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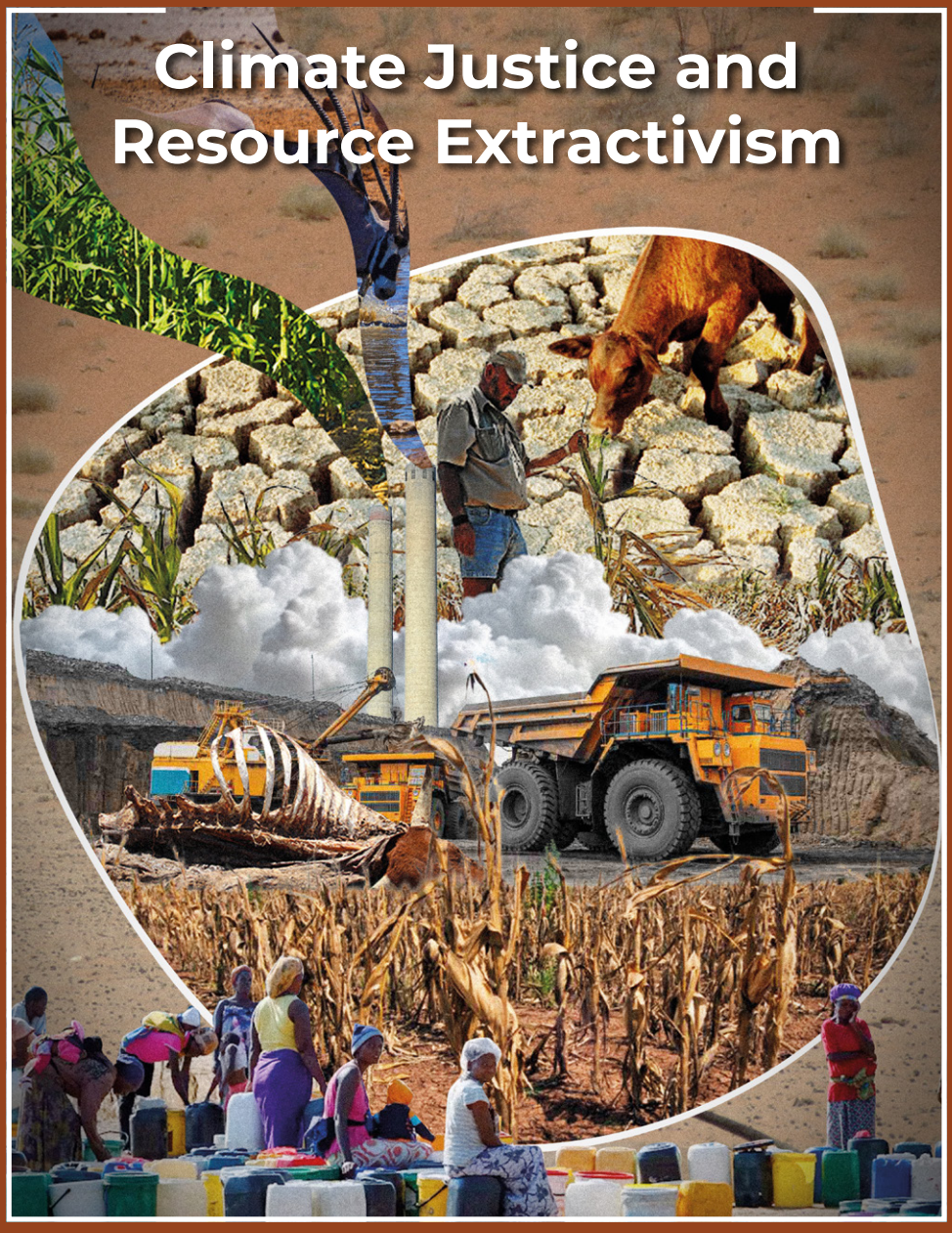

Climate Change, Exploitative Paradigms and Neocolonial Energy Transitions in Africa

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Abstract

This article addresses how climate change and energy colonialism intersect in Africa. The continent is experiencing renewed interested from both Western and Asian countries that often replicates historical patterns of exploitation. As global temperatures rise due to human-induced climate change, the urgency for renewable energy sources has intensified. However, this transition is not merely a technological shift; it is deeply entwined with the legacy of colonialism, which continues to shape the dynamics of resource extraction and energy production in Africa. The modern energy transition, initially driven by the scarcity of resources, is now increasingly motivated by the need to address climate change. This shift represents a fundamental transformation in energy systems, encompassing production, distribution, and consumption. Yet, as Africa seeks to adopt renewable energy technologies, there is a risk that the new energy paradigm may perpetuate colonial-like exploitation, where foreign interests dominate local resources and decision-making processes. Through the use of secondary sources, this paper provides some theoretical insights and empirical evidence to counterbalance official narratives portraying the social benefits of decarbonisation and renewable energy initiatives, emphasising their potential to foster local economic development, create jobs, and enhance energy security. The article concludes that the energy policies of the wealthiest nations and large corporations do not aim to fundamentally alter the prevailing models of production and consumption, and that hence they do not really address climate change. Consequently, these policies are not sustainable for the territories involved, particularly in the Global South.

Keywords: Africa, climate change, green colonialism, energy transition

Introduction

The implications of climate change are extensive, impacting security, the environment, the economy, and social justice due to the interconnectedness of various societal sectors. Its effects are global, transcending national borders, necessitating immediate and coordinated action from the international community. The energy

transition emerges as a direct response to this crisis. The term "energy transition" was first introduced by U.S. President Carter in the late 1970s, emphasising the need for a shift towards conservation and renewable energy sources as fossil fuels became scarce.

Although initially driven by resource scarcity, the modern energy transition, emerging in the nineties, appears to be motivated primarily by the risk associated with the effects of climate change, signifying a systemic transformation in how we produce, distribute, and consume energy. This led to the signing of international agreements to reduce greenhouse gas emissions and move urgently towards the use of renewable energy.

The urgency of the issues raised by climate change demands that we rethink not only our energy systems, but also our consumption patterns. This shift is not just about adopting new technologies, but also about fostering a cultural transformation that prioritises sustainability and environmental responsibility. To effectively address climate change, we must challenge the existing paradigms of consumerism that typically prioritise short-term gains over long-term sustainability.

In this context, the energy transition must be viewed as an opportunity to redefine our relationship with energy, resources, and modes of production with a view to promoting a more equitable and sustainable future. This involves not only technological advancements but also a fundamental re-evaluation of societal values and behaviours related to energy consumption. By aligning our economic systems with ecological principles, we can create a more resilient society capable of reversing the damages inflicted on the environment which are leading to climate change.

Achieving net-zero emissions and mitigating the impacts of climate change will require coordinated global actions that extend beyond merely reducing fossil fuel use. It is crucial to incorporate improvements in energy efficiency across various sectors, promote behavioural change, and eventually shift the consumerism philosophy that underpins the capitalist mode of production which is ultimately the cause of the same climate change we are trying to address by using alternative sources of energy (Sánchez Contreras et al., 2023).

It is in this context that the actions undertaken on the African continent, and often promoted by the countries of the Global North, primarily the countries of the European Union, are inserted into the debate.

The thesis of this article is formulated around research questions that

ultimately aim to investigate the possible connection between the achievement of the goal of zero emissions and the forms of extractivism that, under the banner of energy transition, actually end up reproposing forms of colonialism, which perpetuate the dependence of the African continent on the countries of the Global North (Ederhardt, 2023), while not addressing the challenges of climate change.

The paper critically investigates the relationship between energy colonialism and climate change in Africa, emphasising how historical patterns of exploitation evocative of colonial practices have an impact on the continent's shift to renewable energy sources. It looks at how this change will affect the larger socioeconomic scene and asks whether the energy policies now in place actually help the affected regions, or if they are just a continuation of historical injustices.

The paper highlights important concerns regarding social justice in the form of ownership, control, and the fair distribution of benefits obtained from these resources as Africa looks to adopt renewable energy technologies to address climate change. The need for renewable energy sources in Africa has increased due to the necessity of tackling climate change. This shift is not just technological, but also intricately linked to colonial legacies that still have an impact on resource extraction and energy production. The resurgence of Western and Asian countries' interest in Africa's resources appears to be a reflection of past colonial exploitation.

This pattern highlights the risk that the new energy paradigm may perpetuate colonial-like exploitation, whereby foreign entities dominate local resources and decision-making processes. It also raises questions about whether the current energy transition will truly benefit African nations, or merely serve foreign interests. These dynamics jeopardise the possible advantages of renewable energy for local communities.

Linkages between Climate Change and the Energy Transition

Climate change stands as one of the most pressing challenges of the twenty-first century. It is primarily characterised by the rise in global temperatures. While it is commonly believed that global warming occurs naturally and gradually (Venditto et al., 2023), human activities are accelerating this warming at an unprecedented rate (NASA, n.d. a; National Research Council, 2020; Hausfather, 2017). Therefore, the United Nations Framework Convention on Climate Change (United Nations, n.d. a, p. 1, art. 2) defines climate change as the result of both direct and indirect

human actions that modify the global atmosphere alongside natural climate variations. This acceleration is largely attributed to increased emissions of CO2 and other greenhouse gases, which alter the atmosphere's radiative properties and contribute to global warming (NASA, n.d. b; Fecht, 2021). The combustion of coal, oil and gas by the energy sector is responsible for about three-quarters of greenhouse gas emissions globally (Client Earth, 2022; International Energy Agency, 2024).

The decade 2010–2020 marked the hottest period since records began in 1880, with the average global temperature in 2022 approximately 0.86°C above the 20th century average, making it one of the warmest years ever recorded, alongside unprecedented ocean temperatures (Bardan, 2023). Despite being a minor contributor to global warming, Africa is highly vulnerable to climate variability, experiencing more frequent and prolonged heat waves (Trisos et al., 2022). In fact, 2022 marked the 46th consecutive year of above-average temperatures in Africa (National Centers for Environmental Information, 2022), with rising temperatures threatening livelihoods and exacerbating existing challenges across the continent (Venditto et al., 2023).

Although the need to identify new forms of clean energy emerged as a tangible response to the looming 21st century climate crisis in the late 1970s, this need was already present, as indicated by US President Carter's Energy Nation address: "As we are now running out of gas and oil, we must prepare rapidly for a third shift toward rigorous conservation and renewed use of coal and permanent renewable energy sources such as solar power" (Carter, 1997, para. 10 and 13).

Carter's emphasis, however, was not on the effects on the climate of human actions, since the energy transition was motivated by the scarcity of a resource that led to the identification and use of alternative renewable/non-carbon resources such as photovoltaic energy or, as in the case of Germany, nuclear energy (Krause et al., 1980).

The Kyoto Protocol, adopted on 11 December 1997, was the first attempt to prevent dangerous anthropogenic interference with the climate system by proposing measures to reduce greenhouse gas concentrations in the atmosphere. It was, however, the 2015 Paris Agreement that sent a strong message to abandon fossil fuels and proceed rapidly towards their replacement with renewable and green energy sources.

In Paris, where COP 21 (the 21st session of the Conference of the Parties) was held, 196 nations agreed

to aim to limit global warming to well below 2°C by achieving carbon neutrality (net-zero carbon emissions) by 2050. Experts agree that achieving these goals is vital if global warming is to be kept to no more than 1.5°C above pre-industrial levels (United Nations, n.d. b). Several legislative proposals adopted by the European Union in 2021 aim to reduce greenhouse gas emissions by at least 50% by 2030 to reach the net-zero carbon emission target by 2050, as agreed in the Paris Agreement.

It is essential to increase the use of renewable energy to generate electricity and end dependence on fossil fuels which result in CO2 emissions; to implement policies that promote the use of solar, wind, hydroelectric and other renewable energy sources; and to invest in advanced energy storage technologies.

Hydrogen seems to be the perfect solution to respond to the need to use energy sources that do not emit CO2. It is practically not present in nature as a gas, but must be generated, usually through the electrolysis of water, and in this process, it is transformed into a gas that can be used for the exact same functions as any other combustible gas, such as natural gas, butane, propane, etc. In addition, it can be transported like fossil fuel gases. The even more important advantage is that when used, hydrogen does not produce CO2 or other air pollutants, but only water. As a result, when hydrogen is produced using renewable energy sources such as sunlight or wind, its total environmental impact, excluding all aspects of its distribution, is essentially zero (Cerqueda, 2022).

However, the prevailing renewable energy system follows the same capitalist market logic inherent in ecological destruction. This can be extrapolated from the words of the European Union (EU) Energy Commissioner, Kadri Simson: "A key element of this transition is establishing a competitive hydrogen market with dedicated infrastructure" (European Commission, 2021, para 3). The emphasis on creating competitive markets for renewable energy sources such as hydrogen reflects a broader trend within the renewable energy sector that prioritises profit and market dynamics over ecological sustainability. This capitalist approach can lead to the commodification of renewable resources, where the focus shifts from community benefit and environmental stewardship to maximising financial returns, and the drive for profit can overshadow the social and environmental goals that renewable energy projects are meant to achieve (Ćetković & Buzogány, 2021).

Africa and Energy Colonialism

Africa, thanks to its substantial natural resources and geographical proximity to Europe, seems to be the perfect place to engage in the production of renewable energy at competitive costs. At the same time, renewable energy projects could stimulate and support the economic development of producing countries, providing access to sustainable energy sources to over 640 million Africans who are currently deprived of it (African Development Bank, n.d. a).

The abundant solar irradiation and strong winds, as well as the hydroelectric potential, would in fact allow the production of clean and sustainable electricity, without relying on fossil fuels. Specifically, solar resources on the continent are evenly distributed, and solar irradiation is fairly evenly distributed among African countries; over 85% of African territory receives a GHI (global horizontal solar irradiation) equal to or greater than 2 000 kWh/m2/year. All this implies that theoretically, the solar energy potential obtainable in Africa is naturally high, and is estimated at 60 000 000 TWh (terawatt hours) per year, which represents almost 40% of the global total (Liu, 2015).

On the other hand, the wind potential is distributed a little less evenly than the solar one, as the wind speed is not always sufficient for traditional turbines. However, technological improvements with new generation turbines have expanded the possibilities of wind energy production and in as many as 27 countries, mainly in the Saharan and Sahelian zone and along the coast and in the mountainous areas of southern Africa, wind farms could now be installed. A recent World Bank study indicates that two-thirds of Africa's total wind potential is located in places with average wind speeds above 7.5 m/s (meters per second), and one-third in high-productivity locations with wind speeds above 8.5 m/s. This brings the total wind potential in Africa to almost 180 000 TWh/year, theoretically capable of supplying 250 times the electricity requirement of the entire continent. Despite this enormous potential, however, only 0.01% of this has thus far been accessed (Whittaker, 2020).

Hydroelectric energy holds potential for Africa, currently constituting around 16% of the electricity production on the continent. In some countries, such as the Democratic Republic of Congo, Ethiopia, Malawi, Mozambique, Uganda and Zambia, the share of hydroelectric energy in electricity production exceeds 90% (International Energy Agency, 2022a).

Unlike solar energy, and in part wind energy, the continent's hydrography

means that hydropower potential is unevenly distributed across the continent, with much of it located in West and Central Africa, and to a limited extent in East Africa and southern Africa. Africa's vast potential for clean, low-cost hydropower is yet to be exploited. Furthermore, the effects of climate change could compromise the reliability of hydropower systems, and therefore of energy production (International Energy Agency, 2020b)

Many African countries have recognised the relevance of renewable energy and its potential for delivering socioeconomic benefits, and have implemented supportive policies and regulatory frameworks to promote its development. There has been an upsurge in European interests in green hydrogen production in Africa. The use of solar or wind energy would allow for the goal of zero emissions by 2050 to be achieved (Cerqueda, 2022).

The challenge for Africa is the advanced technology and associated high costs required to build renewable energy plants and distribution systems. International partnerships and initiatives, such as the African Renewable Energy Initiative or the Scaling Solar programme, can provide financial and technical support for many of these projects by facilitating technology transfer, capacity-building and knowledge-sharing (African Development Bank, n.d. b; International Finance Corporation, n.d.). Renewable energy production offers a path to sustainable development, energy access, climate resilience and shared prosperity. This can only be achieved if renewable energy production does not become a form of colonialism. To avoid such an outcome, it will be necessary to depart from traditional development and industrialisation models associated with neoliberal capitalism, as these are based on the production and consumption of material wealth, which results in uneven development (Piketty, 2014; Zhu et al., 2023).

The roots of energy exploitation in Africa can be traced back to colonialism, where European powers extracted resources to fuel their industrial growth. The colonial era established a framework of extraction that prioritised the needs of the colonisers over the welfare of local populations. This historical context is crucial for understanding the current dynamics of energy transitions in Africa, (Frankema et al., 2015; Gareth, 2010).

The Berlin Conference (1884–1885) formalised the scramble for Africa (Michalopoulos & Papaioammou, 2016; Heldring, 2013) between the 19th century and the first half of the 20th century. During this period, the African territories that were considered freely

occupiable were divided on the basis of the balance of power existing between the European powers, and their spheres of influence on the continent. The United Kingdom, France, Portugal, Germany, Belgium and Italy were the main protagonists creating colonies and protectorates, governed by local puppet governments and supported by the European metropole, as they imposed their political and economic control in order to exploit the natural and human resources present on the continent.

It is emblematic that the Berlin Conference, at which no Africans were present, established what are still roughly the modern borders of African states – divisions that were often made following geographical coordinates, without any consideration of the characteristics of the resident populations. States, or ethnic groups that had a common historical, political, cultural heritage and that shared economic ties, were dismembered or, in some cases, disparate entities were forced to coexist, laying the foundations for future conflicts that arose once independence was achieved (Fischer, 2015).

The extractivist and exploitative nature of European colonial interests was often justified as a "civilizing mission". Chancellor Bismark opened the conference stating that: "The interest which the nations represented at this Conference take in the development of civilization in Africa, an interest continually demonstrated by bold enterprises of exploration on the part of each nation for one of these purposes, gives us a guarantee of the success of the work which we undertake to regulate and develop the commercial relations which our countrymen entertain with this continent and at the same time serve the cause of peace and humanity" (Filesi, 1985, p.16).

There is a tendency to underestimate the predatory nature of colonialism and give it a positive reading (Duignan & Gann, 1975). However, as a result of extractive colonialism, the economic system, the labour market and the structure of land ownership were profoundly modified on the basis of unequal exchange relations and a system of forced labour (Frankema, 2015). Combined with the disintegration and enslavement of the advanced societies that existed on the African continent, as underlined by Bairoch (1976, p.122), this reduced, "the possibilities of spontaneous industrialization ... practically to zero." As nations gained independence, the expectation was that they would reclaim control over their resources and develop energy systems that benefited their populations. However, the legacy of colonialism has proven resilient, manifesting in new forms of exploitation under the guise of renewable energy development.

The transition to renewable energy can lead to a new form of green colonialism since it is extractive in nature. We must be mindful of the fact that the production model based on extractivism is exploitative if it is not transformed. The chances are that the production of renewable energy will follow the colonial model and set off a new race to exploit and colonise new resources (Bruna, 2023).

Renewable Energy as a New Form of Colonialism

The production model rooted in natural resource extraction typically exhibits three key attributes (Acosta, 2013):

- a high level and intensity in the process of resource extraction;
- a low or minimal level of local processing of resources; and
- a significant quantity of extracted resources destined for export.

The appropriation of natural resources has been a fundamental aspect of the production process since the Industrial Revolution. This practice evolved into a systematic and organised form during colonial conquest. The extraction and export of raw materials, and the import of goods and manufactured goods created an unequal exchange of goods and services between the countries of the Global South and North; this development scholars have defined as 'dependency'. This unequal trading system persisted even after the colonies gained political independence (Archibong & Afolabi, 2023).

Extractive activities can be broadened to encompass renewable resource like solar and wind. It often prioritises the energy transition requirements of Global North nations, displaces local communities through land expropriation, and perpetuates existing energy-intensive global production and consumption patterns, along with maintaining the same political, economic, and social structures that perpetuate inequality (Hamouchene, 2022).

Due to their access to capital and technology, countries of the Global North, particularly the EU countries, can drive the development and diffusion of cost-effective solutions for the energy transition. The President of the European Commission in September 2022 announced the creation of the European Hydrogen Bank, which is intended to stimulate hydrogen production and achieve the objectives set in Paris, (Spinaci, 2024; European Commission 2020a). One of the bank's activities is to provide subsidies to renewable hydrogen producers within the EU, Norway and Iceland to achieve a reduction in supply costs and ensure that green hydrogen is

competitive with energy carbon-based fossil fuels. The dilemma is that these countries do not have raw materials to use to achieve the energy transition (European Commission, 2020b). A third of the mineral reserves needed for the energy transition, including platinum, coltan, cobalt, tantalum, lithium, copper, and rare earths, are present in Africa (Sartori et al., 2022).

Africa also has the large tracts of land needed to set up large photovoltaic, wind or green hydrogen plants (Nelson, 2020). To invest in and construct such plants, they need direct or indirect control over the raw materials (Zhang, et al. 2023). This raises the critical question of ownership over these resources. The exercise of this control can help to better understand the new phenomenon of green colonialism. It also raises questions about how local communities where such resources are located benefit from the energy produced.

In addition, there remain unanswered questions. These questions are around the ecological sustainability of the processes through which minerals needed for renewable energy are extracted, the working conditions and occupational health risks to workers employed in those extractive activities, and the competition between mainly transnational mining companies involved in such extraction and local communities over land and water resource. Therein lies the paradox of energy transition. To produce clean energy, it is very often necessary to use strategic resources of a mineral or natural nature. The construction, for example of electric batteries or green hydrogen, perpetuate negative social and environmental impacts by the extractive industry in the Global South (Allan et al. 2021).

There is also evidence that renewable energy production could lead to a net transfer of wealth from the poor to the rich through subsidies, discounted services and tax breaks offered by the host governments in the Global South. A case in point is the Ouarzazate's solar power plant in Morocco. It was built by expropriating 3 000 hectares of land from Amazigh agro-pastoralists, and came into operation in 2016. It has not brought any benefits to the displaced communities, and its annual deficit of around 80 million euros has been covered by the public coffers. In addition, the country has incurred a further 9 billion dollars in debt with the World Bank for its construction, for which the Moroccan government has provided guarantees. This potentially means more public debt for a country that is already burdened by debt. Finally, Ouarzazate is in a semi-arid region and the plant requires extensive use of water to cool the system and clean the solar panels, water that has been diverted from drinking and agricultural uses (Hamouchene, 2023).

Conclusions

The prevailing discourse around energy transition, entrenched, in the illusion of sustainability, tends to promote the idea that any shift towards renewable energy is inherently positive. However, this perspective overlooks the fact that the climate crisis is not solely a result of fossil fuel usage but rather stems from the unsustainable and destructive practices of capitalism that prioritise profit over ecological balance. The capitalist framework commodifies and privatises natural resources, perpetuating a cycle of exploitation that undermines the very goals of sustainability and social equity.

In many cases, renewable energy projects in developing regions are framed as opportunities for local development and climate resilience. However, they often serve the interests of western nations seeking to secure energy resources while maintaining their economic dominance. This neocolonial approach can lead to the appropriation of local resources, where the benefits of renewable energy production are siphoned off to serve the energy security needs of richer countries rather than addressing the local energy needs of the communities involved.

To genuinely address climate change and its impacts, a radical transformation of the global economic system is necessary. This transformation must prioritise social and ecological justice, dismantling the colonial relationships that continue to disenfranchise communities in the Global South. It is essential to ask critical questions about ownership, control, and the distribution of benefits from renewable energy projects. Without addressing these issues, the transition risks becoming a form of "green colonialism", where extraction and exploitation continue under the guise of environmental progress. A truly sustainable energy transition must go beyond simply replacing fossil fuels with renewable sources. It requires a comprehensive re-evaluation of production and consumption patterns, emphasising local needs and equitable resource management. Only by confronting the underlying structures of power and privilege can we hope to create an energy future that is just, equitable, and sustainable for all.

Consensus has been reached on the fact that the energy transition can be considered or interpreted as a new form of colonialism since, ultimately, it is based on access to and exploitation of the energy and mineral resources present in the countries of the Global South with little or no consideration for the needs or rights of local populations. The technologies and knowledge necessary for the energy transition are often developed and held by wealthier

nations or large corporations. This may limit the ability of developing countries to develop autonomous and sustainable energy solutions, thus maintaining a dependence on external suppliers.

Nations or companies leading the energy transition can exert significant economic and political influence over countries that supply resources or are recipients of energy technologies and infrastructure. This can lead to relationships of dependency and inequality, where richer countries or large corporations hold control over the energy sectors of less developed countries. While the energy transition aims to reduce greenhouse gas emissions and pollution, this can result in the production of toxic or hazardous waste, which is often disposed of in less developed countries or more vulnerable communities. This raises questions of environmental justice and fairness in the distribution of environmental burdens.

While the energy transition is critical to addressing climate change and reducing greenhouse gas emissions, it is important to recognise that it can carry colonial-like implications if it is not implemented with a fair and just perspective for all parties involved. It is necessary to adopt policies and practices that respect human rights, promote the participation of local communities, and contribute to reducing global inequalities.

The transition from an economy based on hydrocarbon energy to an economy based on renewable energy requires a transformation of production systems. It is not enough to replace energy sources; new technologies must be available that are compatible with renewable energy sources. Addressing green colonialism requires a commitment to decolonising environmentalism, which involves centring indigenous knowledge, perspectives and leadership in environmental decision-making. This includes recognising and respecting the land rights of local communities and supporting community-led conservation initiatives. Decolonising environmentalism also involves recognising the interconnectedness of social and environmental justice issues and working towards holistic solutions that prioritise equity and inclusion to achieve what we can call just sustainability; to coin a term, justainability. Green colonialism highlights the need for critical reflection on how environmental initiatives can perpetuate or challenge colonial legacies. By placing the principles of justice, equity and self-determination at the centre, it is possible to promote more inclusive and sustainable approaches to environmental management that respect the rights and dignity of all peoples and communities.

The shift from an economy based on hydrocarbon energy to an economy

based on renewable energy requires a paradigm change. It is not enough only to replace some energy sources with others; the new energy form also requires new production systems compatible with renewable energy sources, changing consumption patterns, and promoting circular economy models that encourage the sustainability of the planet's natural resources.

The paradox of the energy transition is embodied in the fact that energy transition requires new technologies that, though compatible with renewable energy sources, will continue to exacerbate the negative dynamics of social and environmental impact triggered by the extractive industry. In its effort to achieve decarbonisation objectives, the European Union is achieving carbon neutrality at the expense of the exploitation of natural resources in Africa. The spirit of the agreements between the EU and Africa exhibits goodwill on the part of the EU, but that alone is clearly insufficient. The energy transition may be motivated by good intentions, but the disconnection between social justice and sustainability can lead to socially unsustainable transitions, and it may once again become a trap for developing countries that will strengthen their economic dependence on natural resources: a sine die extension of energy neo-colonisation.

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