about land ownership and tenure security. This aligns with concerns raised by Unruh (2008) and Turner et al. (2023) that customary land rights are overlooked in extractive projects, which is a reality considering that much of the surrounding communities rely on customary land rights.

The respondents who retained their land have access to land for residential and farming rights. In addition, they have access to common property including forests, rivers and graves. But broadly there has been a surge in migration due to the mining activities. In addition, Goromonzi district is just 20 kilometres from Harare and susceptible to the peri-urban expansion that is gripping several parts of the global South (see Delgado Wise and Veltmeyer, 2016). Despite households retaining land for agriculture and many other ventures, women and youth face the challenges of land access and farming. This was revealed in some focus group discussions: "Women's voices are often ignored … farming is more difficult with limited inputs."

This tendency is not new in Zimbabwe where land access is configured on several power asymmetries (Bhatasara and Chiweshe, 2017). These land inequalities are also expressed through land shortages that are emerging, especially for youth and extended families. Therefore, while direct land dispossession is limited, green extractivism manifests through environmental degradation, land fragmentation and social exclusion. Land shortages are emerging: "My older children now have their own families … I need to buy land" [focus group discussion and male respondent]. The establishment of the mine has accentuated land prices in the area with land previously sold at US$ 1500 per hectare now selling for above US$ 2000 per hectare. In addition, land for business at the nearby Majuru Business Centre has also gone up. This land commodification is driven by a huge demand for land for petty commodity trading and also for commercial purposes at Majuru growth point. Generally, land and house rents have risen in the neighbouring location of Majuru*:* "Yes, the land is too small for production. We can't maximise crop production because of limited land." [female respondent]

The mine covers around 1 000 hectares of land, all of which is now fenced off. This fence has caused major resentment among the local people. They argued that their school-going children who are enrolled at Vhuta Primary School are now forced to take a longer or more circuitous route to school. The shorter route to school has since been closed off. "This fence has made life difficult for our children, especially

those living at Low field farm. They now have to travel a long distance along the fence in order to reach Vhuta Primary School." [focus group discussion]

Elsewhere, reports on lithium mining reveal tendencies of land grabbing in Zimbabwe. Media reports reveal that new mining ventures destroyed grave yards and blasting damaged homes in Gwanda.

On the environmental front, pollution is widely reported by most respondents, who noted that "The mine pollutes through dust and noise". The dust comes from the truck traversing portions of the road that are not yet tarred. In addition, the mining itself creates dust and noise, especially during blasting. A Chinese worker revealed that originally the mine was targeted to finish blasting the mountain in 12 years but they realised they could finish the blasting in six years. An environmental officer at the mine noted that there is also extensive ecological harm to the environment, especially land pollution, but this is not usually seen by the communities because it happens underground. An environmental officer reported that "Lots of chemicals go underground, they may not be visible but they are there and the community is not made aware of this". The community revealed that, "Yes, they pollute the environment through noise and dust".

Thus, one way or another lithium mining reveals some level of green washing if one considers the fact that this mining also generates carbon emissions. These dynamics echo concerns about agrarian struggles and resource access inequalities (Borras et al., 2022; Mezzadri et al., 2024).

In Malawi evidence suggests that most carbon projects pay little attention to equity, which brings inequalities especially for poor people and women (Lee et al., 2015). Furthermore, carbon has not been realised yet from the carbon initiatives because some have just started planting trees. However, even those involved in the cooking stoves, despite being in the project for some time, did not mention any benefits of the revenue realised from carbon trading. Sometimes, poor people are left out of the initiative because of lack of secure land tenure, and the high cost of adoption to maintain and take care of the trees or maintain the stoves (Lee et al., 2016). It is mostly women, widows and members of the poorest households who are affected by land access due to the carbon initiatives.

Agrarian struggles and just transition

In Goromonzi, there is limited overt resistance, passive contestation, community lobbying (for example, for road tarring) and negotiated agency. Therefore, what is perceivable is that there is more vertical accountability when it comes to green energy mining ventures. Vertical accountability, by its nature, relies more on mobilisation than equitable citizen participation (Mudimu, 2019; Ribot, 2003). For instance, some

respondents noted the following: "Community leaders act as intermediaries between the firms and the community." [male participants during focus group discussion in Goromonzi]

This is not a new dimension with regards to rural democracy in Zimbabwe, where often a citizen and subject binary are at play with matters moving towards the latter (see Mamdani 1987). As for the sharing of the benefits, no gender affirmative initiatives have been put in place; jobs and other resources are accessed by the better places. Such dynamics undermine achievement of agrarian justice in situations where green energy minerals are extracted. The findings' emphasis on co-creation of knowledge and solutions is echoed in these dynamics and, at times, there is cooperation with the mine: "We live cordially with the mining company." [female respondents]

This reveals some departure from frequent mining reports on clashes in gold mining and other minerals between miners and communities. Perhaps the explanation is that lithium is mostly associated with bigger established firms whereas other mining fields such as gold attract artisanal miners disguised as investors. At the same time, with specific reference to the carbon offsets in Binga, there is no political action occurring on the ground due to the off-site nature of the management of the carbon projects. The less visible physical land disturbances in Binga are perceivable and, with time, there is the possibility of the fencing off of some of the commons, because much of the land dedicated to carbon project is state land that is usually used by communities for forest and fire resources.

In Malawi, there is a struggle for livelihoods and most households are encouraged to participate in these projects with the hope of benefitting. However, most of these hopes have not been realised. Despite some being anticipated, others are not clear. In addition, spending time on tree planting undermines household food production. As for the cook stoves, these trigger social reproduction crises as the stoves render firewood sellers jobless with financial gains for firms engaged in the stove production and those directly benefitting from the carbon trade.

Despite these struggles, there are limited efforts to resist these carbon initiatives. In the event that such grievances are raised, the agriculture office and the traditional leaders are placed to handle these. It is difficult to resist because the initiatives come through the traditional leaders so they do not have much freedom. Sometimes these leaders practise favouritism and corruption so it is difficult for community members to fight back.

Conclusion

Carbon offset projects and critical mineral (lithium) mining – both modes of green extractivism – are pursued by the governments of Malawi and Zimbabwe as climate change measures and investment opportunities. These projects are largely enveloped in positive narratives of trickle-down effects to the agrarian communities, but evidence from the study sites reveals otherwise. The projects do not generate the much-promised employment and they accentuate the commodification of nature, life and land in most cases. The social reproduction outcomes are also variegated with households largely eking livelihoods on informal petty commodity production, with women continuing to shoulder the burden of social reproduction. The labour outcomes from carbon offset projects in most cases undermine existing labour arrangements, especially in stove projects in rural Malawi. In critical minerals, labour outcomes also demonstrate the exploitation of local labour and the racialisation of labour, in addition to the limited union participation by mine workers. The state, in most cases, supports the capital accumulation by the firms involved in these carbon projects and lithium mining, as evidenced when capital friendly laws and many investor-friendly institutions are put in place. The findings illustrate how the climate crisis has provided an opportunity for capital's continued accumulation, especially by foreign firms. This call is for a reimagining of just transition that centres social reproduction, gender equity and labour rights in the wake of demand for critical minerals and carbon offset projects (ILO, 2016; Wilgosh et al., 2022). The emphasis on energy justice and community-led development is crucial to achieving a truly just transition in a context where global governance, state and capital coalesce to address climate change, investment and development dilemmas.

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