A Climate-smart world and the rise of Green Extractivism[1]

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Abstract. Climate change policies' implications for the capitalist system call for us to go beyond efficiency-driven extractivism and further analyse the outcomes of green policies. The implementation of Mozambique's climate change policy resulted in the emergence of green extractivism, a variation of extractivism that is based on the extraction, expropriation and transfer of emissions rights from rural poor, in favor of external accumulation. Emission rights are one's ability to rightfully use and benefit from ecological assets. Thus, under green extractivism, rural households are not only being deprived of resources determinant for their social reproduction, but also of their right to emit.

Keywords: climate, green extractivism, capitalist system, policies.

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Introduction

From efficiency-driven asymmetric and exploitative exchange relations to green-driven extractivism

Extractive activities can be traced back to the 1500s embedded «into a historical perspective of «continuity and change» in the evolution of world capitalism and imperialism» (Veltmeyer, 2013). Efficiency-driven extractivism is one of the central strategies of imperialism, colonialism and neoliberalism's exchange relations, thus, accumulation. It focuses mainly on economic efficiency goals rather than environmental goals, as it is the case of mining and energy extractivism and the more recently academically explored agrarian extractivism (Alonso-Fradejas, 2021; Gudynas, 2021; McKay, 2017a; Petras and Veltmeyer, 2014). Historical exchange relations, based on efficiency-driven extractivism, are at the core of today's global uneven and disproportional economic development and global division of labour (Acosta, 2013; Amin, 1977; Bebbington, 2015; Shivji, 2019).

Nowadays, the current scramble still targets African countries for the development of extractive activities (Bryceson, 2002; Moyo *et al.*, 2012). Ye, van der Ploeg, Schneider, and Shanin (2020) see extractivism as «a main feature of global capitalism as a whole. More and more economic sectors are (re-)constructed in extractivist ways». Extractive activities have been framed as an opportunity to development and poverty reduction while the real implications are left unaccounted. By following this framing, the new institutional approach of development from the national government over the last 20 years, put Mozambique as one of the most pursued

destinations for investments (mainly Foreign Direct Investment, FDI) seeking the extraction of natural resources. Consequently, the country has become an extractive hub, feeding other regions' industrialization with energy and primary commodities, while intensifying imports of manufactured goods and food. Although rates of economic growth are a result of the high inflow of FDI (Castel-Branco, 2014; Mosca, 2005), the economy does not accomplish the goals of poverty reduction and broadening of the social and economic basis for development (Castel-Branco, 2014). These extractive activities have rather become a major driver of social exclusion and negative implications for rural livelihoods.

There is a distinct feature on today's scramble and resource grabbing, brought up by the current global environmental crisis, which is vastly transforming the global economy. The green economy and climate change policies (and its implications for rural development) call to go beyond the agrarian question's focus on «classes of landed property, capital and labour in the countryside» (Bernstein, 2010) by integrating more of a political ecology lens. Additionally, Borras, Scoones, Baviskar, Edelman, Peluso and Wolford (2021) state that because climate change and contemporary capitalism are entwined, this relationship requires deeper analysis particularly regarding how it is shaping the rural world. By answering to these calls, this research aims to explore and strengthen, theoretically and empirically, the existing literature in critical agrarian studies in understanding the new dynamics of extractivism in the context of its intersection with climate change policies and how these new emerging ecological relations unfolds; and, ultimately grasping the implications for global accumulation and rural livelihoods.

This call sits on the fact that mainstream institutions (World Bank, Food and Agriculture Organization, United Nations or Intergovernmental

Panel for Climate Change, and so forth) promote urgent measures to mitigate and adapt to climate change, focusing mainly in controlling Greenhouse Gas (GHG) emissions, with direct impacts to land use and rural areas and population. To facilitate the goal of overcoming climate vulnerability and solving this global urgent matter, increased levels of aid and funds are being directed to climate projects aiming both the reduction of emissions and maximize carbon sequestration (FAO, 2013; IPCC, 2019; The World Bank, 2010b, 2010a), which constitutes the essence of enforcing a «climate-smart world». In other words, those institutions are promoting and financing the implementation of «climate-smart policies» defined as «those that enhance development, reduce vulnerability, and finance the transition to low-carbon growth paths» (The World Bank, 2010a:XX). Thus, efficiency and environmental goals are the central combination of contemporary global processes of accumulation (Franco and Borras, 2019).

Among many others, «Climate-smart policies» include Reducing Emissions from Deforestation and Forest Degradation (REDD+), Climate-Smart Agriculture (CSA) and promotion of «green» investments such as tree plantations, biofuel production and renewable energy. This paper focuses mainly on the implementation of REDD+ and CSA. CSA is considered, by both the World Bank and FAO, as one of the essential tools for achieving sustainable development, claiming that «CSA meets these expectations by improving productivity, enhancing resilience and reducing GHG emissions» (FAO, 2013:357). In line with FAO's concept, The World Bank (2011) considers CSA a way to strengthen food security and provide environmental benefits. CSA in Mozambique is actually implemented under the umbrella of REDD+, the main national policy for climate change mitigation and adaptation. The Mozambican REDD+ national strategy

aims «to reduce emissions from deforestation and forest degradation, forest conservation, sustainable management and increase of carbon reserves through planted forests» (MITADER, 2016) by focusing in three main sectors: agriculture, forest and energy. It is within the scope of these two policies that this paper aims to understand the intersections between extractivism and climate change policies.

Methods and theoretical framework

The research aims to to answer the question of «How does the intersection of extractivism and green policies shape resource grabbing and what would be the implications for accumulation and rural livelihoods?». In order to answer to the research question, it is important to start with the consolidation of the existing literature on extractivism to further understand the different ways in which it manifests on the ground. Based on that, we can understand how does this intersection (extractivism and green policies) is positioned within the consolidated framework.

For that matter, fieldwork was conducted intermittently between 2015 and 2019, through qualitative methods including participant observation, document analysis, more than 80 semi-structured interviews (households, NGO representatives, local government officials, Reserve administration staff and grassroot social movements' representatives) and focus groups discussions (with expropriated households and rural workers). Primary data was analysed against the background of secondary data at the national level, including quantitative macroeconomic indicators to further understand the structure and performance of an extractive economy. Qualitative data was analysed through a purposeful approach

of constant comparison, (Boeije, 2002) based on a process of open, axial and selective coding, to be able to trace processes, build storylines, identify causality and links between processes and outcomes.

The theoretical framework combines concepts from political economy and ecology, land and resource grabbing (Borras and Franco, 2013; Hall *et al.*, 2015; White *et al.*, 2012; Zoomers, 2010), extractivism (s) and appropriation of nature (Acosta, 2013; Arsel and Büscher, 2012; Fairhead *et al.*, 2012; Gudynas, 2021), the role of nature in wealth production (Bunker, 1984), uneven relations between peripheries and centres that feed global uneven development and implications to rural livelihoods and the agrarian question (Amin, 2012; Bernstein, 2010; Shivji, 2019); Second contradiction of capitalism and ecological crisis (Moore, 2017; O'connor, 1998) and the ability of capitalism to convert its own crisis into a new accumulation strategy (Arsel, 2019); also, it explores more recent literature on green extractivism as complementary inputs to the current analysis (Bruna, 2021; Dunlap and Brock, 2021; Voskoboynik and Andreucci, 2021). It is important to underline that political ecology offers adequate analytical tools to explore biophysical issues and injustices within ecological exchange relations by shedding light onto the importance of ecological assets both to local reproduction and national reproduction. These frameworks allow the further understanding of the regional and global flows of what is being extracted/appropriated and the local implications to social reproduction as a result of ecological loss.

Intersection of extractivism and green policies

By analyzing the intersection of extractivism and green policies, through the experience of Mozambique, the study shows that green policies imply,

beyond resource grabbing, the expropriation of emissions rights from rural poor. Emission rights, particularly in the case of rural households, are the ability that one has to be able to rightfully use and benefit from ecological assets. Some examples would include using and benefiting from forest resources for their livelihoods, practicing agriculture without imposed restrictions, and so on. By using the extractivism framework, one is able to grasp how emission rights are expropriated, transformed into carbon permits and transferred in favour of external accumulation (accumulation based on selling carbon permits or even by using them). This gives rise to a new variation of extractivism that I propose to call «green extractivism», which comes as a handy analytical tool in today's focus on reducing emissions or compensating for emissions (the era of «emissions imperative»). Green extractivism arises as an innovative way in which capitalist production, reproduction, consumption and accumulation unfolds.

By exploring green extractivism, further steps into the theoretical and empirical understanding of extractivism are made. First, in terms of tackling the differentiated processes in which extractivism unfolds as a function of nature appropriation and labour exploitation, what I call «variations of extractivism». Second, in terms of further understanding how accumulation is realized throughout the commodity circuit (from extraction to consumption) and what are the implications for the host country in terms of economic production and development. And third, it allows the tackling of «invisible» or «intangible» key resources (emission rights) that are actually expropriated from the rural poor and that undermines social reproduction and puts an additional burden on the working people, especially onto rural women. This is made through the analysis of three study sites that provide empirical data to tackle different variations

of extractivism including: *1.* Mining extractivism in the case of the South African company SASOL and natural gas extraction in Southern Mozambique; *2.* Agrarian extractivism based on the case of Portucel Moçambique and its eucalyptus tree plantation project; and, *3.* Green extractivism in the case of the Gilé National Reserve and a combination of REDD+ and CSA implementation.

Towards a consolidated extractivism theoretical framework

Extractivism's theoretical foundations

Classic theories (Ricardo, 1919; Smith, 1976) underline the importance of extractive activities and their role in nations' wealth creation, failing to address the unwanted economic and social implications to the host countries as well as the unbalance distribution of gains and losses within processes of exchange of commodities among regions. On the other side, resource curse theorists (Auty, 1995; Badeeb *et al.*, 2017; di John, 2011) are too centered in the resources and the implications for the host country «blaming» mostly the abundance of resources for the negative macro and micro implications. However, they miss the inherent flaws and injustices within the capitalist system itself and how accumulation is realized through asymmetric exchange relations.

Development studies and Marxist scholars have been profoundly researching and exploring the causes of poverty and underdevelopment, but generally missing important issues regarding nature appropriation (ecological exchange relations), the role of raw material in the creation of surplus

and ecological implications of such processes. As more useful as these theories are, most of them are still leaning towards western and Eurocentric economic and social dynamics. Dependency theory arises as a crucial tool for understanding power relations and capitalism in a globalized world and its implications regarding underdevelopment of peripheries (Amin, 1977; Frank, 1970; Furtado, 1964). To answer to those gaps in these set of conceptual frameworks, extractivism framework aims to look at roots of underdevelopment in a context of global relations of exchange of commodities, centering not only labor exploitation but also nature appropriation. This framework interconnects global flows and circuits of commodities with local implications; especially as an attempt to grasp economic, social and ecological framing of extractive economies to hold the costs incurred accountable and better understand development paths of such countries.

Without explicitly calling it «extractivism», Bunker (1984) underlined the differences between extractive economies and productive economies. He argues that extractive activities would have adverse implications for the economy and on the «the subsequent developmental potential of the affected regions» (Bunker, 1984:1017). For Bunker (1984), theories (growth, development, labor and so on) based on experiences of productive economies will not accurately explain the dynamics and development path of extractive economies «because the exploitation of natural resources uses and destroys values which cannot be calculated in terms of labor or capital», (Bunker, 1984:1019). This is at the core of extractivism as a theoretical framework. It goes beyond «blaming» the abundance of resources, it tackles the process, terms and conditions, proceedings and power relations through which actors extract, drain and exchange natural resources based in an uneven process of wealth creation and distribution.

Extractivism as a theoretical framework

> Extractivism is not only about what is taken, nor what is left, but is at the same proportion, about what was lost and can't be recovered. Losing the ability to social reproduction along with the perpetuation of underdevelopment.

Extractivism or extractivim(s) or even global extractivism(s) (highly debated on the EXALT initiative-Helsinki University) are conceptual frameworks that are being studied and debated across disciplines. Heterodox economists, political economists, political ecologists, geographers, anthropologists and so on, have been profoundly discussing the theoretical and empirical foundations of extractivims. For this paper and research in general, extractivism is going to be further explored in a context of production, accumulation and appropriation of nature.

The term «extractivism» became highly debated by many scholars in the Latin America context. Acosta (2013) understands it as a «mode of accumulation» based on the removal of natural resources for export. Whereas Gudynas (2010) calls it a «mode of appropriation» meaning to «describe different ways of organizing the appropriation of natural resources (such as matter, energy or ecological processes) to serve human purposes in their social and environmental contexts» (Gudynas, 2021). Petras and Veltmeyer (2014) define extractivism as «the appropriation of large volumes of natural resources» aiming to be «exported as raw materials to global markets», including the exploitative relation of waged labor.

Ye *et al.* (2020) revived the theoretical grounds of extractivism, without explicitly challenging labor theory. They focus their argument mainly in control over resources, flows and networks of commodities,

without developing productive forces (Ye *et al.*, 2020). So, in the context of a globalized economy, flows of commodities to and from extractive cores, to and from productive cores are «big businesses» involving multiple channels of accumulation throughout the whole value chain until it reaches the final consumer. Big shipping, freight, logistics and transport companies accumulate throughout this process that are part of the scheme of extracting, transferring and exchanging raw materials. In this context, Andrade (2022:2) underlines the fact that extractivism is a phenomenon that is «constituted and simultaneously conditioned within the totality of the social organization of production and the dynamics of capital accumulation, social, and power relations at the country level».

Extractive cores are ecologically exploited, economically structured and socially organized to accommodate extraction and draining of commodities. Peripheries such as Mozambique, are ought to become extractive economies with strategic circuits to drain commodities to international markets with underdeveloped productive forces. Public financial and social resources are transferred from priority sectors such as agriculture, to extractive sector and infrastructures. This confirms a particular insight from Bunker (1984), where the author underlines how these dynamics of extractivism shaped class structures, environments, organization of labor, system of property, state, and so many other economic and social framings of extractive hubs.

Economic dependence, deterioration of social conditions, income concentration, unequal distribution of extractivim's benefits, displacement of local population with negative implications to livelihoods, resource (land) dispossession and concentration, marginalization of local or country's priorities are amongst the most identified and explored ills of

extractive capital by scholars (Acosta, 2013; Arsel, 2012; Arsel *et al.*, 2016; Gudynas, 2010; North and Grinspun, 2016; Petras and Veltmeyer, 2014; Nygren, Kröger and Gills, 2022).

Other scholars highly underline ecological implications of such mode of operation: degradation of the environment and habitat of indigenous and peasant communities, pollution of water, global climate change, depletion of the soil, deforestation, decline of biodiversity and so on (Arsel, 2012; Bunker, 1984; Burchardt and Dietz, 2014; Dunlap and Brock, 2021; Petras and Veltmeyer, 2014). On top of that, all extractive economies have one thing in common, the «enclave logic»: the lack of connections in their economic structures and concentration of economic and productive forces in few primary commodities and their respective economic sectors, which intensifies the vulnerability of the economy to global markets (Acosta, 2013; Castel-Branco, 2014), thus, reproducing underdevelopment.

Recent theoretical contributions provide further understanding of extractivism —as an overextension of natural resource exploitation in which uneven access to resources and the differentiated distribution of its benefits and burdens are verified (Nygren, Kröger and Gills, 2022). On the other hand, financialization emerges as an important issue to be incorporated in the extractivism debates, as it is understood as crucial to the creation of new frontiers of exploitation and appropriation and the production of extractive space (de los Reyes, 2022). Higher costs, usually left unaccounted such as disruption of social and economic organization, productive forces and ecological degradation, are left to extractive cores. This research aims to underline and tackle the ecological relations, giving higher importance to ecological assets and their role in current dynamics of accumulation and as determinant to rural livelihoods.

The emergence of green extractivism: greenization of extraction versus *extracting emission rights*

In the context of enforcing a Climate-Smart world and with the emergence of the green economy, many scholars are paying attention and exploring different mechanisms through which capitalism is responding and extractivism is unfolding. This started a hype in academic work relating extraction and green economy, or resource extraction and climate change as well as the intensification of renewable energy and conservation projects around the world. Many scholars aim to answer the question of what does the greening of the economy and productive forces mean to effectively fight climate change, but also what are the social, economic and environmental implications of the so called «greener» alternatives. Some of these dynamics and processes have been referred to as «green extractivism», with all the differences in meaning, description or analytical power. Some authors used the term «green extractivism» (Dunlap and Brock, 2021; Kingsbury, 2021; Verweijen and Dunlap, 2021; Bruna, 2020), other used «greening» extractivism (Voskoboynik and Andreucci, 2021) or even «plant extractivism» (Homma, 2012) and «eco-extractivism» (Nunez *et al.*, 2020).

These debates put forward relevant insights and analytical issues that need to be followed up. For instance, Homma (2012) analyzed the case of the Brazilian Amazon and the dynamics of extractivism in the region and the author brings up the idea of «plant extractivism» basically to refer to the process of extraction of forest resources with the exception of timber logs. However, in more recent debates, scholars have explored how the emergence of green economy induced the greenization of extraction.

Brock and Dunlap (2018) came up with the notion of counterinsurgency, which involves different corporate mechanisms to legitimize fossil fuels extraction, particularly coal, mainly in response to activist resistance movements. These mechanisms included «hard» and «soft» approaches, in other words, repression, political violence and military force on one side and widening corporate social responsibility and green initiatives on the other side, in order to persuade the public that resisting is pointless, but also to legitimize their extraction operations (Dunlap, 2018a; Dunlap and Brock, 2021).

The same approach has been used to analyze the intensification of renewable energy production in the name of mitigating climate change. (Dunlap, 2018a) focuses on wind energy development and explores how hard and soft counterinsurgency techniques unfold in Mexico. Other authors also discuss how the solutions to climate change (mitigation and adaptation policies including REDD+, CSA, promotion of biofuels and renewable energy, and so on) actually constitute a legitimation tool for both extraction, accumulation and resource grabbing (Bruna, 2021; Dunlap, 2018b).

Still on the matter of greening the extraction process, some scholars have recently explored the role of «transition minerals», those minerals assumed to be greener and strategic to the low carbon transition; some explored the case of lithium and how its extraction actually attain high ecological costs and undermines the sustainability of energy transition (Kingsbury, 2021; Voskoboynik and Andreucci, 2021). These notions underline the emergence of climate-friendly extraction and directly connects green extractivism to cases where «intensive resource exploitation is framed not only as compatible with climate change, but indeed as necessary to its mitigation» (Voskoboynik and Andreucci, 2021:1).

Generally, the concept of green extractivism has been discussed in the context of green economy and climate change mitigation and adaptation policies, mainly positioned in the approach of being a set of «forms of resource extraction linked to or justified by the ‹green› economy» (Verweijen and Dunlap, 2021:5), including energetic extraction from renewable resources (wind, solar, hydrological and bioenergy) and all the extractive operations that are needed to produce renewable energy such as extraction of minerals and hydrocarbons used to produce wind turbines and other equipment (Verweijen and Dunlap, 2021; Dunlap and Jakobsen, 2020).

However, it is becoming common to use the term «green extractivism», sometimes stripped from theoretical foundations, to describe processes through which extraction is turned «greener» or when green policies and discourses are used to legitimize efficiency-driven extractivism processes aiming ultimately at making the process of resource extraction and exploitation acceptable (Voskoboynik and Andreucci, 2021). Green discourses, policies and economy constitute indeed mechanisms of greening efficiency-driven extractivism or at least greening specific phases of the whole process that constitutes extractivism (i.e. the extraction phase).

But this paper, explores, theoretically and empirically, the concept of green extractivism grounded in the extractivism theoretical framework. Of course, most of the approaches mentioned above are significantly interrelated and considerably related to the distinct approach that this paper adopts. But there is a distinction that is ought to be put forward: «the greening of extraction» and the extraction of «emission rights». Those are two different but complementary conversations. In sum, the current paper sees green extractivism beyond the greening of other variations of

extractivism, it focuses the analysis on the extraction of emission rights. In other words, the process of extracting emissions/ecological assets (and its respective mechanisms of legitimation) is indeed at the core of green extractivism when understood as a variation of extractivism.

Differentiated processes of resource appropriation and extraction: Variations of Extractivism

Within a productivist lens, extractivism can be understood as a process that feeds accumulation based on differentiated ways of removing and appropriating nature (natural resources) through differentiated levels of labour exploitation. The extracted commodity is transferred from region A to region B and accumulation is materialized throughout all levels of the commodity chain, circuits and flows until it reaches region B. Region A is generally a peripheral or extractive economy and region B is usually a productive core or industrialized region where transformation, consumption and maximized accumulation happens. So extractivism implies the appropriation of labour and nature from the extractive cores through asymmetric and exploitative social, economic and ecological relations. Higher costs, such as disruption of social and economic organization, productive forces and ecological degradation, are left to extractive cores. Whereas economic gains and profits are concentrated in productive/industrial regions and actors.

But one of the central arguments of this paper is that resource grabbing, through extractivist schemes, can be done through differentiated mechanisms of resource appropriation and extraction. Two main patterns of extractivism were identified, namely: *1.* efficiency-driven extractivism

and 2. green-driven extractivism. Thus, there isn't a unique way of appropriating and extracting commodities based on natural resources. «Variations of extractivism» is an attempt to reflect, across economic sectors, on the many different mechanisms through which resources/commodities are extracted and transferred from extractive hubs to industrialized centres. It is an attempt to consider different models in which resource grabbing takes place under extractivist schemes, and how it changes social relations considering the different patterns of expropriation and exploitation and their potential outcomes.

FIGURE 1

Variations of extractivism and its relation with nature and labour

Source: author.

Each variation of extractivism is based in distinct processes of appropriating nature and differentiated levels of labour exploitation. For instance, the classic Mining and energy extractivism usually imply much less labour exploitation in relation to agrarian extractivism, which heavily relies on labour exploitation. Figure 1 depicts an attempt to kickstart the understanding of the different manifestations of extractivism and the differentiated injustices it reproduces although it may not exhaust all of the extractivism's variations. It is important to underline that this schema constitutes a heuristic tool to reflect and examine reality, with the acknowledgement that reality does not fit fully into any typology nor into the boundaries within the typology.

Variations of extractivism: from efficiency-driven to Green-driven extractivism

Efficiency-driven extractivism in Mozambique

According to the Mozambican Central Bank (Banco de Moçambique, 2018) report, FDI inflow in 2018 was approximately 2.7 billion USD, 77% of total investment was directed to Extractive Industry (and 80% of those particularly into natural gas and mineral coal), (Banco de Moçambique, 2018). FDI reached a maximum in 2013, of around USD 6,697 million, among other factors, the amount was directed to the extension of their productive capacity and capacity of draining commodities for exports (Banco de Moçambique, 2018). Thus, extractive capital is among the main drivers of economic growth.

Extractive industry became the sector that grows the most and went from the lowest to the second largest of the economy while the agricultural sector and the manufacture industry[2] diminished their importance, percentage wise. Castel-Branco (2014: S26) explains that despite the high rates of growth, the economy «has been ineffective and inefficient at reducing poverty and providing a broader social and economic basis for development». All of this is justified by the fact that investment, public spending and the political efforts of the country are more and more being directed to extractive activities, particularly extractive industry, including infrastructures and services to support them.

But the result of more than two decades of efficiency-driven foreign investment consolidated the colonial extractivist economic framing leading to augmented negative implications of the population's well-being. The country ranked in 180th position in the Human Development Report (out of 189 countries in 2019), positioning the country in the low human development category. The Multidimensional Poverty Index shows that, based on 2011 statistical data, 72.5 per cent of the population is multidimensionally poor and 13.6 per cent are classified as vulnerable to multidimensional poverty (UNDP, 2019). Overall, poverty is still a predominant issue, approximately 50 per cent of the population lives below the poverty line, despite the «macroeconomic successes».

While socioeconomic indicators reflect the reproduction of underdevelopment in Mozambique, Mozambican exports are peaking. The

[2] The manufacture industry in Mozambique is vastly dominated by one Mega-project that aims to transform aluminum. It is considered an atypical case of commodity trade in which aluminum imported as raw material (from the Netherlands) and imported back to productive cores as Aluminum bars. This multinational is believed to have settled in Mozambique, among other claims, because of the ease on environmental policies on the country and the fiscal benefits acquired.

structures of Mozambican balance of trade shows the poor capacity of the country to industrialize or the unwillingness of investors in investing in processing of commodities. It also shows that the majority of these commodities are exported to the BRICS. Even though the BRICS account for 21% of the FDI, 35% of total exports were directed to them, reaching a peak in 2018 (51% of the total exports from Mozambique); implying that more than half of the exports from Mozambique is feeding BRICS' demands and industrialization by supplying relatively low-priced raw materials and supplying low priced energy.

Moreover, the structure of exports clearly shows the concentration of economic power in a few megaprojects and a few economic sectors (energy and extractive industry). For instance, 30 per cent of the exports in the last 15 years belong to only one company: Mozal — with a «transit commodity» — aluminium. In 2019, 70 per cent of total exports of the country belong to megaprojects (multinationals operating in the energy and extractive industry: predominantly Vale and Jindal (coal), Sasol (natural gas), Mozal (aluminium) and Kenmare (heavy sands). All of them, are highly vulnerable to international market price volatility — which says a lot about Mozambican economic vulnerability and external dependence.

While Mozambique is exporting raw material, energy and primary commodities to fuel other countries' industrialization and accumulation, it has become a net importer of manufactured goods to feed the country's internal needs but also the demands of extractive foreign capital, that is, multinationals operating in extractive industries. Almost half of the total imports from 2009 and 2015 were supplied by the BRICS, with the increasing importance of China and India.

Besides supplying the domestic market with food and other goods, an important share of imports is mainly feeding FDI and particularly FDI in the extractive sector. According to the Central Bank report (BdeM, 2019), around USD 1,365 million were translated into machinery and infrastructure for gas exploration activities in the north (areas 1 and 4 of the Rovuma Basin). The structure of imports shows that the domestic market needs external aid to supply food and processed goods (machinery, capital goods and so on). It does not have a high enough level of industrialization to answer to domestic needs nor does it have the ability to produce enough food for internal needs, as private and public resources are employed directly to answer to international market interests.

Overall, the inflows of foreign extractive capital and their extract-drain-and-export scheme are operationalized in distinct ways and sectors. Each of these processes of extracting natural resources requires a different combination of labour exploitation and nature appropriation. The two most prominent efficiency-driven methods of extractivism are explored in the following sections.

Mining and energy extractivism: extractive industry, energy and appropriation of nature

One of the main pillars of Mozambique's economic policy is the intensification of natural resource exploitation in the name of development and economic growth. The energy-mineral complex is among the priorities of the Mozambican Government since the post-socialist period (Castel-Branco, 2014; Mosca *et al.*, 2013). SASOL is the oldest megaproject of the extractive industry and its exports represents, on average, 5 to 8 per

cent of total national exports, since the operationalization of the pipeline in 2004. The project consisted of extraction of approximately 122 million gigajoule of natural gas per annum and the transportation of it through an underground pipeline (with more than 800km) to South Africa (Secunda, Mpumalanga). The area (Temane and Pande) is considered one of the top natural gas reserves of Africa, with estimated at 2.5 trillion cubic feet (TCF) or 2.7 million of Gigajoules (MGJ), with an estimated potential of 3.2 TCF. The first area to be drilled would be Temane, with the capacity of producing 20-40 million cubic feet per day (AfDB, 2002).

Social, economic and environmental implications are to be taken into account. It was clear from the SASOL's environmental impact assessment, that a lot of risks and hazards of such project should be carefully taken into consideration. From hazardous and non-hazardous waste management worries, to other major concerns regarding their operations such as the release of mercury to the atmosphere, the need to control high nitrogen oxides (NOx) emissions, incineration of medical wastes, and the resulting release of dioxins or the treatment of stormwater or firewater with high levels of organic contaminants (PDA, 2001).

Although the real environmental impact of Sasol is still not clear today, local population, agriculturally based, claim that the company's operations are negatively impacting agricultural production and have been causing ruptures in their livelihoods. Besides going through a process of land expropriation, smallholders that live in the surroundings of the drilling areas complain about changes in the environment and ecosystems that negatively affect their economic life and health. They report tremors, changes in rain patterns, decreased soil quality and productivity and bitterness in food crops produced close to SASOL's areas. Health related

issues were also reported. Consequently, adverse implications to social reproduction of local population were verified.

> After Sasol arrived, rainwater no longer could be drunk. Pumpkin leaves, cassava leaves and other plant leaves could no longer be eaten... They tested the rainwater and there were problems with that water, is poisoned... You can get sick. We saw that the leaves from our *machambas* [plots] changed colours and flavors... Sasol is bringing poverty, is increasing poverty. They keep destroying what the community is trying to build. (Resettled smallholder, Inhassoro).

In a more macro perspective, there aren't many benefits promoted by the implementation of Sasol extractivist project. Mozambican Government, whether it is justified by the lower bargaining power, or by the low levels of transparency in contract and concession negotiations, or corruption claims, has set a 5% royalty rate. Additionally, it provided huge fiscal benefits to SASOL - including exemption of VAT and Import taxes. Castel-Branco (2014) analyzed three major mega-projects in the energy-mineral complex in Mozambique: Mozal, Kenmare and Sasol. He showed that the fiscal benefits (corporate tax incentives and free repatriation of capital) that they benefited in the first four years of generating taxable profits —between 2008 and 2012 these three contributed to more than 20% of Mozambique's GDP and less than 2% of total tax revenue of the government (Castel-Branco, 2014). By combining all of their tax contribution (corporate and workers income tax) it corresponds only to 3% of their total sales, and he underlined that revenue from workers income exceeds corporate tax (Castel-Branco, 2014). Overall, the combination of tax

incentives, free repatriation of capital and low profit re-investment rate, is at the core of external accumulation and low wealth retention in the country.

The study conducted by CIP (2013) shows that very low revenues are collected by the government compared with the expected, not only because of the low royalty rate but also because the pricing agreement do not benefit the country. According to the study, Sasol purchases natural gas in Mozambique for 1/5th the price it sells it in South African market. Mondliwa and Roberts (2018) concluded that the biggest winners of SASOL project and gas extraction in Mozambique are (1) the Sasol through the removal of production sharing, margin of profit based on price differences and large deductions related to capital overspend; and (2) the South African Government through taxes paid by Sasol in South Africa. And South Africa is achieving their goals of reducing emissions through as it claims the diversification of energy sources (from coal to natural gas) while feeding its industrialization needs.

Distinctively, Mozambique ends up in a structural and economic framing of extract-drain-export, as well as being left with disrupted ecosystems, ecological degradation and degradation of productive forces. Consequently, it loses the ability to generate a social and economic basis or organization to achieve progress and sustainable development as depicted by Amin, Bunker and other scholars focusing on uneven relations among global south and north countries.

In this variation of extractivism the resources are, as Ye *et al.* (2020) put it, actually «mined». This means that natural resources are «extracted by mining» or are literally «mined» from the earth and become commodities to be drained/transported and sold in the international markets where

they are further transformed into final products or used as energy to feed industrial/productive cores. Overall, the distortion of economic dynamics (macroeconomic and dependency intensification) and the disruption of local social reproduction processes, and all of the extractivism ills that are discussed in the previous sections, are among the implications of Sasol's gas extraction. However, it is important to underline the ecological implications: (1) depletion of resources of the country that are asymmetrically and unevenly benefiting domestic capital classes and elites and mostly benefiting the South African economy, industrialization, and the state; and, (2) ecological and ecosystem destruction such as air pollution, less fertile soils, possible disruption of rain cycles and contamination of food crops —that impact negatively on a household's health and ability to produce food.

Agrarian extractivism: appropriation and exploitation of land, labor and nature

Many scholars have been relating the concept of «extractivism» beyond the traditional dynamics of «mining» commodities from the ground. For instance, Ye *et al.* (2020) argue that agriculture, forestry and fishing can also be part of the extractivist scheme of production; they state that those commodities can also be «mined», figuratively. This is the arena of the rising concept of agro-extractivism or agrarian extractivism. «Agro-extractivism» or «agrarian extractivism» (Alonso-Fradejas, 2015; McKay, 2017b; Petras and Veltmeyer, 2014), considered to be the agrarian question of the 21st century (Petras and Veltmeyer, 2014), is an emerging variantion of extractivism in which the removal of unprocessed natural resources is done in the agricultural sector. Whereas Alonso-Fradejas (2021)

calls attention to the interrelation of agrarian extractivism and the fight against the current ecological and social crisis. He argues that biofuel and tree plantations are praised as climate stewards and vehicles of sustainable development, but in reality, they are actually a predatory form of agrarian extractivism which results in processes of «impairing destruction» affecting everyone, but working families are hit harder, especially women.

Mozambique is a potential area for the development of agrarian extractivism. The government has been actively promoting the existence of idle land and incentivizing foreign investors to dynamize the agricultural sector, following the WB's «campaign» since the 2008 report. In this line, and also as part of the climate change national strategy, Portucel Moçambique arises as a «very promising investment» with the potential to promote economic growth, rural and social development and employment generation. Portucel Moçambique was created in 2009 by The Navigator Company (formerly Portucel Soporcel group), for the implementation of the largest integrated forestry project for the production of paper pulp in the country for export.

Initially the company expected exports of paper pulp production estimated at around US $ 1,000 million per year. The company's main markets were the Asian market (80 per cent) and the European market (20 per cent). However, according to the company, it became economically unsustainable (unprofitable) to export pulp. According to the company representative (interviwed in Maputo), Portucel dropped industrialization plans and decided to export woodchip (earlier in the value chain), approximately one million tons per year instead. However, a eucalyptus woodchip production unit has not been built, and they are already cutting down grown eucalyptus to pilot the export route.

The 2015 Portucel Report presents the risks (social and environmental) of implementing the project that were pointed out by the Environmental Impact Study: (1) fragmentation, alteration and/or loss of habitats; (2) loss of biodiversity; (3) water absorption by plantations; (4) increased risk of forest fires; (5) conflicts in access to land; (6) loss of agricultural areas; (7) risk of malnutrition; (8) loss of ecosystem services for communities. But still, the company was authorized to acquire 356,000 hectares of land for 50 renewable years. It was estimated that around 25,000 families were residing in Portucel's area in both provinces. However, so far around 3,500 families had their land transferred to Portucel. So far, 13,500 Ha of eucalyptus were planted in both provinces. According to the company, they employed 251 permanent workers and have paid 3.6 million daily remunerations (equivalent to 2,000 to 3,000 seasonal workers) from 2013 to 2018.

Land grabs, rural exclusion, disruption of ecosystems and negative developmental outcomes (local and national) have been acknowledged as major implications of monoculture tree plantations (Ehrnström-Fuentes and Kröger, 2018; Kröger, 2014; Overbeek *et al.*, 2012; Wolford, 2021; Xu, 2019). With the state as a supporter or even a «promoter» of such projects, these projects usually overlap with climate change mitigation and adaptation projects such as the REDD+ and CSA. This is actually the case of Portucel Moçambique and its tree plantation project that are operationalized under the REDD+ National Strategy. A lot of changes were identified regarding land use and ownership in the areas occupied by Portucel. Overall, agro-extractivism is particularly more land-consuming and with more exploitative labour relations. The intensification of the mono-crop model of production also presents ecological implications in terms of water

availability and levels of soil fertility. At the household level, the crucial factor was the decrease in food produced per household.

An interview-based study (Bruna, 2017) showed that there was a significant decrease in the quantity of food produced, when comparing production before and after the transfer of land to Portucel Mozambique. There was, on average, a decrease in production of approximately 100 kg per crop in maize, beans and cassava, which indicates a possible food deficit for the households that had their land transferred to Portucel Mozambique. Additionally, there were also changes in the production structure. Because of the decrease in land and income, households produced less variety of food crops than they did before, which may indicate a lesser variety of foods available per household.

Attention should be given to labour relations in this case. Not all labour released from the expropriation of land process was needed, but some labour was needed, especially in the initial phases of the plantation process. Two main types of labour relations could be identified in this case. The first was a big (unstable) demand for seasonal workers to clean, plough and sow vast portions of land. They were paid on a daily basis and with very low levels of daily wages. The second was basically a small proportion of permanently employed workers in low-level positions such as guards and cleaners. Both of them claim to be badly paid for the burden of work and classify the salary as a «survival» salary:

> The amount [salary] is small for the work here. We work from 7h to 14h30 to receive 170Mt [equivalent to a bit less that 3USD a day] (...) if at least we got 200, it will be normal. I have been working for the company for 7 years now and I got nothing. It is just enough for survival (Portucel Worker, Ile District).

Seasonal workers were also needed when rehabilitating the infrastructures to support and accommodate Portucel's operations. Roads (more than 1,000km of road), bridges and so on, connecting plantations, the company's offices and the nearest port city were financed by Portucel. Distinctive from the traditional mining extractivism, higher levels of labour exploitation and land appropriation are usually verified in this variation of extractivism. Nevertheless, disruption of local social, economic and ecological framing is equally verified in this case.

Overall, the different variations of extractivism explored in this chapter (but not limited to them) can combine different and varying degrees of labour exploitation and nature appropriation. The two most prominent efficiency-driven methods of extractivism were identified and explored in this section, whereas in the next section we will explore the emergence of a third variation of extractivism under a productivist lens, the rise of green extractivism.

The global environmental crisis and the rise of Green Extractivism

Climate change, extractivism and the green frontier of accumulation

This section explores the dynamics of green-driven extractivism in the context of climate change mitigation and adaptation policies implementation. Nature has always been a fuel to the capitalist mode of production. Polanyi (2001) showed how the market would turn nature's gifts into fictitious commodities, from which O'connor built the argument of the

second contradiction of capitalism. Climate change is the unfolding of the second contradiction of capitalism put forward by O'connor (1998), evidence that the impediments of this contradiction are the source of new forms of accumulation as stated by Brockington and Duffy (2010), or proof that capitalism is able to convert its own crisis into new accumulation strategies (Arsel, 2019). The questioning of mainstream solutions to climate change such as technical fixes highly associated with economic growth objectives, market mechanisms and financial tools have been questioned (Asefi-Najafabady *et al.*, 2020; Gills and Morgan, 2020). However, they are continuously being implemented.

Commodification of nature is nothing new. What is new is that in the midst of the current global environmental crisis, climate change policies are further changing human relations with nature and shaping and transforming the global economy and accumulation strategies, especially for the most vulnerable countries. Arsel and Büscher (2012) and Büscher and Arsel (2012) importantly underline the geographical uneven relations between dominant economic actors and poor populations. This calls attention to the fact that the climate crisis could «offer» opportunities for capital accumulation embedded in asymmetric and exploitative exchange relations.

In a climate-smart world, mainstream institutions are aiming urgent climate measures straight to biodiversity-rich African countries and other regions of the global South. These sets of measures mostly involve integrated land-based projects to lower emissions but most importantly aiming at carbon sequestration in poor countries to overcome industrialization damages from developed or emerging economies. Rural Mozambique has been penetrated by multiple «green» investments and projects

that includes the approval of several tree plantations projects such as Portucel Moçambique (356,000 hectares), Chikweti Forest (63,040 hectares) and Green Resources (133,000 hectares); these green projects also include biofuel production investments (such as ProCana, 30,000 hectares) and the re-establishment of many conservation areas (Limpopo National Park with 1,123,316 hectares, Gilé National Reserve with 286,000, Niassa Reserve with 4,200,000 and Quirimbas National Park with 750,000 —the Gilé National Reserve is one of the only conservation areas without rural population living inside).[3]

Studies reveal how wildlife, marine and biodiversity conservation can be categorized as commodification of nature and primitive accumulation although it does not take the usual form of privatization of land (Benjaminsen and Bryceson, 2012; Kelly, 2011; Bruna, 2019). However, all of them underline resource grabbing implications such as loss of land rights, loss of access to forest resources, food insecurity and conflicts. How do these sets of strategies and new forms of accumulation unfold on the ground? Besides the explicit cases of implementing tourism based in nature, investments in conservation areas or investing in agri-businesses aiming at the production of biofuel (anchored in the environmentally-friendly discourse of alternative energy sources), a whole new space and possibilities of accumulation arise as capitalism co-opts climate change policies.

Both in the case of Portucel Moçambique and Gilé National Reserve (next section) CSA and REDD+ are policies that are synergistically merged with profit-making projects/investments in agriculture, energy,

[3] Additionally, 25 per cent of national territory was appointed to be reestablished as conservation areas, whether as reserves or national parks. http://www.biofund.org.mz/base-de-dados/plataforma-sobre-as-ac/?areaid=209

extractive sector and beyond. For instance, the tree plantation project operationalized by the company Portucel Moçambique is part of the REDD+ National Strategy and was only able to acquire 356,000 hectares of land if the company implemented a social development plan that included providing inputs and technical assistance that enforce the implementation of CSA in smallholders' farms.

So, agro-extractivist projects with high profit margins are justified and legitimized by green discourses, particularly, claimed to be strategies to mitigate and adapt to climate change. On the other hand, discourses around the need of intensifying the so called «clean energy» investments as a way to combat climate change are predominant globally. The construction of dams, eolic energy projects, solar energy projects, or even the prioritization of natural gas over fossil fuels are also large-scale projects and investments that are legitimized by the fight against climate change, but are in fact, profit-making opportunities subsidized by cutting into necessary consumption of rural populations. This goes in line with what is argued by wind energy projects and extraction of transition minerals explored in the current green extractivism literature (Bruna, 2021; Dunlap and Brock, 2021; Voskoboynik and Andreucci, 2021) and how they constitute a «driver of extractive frontier expansion».

Overall, an emerging restructuring of the global economy leaning towards the «greenization of the economy» throughout all levels of the value chain is observed. Meaning that investment portfolios, production processes, packaging, distribution, markets and consumption are all following the emission imperative: reducing emissions or turning greener, or at least that is what they claim to be doing. However, in reality these green policies and discourses are actually creating new spaces, opportunities and

even commodities that ultimately aim to increase accumulation in the name of the fight against climate change, which constitutes a new frontier of accumulation legitimized by green discourses (Bruna, 2021). Thus, again, poorer global South countries will have their resources extracted as a way to respond to environmental global (and especially industrialized countries') demands and interests. Differently from past centuries in which efficiency-driven extractivism dominated, emission rights and carbon permits constitute the new commodities being extracted and central to accumulation. The next section will explore these dynamics through the lens of the REDD+ implementation.

Green extractivism in Gilé National Reserve and REDD+

With the intensification of climate change policies and the emergence of the green frontier of accumulation, the «new scramble for Africa» (Moyo, Jha and Yeros, 2012) has become «greener» than ever and the dominant issue when designing policies and investments projects —similarly to other African countries, Land Matrix data for Mozambique shows an increase in land deals to produce biofuel, for forest plantations, for conservation (REDD+) and renewable energy.[4] And these projects or investments seek appropriation and extraction of resources to feed their accumulation goals, whether it is land, minerals, water, biodiversity and so on. Some even engage in the same extractivist scheme of extracting-draining-and-export as is the case of Portucel Moçambique. But a closer look at these processes tells us that those «tangible» resources are not the unique type of resource

[4] https://landmatrix.org/charts/country_profiles

that is being expropriated and extracted. In a world where «emissions» have become a top priority and monetized, these processes require additional attention. It was with the intention of capturing carbon offsets that the Gilé National Reserve (GNR) was reestablished.

The Reserve covers an area of 2,860 Km^2 in the districts of Pebane and Gilé in Zambézia province. In 1932 an area of 5,000 Km^2 was appointed as a Hunting Reserve, however in 1960 it was reduced to 2,800 Km^2. Throughout the independence, civil war period the area was transformed into a «safety net» (GDEMOC and IGF, 2010) for smallholders' subsistence. With the emergence of environmental concerns and external interest to fund conservation areas, institutional and legislative instruments were put in place in order to manage and protect this conservation area. In 2011, the buffering zone was officially appointed, and it constitutes 1,671 km^2, forming a strip of variable width, that completely surrounds the Reserve.

The reserve area was identified as one of the 1st target areas for the implementation of the REDD+ programme in Mozambique which aims at «promoting community-based forest management, agro-forestry, sustainable charcoal making and reforestation to restore degraded areas»[5] throughout 163,000 households in the targeted districts (MITADER, 2016). Scholars have been questioning the effectiveness and studying the implications of REDD+. These include reinforcing existing inequities and social exclusions (Corbera, 2012; Corbera *et al.*, 2017; Phelps *et al.*, 2010). Hunsberger *et al.* (2017) summarize the risks in REDD+ design and implementation: *1.* disregard of rural communities' views while failing to address causes of deforestation; *2.* local communities losing access and use

[5] https://www.worldbank.org/en/news/press-release/2017/03/07/world-bank-injects-47-million-to-stem-deforestation-in-mozambique

of forest resources; deepening of existing inequalities if elites capture the policy's benefits; *3.* reducing the forest to a single commodity value by assigning a price to it; and *4.* uncoincidental layers of interest among actors: international, national and local institutions.

Even so, this REDD+ project has been up and running for almost a decade and it affects around fourteen communities (around 15,000 families) that live in the buffering zone of the reserve. These families are predominantly small-scale farmers that practice subsistence agriculture and they rely heavily on forest resources from the reserve and its water sources. They are highly dependent on forest resources for their subsistence and their livelihoods are structured as follows:52 per cent forest resources (1-firewood; 2-hunting; 3-fishing; 4-others); 32 per cent agriculture; 9 per cent domestic animals (pigeons, chickens, pigs); and 7 per cent alternative strategies. With the implementation of REDD+, smallholders' livelihoods went through a shocking rupture and now they struggle to get food and income.

The REDD+ policy defines that the households should be compensated for the loss of forest resources and livelihoods by «benefitting» from the implementation of CSA (learning new agricultural techniques, with inputs provided). Not all were selected to be beneficiaries. Only around 8,000 were selected to be part of these community development projects directly provided by the Reserve Administration, which include: agricultural input packages, kits for producing honey, processing of mushrooms and other small livelihoods alternatives —all embedded in CSA schemes. Even the beneficiaries went through a shocking rupture of their livelihoods and now they struggle to get food and income:

> I am alone with my wife [working at the farm]. I don't have the possibility to hire someone, because when you hire someone you should at least pay. Only there [Reserve] we could get *caril* [meat/protein]. The men would go in there, and hunt animals. Gazelle, rats, and also fish. Because there are rivers that have a lot of fish. Now we can't. Now we have to buy Fish. Before I didn't buy. Many of us did not buy. I would go once a week. When the man goes there to hunt, the woman stayed at the *machamba* [small farm]. From there we took [Money] and used for our children's clothes. (Interview smallholder Pebane, November 2019): «Last year we produced peanuts, and the NGO told us to do so in our fields, but we couldn't find buyers. The product just stayed there. We are eating one share, but the other share is just rotting» (Interviewee, Gilé, November 2019).

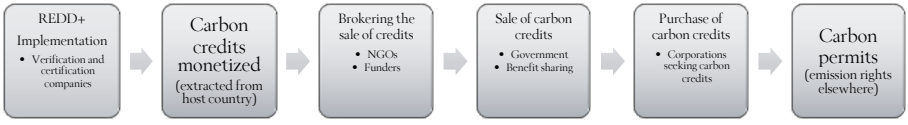
Overall, data collected in the field indicates that implementing CSA did not compensate for the loss of livelihoods. It is ultimately a strategy to protect the biodiversity of the reserve, as the main goal here is carbon sequestration and sale, rather than improving livelihoods. The scenario becomes even worse for the ones that are not benefiting from the compensation mechanism projects because they did not get any of the «benefits» described above, although the investments/projects promised they would get them. A lot was taken, but they got nothing in exchange. And this group constitutes the majority of the expropriated and affected. «We don't go inside the reserve anymore, but we don't see the benefit in doing so. Because they don't keep their promises. Some were selected and see the benefits. While us, who are outside, we have no benefits at all. We receive nothing in exchange» (Non-beneficiary smallholder, Gilé, November 2019).

Besides not getting any benefits, the feeling of worsening livelihoods and subsistence is clearly exacerbated in this particular group. They lost access to forest resources that were determinant for their livelihoods, not only for the supply of protein and other foods, but also to support small businesses within the community. What is happening here is that a new commodity is born — carbon permits - and it is born by cutting into the necessary consumption of rural households and a diminished household ability to produce food and cash crops. Besides implementing these projects, a percentage of the sales of carbon permits are supposed to be channelled to the benefit of these communities, however, after 10 years of REDD+ none of those financial benefits have reached them.

The Reserve has a potential of producing around 330,000 Verified Carbon Units (VCUs) within five to six years' time, that would be confirmed by the verification process (FEEM, 2017). The process of extracting carbon permits («emission rights») includes different stages, since carbon offset valuation processes all the way to sales. The structure of the value chain shows how different actors accumulate in different stages of the value chain that is controlled by a group of stakeholders (See Figure 2 - carbon commodity chain). Thus, similarly to efficiency-driven extractivism, the flows and circuits of commodities in green extractivism should be taken into account. As the carbon commodity chain shows, the flow of carbon permits, from production to consumption, imply profit and gains from multiple actors in different phases of the chain.

FIGURE 2

Carbon commodity chain-expropriation of emission rights



Source: author.

In the context of carbon markets, Bridge (2011) calls attention to the rise of the hydrocarbon commodity chain, in which «carbon economies are constituted are at the same time processes of dispossession: resource making, then, is a form of taking or theft in which the material and cultural attachments of existing resource users are alienated». The way this commodity is created, produced and sold imply processes of removing/denying the ability of the local population (and countries) to exercise their emission rights and to benefit from the ecological assets that the reserve area contains. By analysing the implementation of REDD+ on rural livelihoods, it was clear that there was a cut in smallholders' necessary consumption. And although CSA was used to compensate for the loss of forest resources, it actually forced them to change their traditional ways of farming and adopt new techniques that are, according to the implementing actors, lower in emissions. So besides being expropriated of forest resources for the sake of carbon sequestration, smallholders are being expropriated of their emission rights in their own farms as well.

So, green extractivism implies the appropriation, extraction and transfer of emission rights where the expropriated are being grabbed of resources determinant for their social reproduction as well as their right to emit. Green extractivism, in the case of conservation areas, distinctively

from other cases and variations of extractivism, does not necessarily imply (direct) localized environmental negative implications (pollution, loss of biodiversity, etc). However, it grabs the ability of the local population to reproduce themselves by using or benefiting from their ecological assets (biodiversity, forest resources, emission rights and so on).

It implies limitations for the social productive forces of the region — protecting biodiversity at the cost of rural livelihoods. Nevertheless, it can imply (indirect) external degradation of the environment elsewhere by opening up spaces and opportunities to further pollute elsewhere by the buyers of carbon permits. Besides supplying raw materials or energy, the extraction and transfer of emission rights (from rural poor to polluters) is another way through which extractive cores can feed industrialization elsewhere. What is being «mined» is carbon credits (emission rights) that result in the rupture of rural livelihoods: through forest resource grabbing («green grabbing»), control of land and expropriation of emission rights. This case shows how global policies to overcome climate change are actually creating local adversities, feeding external industrialization and accumulation.

But REDD+ is not the only case through which green extractivism can unfold. This new (green) frontier of accumulation created by global concerns around climate change comes with extractivist mechanisms that support processes of uneven distribution of gains and losses based on varying processes of appropriation of natural resources and labour exploitation. For instance, the case of Portucel Moçambique would also fit in the green extractivism framework as its strategies of accumulation go beyond appropriation of land, but also goes hand in hand with climate change mitigation policy as tree plantations are part of the Mozambican REDD+

National Strategy. Besides being integrated in the REDD+ National Strategy, the case of Portucel goes further in the greenization of its capital accumulation in so far as it is enforcing CSA to smallholders. Consequently, smallholders' farming emissions are reduced by expropriating them from their emission rights. Again, emission rights are being grabbed from smallholders as they adopt these new techniques promoted by the company and the IFC. Similar to the Gilé case, Portucel's resource grabbing is being facilitated and legitimized by green discourses. But distinct from green extractivism happening in Gilé, the case of Portucel implies local direct adverse consequences to the environment and destruction of biodiversity and ecosystems. Many other policies, financing and investment promoting biofuel production, renewable energy projects (based on water, solar and wind energy) legitimized by climate change narratives and green discourses can be based on the expropriation of emission rights, thus, other mechanisms through which green extractivism may happen.

Conclusion

Looking at Mozambique as the empirical case, it became clear that by specializing in the supply of energy and raw materials, Mozambique feeds external industrialization while undermining both its internal capacity to industrialize and its ecological wealth. Consequently, the country feeds from imports to satisfy internal market needs of food, fuel and capital goods. The result of more than three decades of efficiency-driven, foreign investment and extractive framing of the economy led to negative implications for the population's well-being. Based on 2011 statistical data,

72.5% of the population is multidimensionally poor and 13.6% are classified as vulnerable to multidimensional poverty (UNDP, 2019).

As the paper showed, extractivism framework is embedded in intertwined dynamics of global and local scales. The development of capitalism in industrial and productive cores, realized through asymmetric and exploitative economic, social and ecological relations, implied costs to local populations and societies in extractive cores. Moreover, extractive regions are left with an economic, social and ecological framing that undermines and inhibits social reproduction and progress, locally, regionally and nationally. Mozambique now presents an economic framing that was actually created to accommodate an extract-drain-and-export scheme of commodities to external markets.

By exploring and unpacking variations of extractivism under and beyond green policies, the paper puts forward an emerging green-driven variation of extractivism that goes beyond the historical and classic patterns on this matter. With the emergence of the green new frontier of accumulation, the rush for resources is changing in its nature but not in its essence, appropriation and exploitation are still necessary conditions, but the discourse around it has changed. It is all about emissions now. This paper showed how global processes and policies can impact local rural societies through exploitation and appropriation. It was clear how localized injustices are subsidizing global environmental and capital accumulation goals. Green-driven extractivism only intensified the economic and social framing of the country as an extractive hub. With the creation and extraction of a new commodity —emission rights— green extractivism is feeding international market and environmental demands at the cost of rural population's livelihoods and rights to emit.

Grounded in the new frontier of accumulation, green extractivism underlines ecological exchange relations injustices between regions and actors. Constituting an important tool for both agrarian/climate social movements and a relevant input to be considered in the debates and action toward climate justice. Expropriating emission rights is going to be the basis of the current and future scramble as a climate-smart world is installed. This unfolds in many different ways, such as the following: (1) climate-smart policies that impose changing traditional farming systems into labour intensive CSA techniques in order to reduce emissions from smallholders and the agricultural sector; (2) expropriating emissions rights by restricting access to forest resources in order to maximize carbon sequestration in the context of conservation-based climate-smart policies; (3) by enforcing «green» investments (biofuel production or tree plantations) and using climate-smart projects to compensate for the loss of livelihoods, while synergistically transforming rural livelihoods into «more environmentally friendly» livelihoods, but ultimately aiming at emission reduction. All of those, imply extracting and transferring emission rights from the rural poor to capitalist classes in different regions of the world.

One important factor to be underlined here is the fact that the weight of climate crisis resolution might be falling on the shoulders of actors that did not contribute significantly to the current global environmental crisis, not the local population where such projects are implemented nor the country where such policies are enforced; however, the adversities are unfairly falling on them to accommodate the demands, ways of life and production processes of industrialized and richer countries. Consequently, countries like Mozambique are constrained from using their resources (raw materials, energy, emission rights and so on) for their own good,

to meet their domestic needs and goals and fuel their own growth and development.

Overall, this research offers insights to climate justice debates and reinforces the need to further explore this concept. This study reveals the importance and need to incorporate notions of ecological injustices on designing, making and implementing global climate change policies. It also reveals the need to ensure the participation of the populations that are directly affected by the implementation of such projects. Nevertheless, future research should further explore the conceptualization of climate justice, the role of historical ecological footprints, the role of emerging «green» financialization and identify emerging alternatives to mainstream climate change solutions.

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