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Globalization and Digitalization: A New Form of Colonialism? Digital Economic Dependence in the Global South

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Abstract. *Global economies and societies have undergone tremendous change because of the quick development of digital technology, yet these advancements mask ingrained trends in worker exploitation, resource extraction, and geopolitical power relations. This study looks at "digital colonialism," in which powerful international organizations and multinational corporations, primarily from wealthier countries, attempt to influence the technical environments of less developed states that have a colonial past. The research emphasizes how technical improvements maintain political and economic imbalances. Some academics highlight how multinational firms shape digital infrastructures, while others concentrate on the geopolitical ramifications of labor exploitation and resource extraction in former colonies. Empirical studies that identify the material underpinnings of digital technologies and their neocolonial implications are still lacking, nevertheless. To fill this gap, our study analyzes the extraction of essential raw resources, namely aluminum from Guinea and cobalt from the Democratic Republic of the Congo (DRC), to show how digitization contributes to the perpetuation of colonial activities. We examine (1) which former colonies own these vital resources, (2) the volume and direction of resource exports, and (3) the manufacturing and sale of completed technological items using data from the Observatory of Economic Complexity (OEC) for 2022. We reveal the exploitative circumstances under which these resources are sourced and their wider geopolitical ramifications through document analysis and case studies. Despite supposedly advocating for a more environmentally friendly future, our research shows that the EU's sustainability and digital objectives mostly depend on exploitative methods that are reminiscent of colonial-era exploitation. Economic dependency and environmental degradation in supplier countries are sustained by the Global South's ongoing raw material extraction and refining as well as the industrial supremacy of middle-tier powers like China. The moral dilemma of sustainability initiatives that subtly perpetuate past injustices is highlighted by this study. By emphasizing the continued existence of neocolonial dependencies in the digital economy and advocating for a more inclusive approach to global digitalization, this study adds to the current conversations on techno-colonialism. The study also emphasizes the necessity of decolonizing digital infrastructures and ensuring that marginalized voices are included in shaping the future of digital economies.*

Keywords: digital colonialism, resource extraction, technological dependency, neocolonialism, sustainability paradox.

Introduction

The rapid expansion of digital technologies has transformed economies and societies worldwide, but beneath this progress lies a complex web of resource extraction, labor exploitation, and geopolitical power dynamics.

The study engages with the concept of digital colonialism, which is described as a modern phenomenon in which major global powers and multinational corporations, mainly from wealthier

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nations, exercise control and influence over the tech landscape in less economically developed countries that have faced colonialism in the past (Stevenson, 2024).

Digital technologies can reproduce colonial power structures through technological dependency, skill disparities, financial control, and cultural dominance. These digital manifestations mirror historical colonial practices, leading to contemporary impacts that perpetuate global inequalities in the digital age.

Literature review

Historically, colonialism has been defined in various ways, addressing its complex historical, social, economic, and political aspects. A commonly accepted definition describes colonialism as the control of one nation by another, typically marked by the establishment of settlements and the exploitation of resources.

One prominent aspect of colonialism is its economic dimension, often facilitated by establishing colonial administrations that enforced policies favoring the colonizers' interests. Research underscores the historical role of colonial systems in creating substantial health and social justice disparities for Indigenous peoples, demonstrating the enduring effects of these exploitative frameworks (Thomas et al., 2024). Culturally, colonialism frequently involves forcing the colonizers' values, beliefs, and practices onto the colonized populations. The subtle yet pervasive impacts of colonialism are evident in the marginalization of Indigenous knowledge systems, which are often disregarded by the dominant narratives established by colonial authorities (Trout et al., 2018). In political terms, it involves creating governance systems that favor the colonizers while undermining the rights and self-determination of local communities. This dynamic is reflected in the ongoing battles for sovereignty that Indigenous populations face as they navigate the remnants of settler colonialism that continue to influence their political situations (Hughes et al., 2022; Nişancıoğlu, 2019).

Bernauer argues that colonialism should be seen as "a milieu or active set of relations" that evolves over time, highlighting the dynamic interactions between colonizers and the colonized (Bernauer, 2024). The historical context suggests that colonialism remains more than a mere remnant of the past; it is a continuing force affecting present socio-economic relationships.

Digitalization is described as a transformative process integrating digital technologies into the core of organizations and society, resulting in improved operational capabilities, innovative business models, and greater societal engagement. Adapting to new technologies has become a crucial aspect of our culture, changing how we interact with each other and the world around us. It has created opportunities for more straightforward social interactions and greater access to abundant knowledge and resources.

Digitalization offers many benefits across various sectors, significantly enhancing efficiency, productivity, and innovation. The strategic implementation of digital technologies optimizes internal operations and enriches the external value delivered to customers and society at large.

While promising a better and more prosperous future, the integration of digital technologies can result in shifts in social values and the emergence of new ethical dilemmas, especially regarding privacy, data security, and the equitable distribution of digital resources (Serkina et al., 2022; Shaw & Donia, 2021).

The concept of digitalization seen as a modern type of colonialism has gained traction in contemporary discourse, especially regarding globalization and the widespread influence of technology on societies around the world. Digital colonialism, a term that captures the dynamics

of power, control, and exploitation in the digital sphere, draws comparisons to historical colonial practices.

This phenomenon involves the appropriation of data and digital resources, typically by Western corporations, resulting in unequal power dynamics reminiscent of historical exploitation. It appears in various ways, such as data colonialism, techno colonialism, and algorithmic colonialism, enhancing our understanding of how digital technologies can continue colonial legacies.

One of the foundational arguments in this discourse is articulated by Jin, who posits that the advent of digital technologies has not eradicated imperialistic tendencies but has reinforced them, mainly through platform imperialism. Jin argues that while non-Western ICT corporations may attempt to balance power dynamics, the overarching reality remains that digital technologies serve to uphold existing hierarchies and forms of domination, especially those rooted in the United States hegemony (Jin, 2013).

Digital colonialism significantly affects the Global South, where foreign organizations frequently dominate essential digital infrastructure. This dominance creates unequal data flows and power disparities. Salami emphasizes this issue in Africa, illustrating that foreign companies, masked as technological support providers, take control of digital assets. This practice perpetuates a type of digital colonialism that erodes local autonomy and hampers development (Salami, 2024). Furthermore, Ilyas points out that influential Western tech firms and intelligence agencies exacerbate this situation by collecting and profiting from data of non-Western communities, thereby reinforcing colonial dynamics of power and control (Ilyas, 2022).

In examining the cultural dimensions of digital colonialism, Oji and Nzeaka explore how platforms like WhatsApp can regulate the lives of digital natives, reflecting broader patterns of Western domination and control over digital spaces. Their research highlights the need for greater awareness among users regarding the political implications of their digital interactions (Oji & Nzeaka, 2020). Global North leads the digital colonialism through multimillion-dollar media companies such as Google and Meta. Their media products are hard to ignore since they took over daily life and they are impossible to compete with due to lack of capacity and knowhow. The new digital colonialism implies influence through media content. Similarly, Birhane discusses the algorithmic colonization of Africa, emphasizing how Western tech monopolies leverage algorithms to influence social and political discourse, thereby perpetuating colonial legacies in a modern context (Birhane, 2020).

Muldoon and Wu (2023) observe that "extraction and extractivism" are common characteristics of contemporary technology. They reflect the capitalistic aspects of historical colonialism, in which stronger powers took advantage of weaker regions for their gain.

Digital colonialism manifests through controlling digital infrastructure, cultural dominance, economic exploitation, and political influence by powerful nations and corporations. This modern form of colonialism mirrors historical practices, emphasizing the need for equitable digital policies and the inclusion of marginalized voices to counteract these influences.

Methodology

The research explains how digitalization enhances the reuse of colonial practices. The exploitation of natural resources has always represented one of the primary forms of oppression in colonized nations. While the international perspective has shifted towards sustainability, green energy and technological advancement, it still demands increasing resources from the Global South. We have

identified the essential commodities for digitalization and traced *their manufacturing path into finished technological products.*

Firstly, we have analyzed data provided by Observatory of Economic Complexity (OEC) to understand 1/ which of the former colonies own the essential raw materials for digitalization, 2/ how much of these resources are exported and to whom, and 3/who manufactures the finished technological products and what their export value is. To ensure data availability for all raw materials & countries examined we have leveraged data from 2022.

By examining the data panel and utilizing document analysis, we have pinpointed into a discursive paper the cases of cobalt and aluminum extraction from the DRC and Guinea. These materials are essential for constructing digital infrastructure, such as smartphones, laptops, data centers, and electric vehicles. However, sourcing these resources is plagued by issues related to neocolonial dominance, environmental damage, and labor exploitation.

Results and discussions

Digitization is the process of converting information from a continuous form into a discrete representation that can be processed algorithmically by a universal computing machine. The digitalization process created value from raw data, and as each and every generation of value implies consumption of either means of production or human labor, we should ask ourselves what does the digital sector need in order to create that said value?

While digitalization is nowadays mainly seen as a positive process that benefits humankind, the natural implication of the new-age process stays in the shadows. Like any industries, digitalization requires raw materials, tools and energy to properly function and to reach us with its products.

Many commodities are needed in Information and Communication Technology (ICT), some of them being crucial to the transition to green energy and even to the stability of the sector today. Almost the entire periodic system of elements can be found in digital technologies: cobalt, tantalum, tungsten, tin, indium, gallium, germanium or Rare Earth Elements (REE) are some of them, most being produced in China or the African Continent.

Some of these elements, being formed during million or even billions of years on earth, require high technology, risks and natural implications to be obtainable. These said risks undermine the same goal that the minerals that we acquire are used for, therefore the mining and refining processes must be carried out responsibly. But what if the land that is excavated, blasted or shortly put, mined, is in a place and the beneficiary of the produce is in another place? Is this a situation in which there are no environmental risks for the recipient, is it the best scenario for him because he can ignore the natural implications of mining while obtaining even more natural resources because of it? In today's world, being affected by colonialism and even postcolonialism, it is a normality to acquire resources from a place, for them to suffer production in another place and finally to be laid for consumption in a third, new place.

The Colonial Continuum: From Rubber to Cobalt

To understand the extractive dynamics of digitalization, one need not look further than the Democratic Republic of Congo (DRC). Historically pillaged for rubber and ivory during King Leopold II’s brutal colonial regime, the DRC today remains trapped in a neocolonial web, now fueled by the insatiable demand for "green" and digital technologies.

The country holds almost 70% of the world's cobalt reserves, a mineral critical for lithium-ion batteries in electric vehicles and smartphones and supplies 40% of global tantalum (via coltan), essential for capacitors in electronics.

A minimum of 70% of global cobalt is possessed by the DRC, which also supplies a minimum of 70% of global offer, while 72% of the African country's population lives in extreme poverty. This wealth has not translated into prosperity for its people. Instead, it mirrors the colonial plunder of the past, with over 90% of DRC's cobalt exports flowing abroad, where raw materials are refined and monetized into high-value products. Being controlled by Belgium in the past, DRC was mainly a producer country, in 2020 the cobalt exports accounting for 99% of goods exports and 30% of GDP, rendering the economy vulnerable to external shocks and to fluctuations in production. Moreover, not only is cobalt a *curse-resource* and DRC a true example of the *paradox of plenty,* but the African country does also not even process 2% of its cobalt, since the economy was designed to be extractive.

China is the most important partner of the DRC regarding cobalt – it imported cobalt ore valued at 134 million dollars in 2022, representing 76.7% of total cobalt exports from the DRC (Figure 1). While the DRC is the main source of cobalt worldwide, China refined 77% of the world's cobalt in 2022. At first glance, this could highlight a mutual dependency of China and the DRC. But while the DRC is highly dependent on the export of cobalt, China has many other assets and products, apart from being a global super-power.

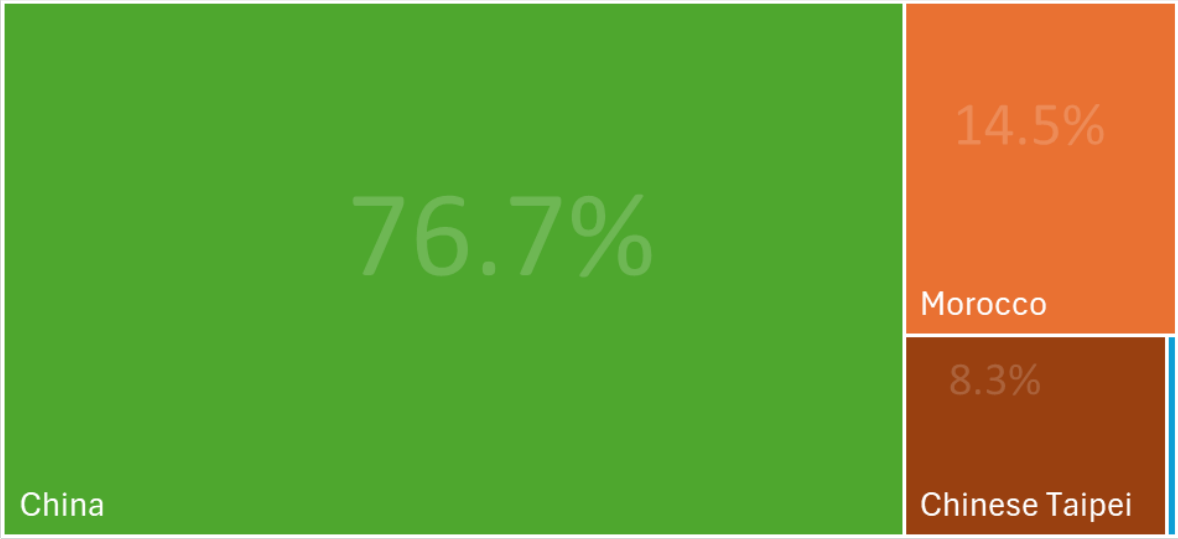

Figure 1 Where does Democratic Republic of the Congo export Cobalt Ore to? (2022)
Data source: The Observatory of Economic Complexity (OEC), own elaboration.

The African country loses the opportunity to refine it and sell it at a higher price. By just turning cobalt into batteries via industry, the value becomes 10 times bigger. Batteries are essential for the transition to green energy and renewable energy, mandatory for the advancement of electric mobility and intelligent transport or cities, making them a natural resource that is critical for achieving the European Green Deal and to reduce pollution and waste. But the lack of infrastructure, technology and know-how forces DRC to export their cobalt as it is. Political instability and corruption also stop the drive for change, and the past colonial way of running the country being a solid motive behind the situation the African country is in today. While the Industrial Revolution reached Europe first and then their colonies, some settlements remained just

an extractive site for the metropolis. As at said times the Belgian Congo supplied rubber to Belgium, nowadays it supplies cobalt to China.

To better understand the supply chain design and its implications, we followed what happens to the cobalt ore once it reaches China.

According to The Observatory of Economic Complexity (Figure 2), China exported batteries valued at 2.92 billion dollars in 2022. Out of this, exports to Europe represent 938 million dollars, from which almost 880 million are exports to members of the European Union. That means that 32% of the entire export value is heading into the European continent, only 2% of that going to the economies of countries outside of the EU. The techno colonialism understanding of the matter stands that while European countries do not benefit directly from the RDC by buying their cobalt ore, they do indirectly by buying batteries from China that are produced using that same cobalt from Africa. This way, the European Union and their members are not only dependent on China, but they are also dependent that the DRC is selling their cobalt ore to China so that it gets refined and enters the market. (Joint Research Centre, 2020).

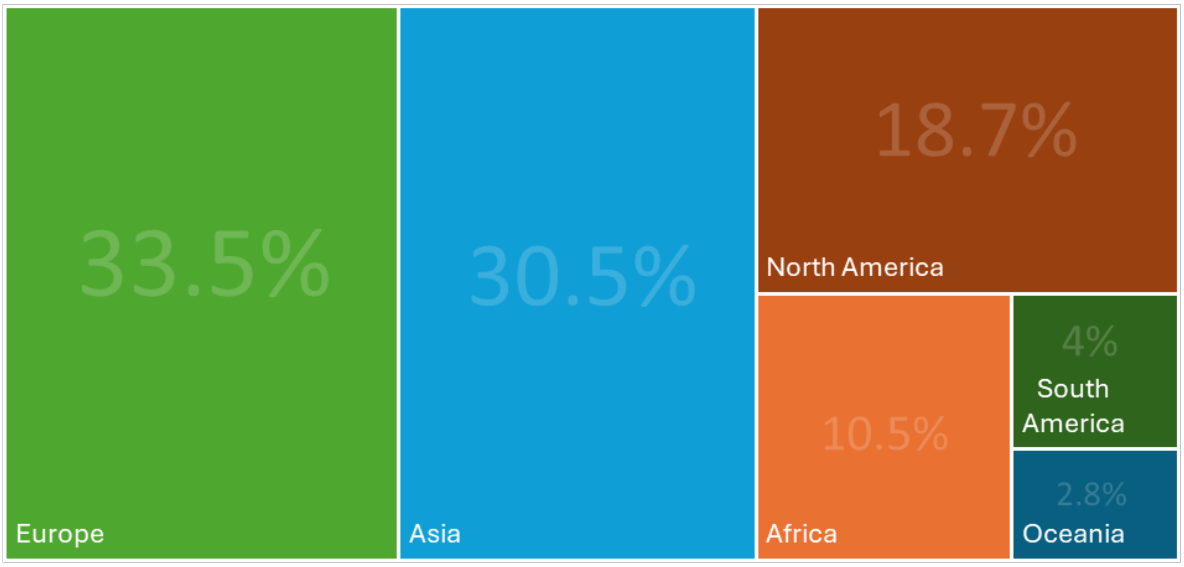

Figure 2 Where does China export Batteries to? (2022)
Data source: The Observatory of Economic Complexity (OEC), own elaboration.

The mining industry in the DRC is tough for the average worker, the population is battling modern-day slavery and child labor, while artisanal mining is still being highly practiced. China benefits from this situation, being a recipient of the shortcomings of the DRC economy, while the EU becomes a non-ethical consumer of goods made through oppression because it buys batteries from China. (Gulley, 2023)

Moreover, the EU admits the *strategic drawback* of China dependency, so the European Parliament is contemplating the idea of "building a Congolese processing plant to produce lithium-ion batteries" in the DRC because of its cheap land, construction costs, and labor. (European Parliamentary Research Service, 2024) This scenario would benefit both EU countries, by lowering their dependency of China, and the DRC through technological transfer and job creation. Before drawing this conclusion, we also need to consider the DRC is one of the poorest countries in the world, and their educational system is one of the most inefficient in the world. (QS World University Rankings, 2023) This means the DRC might be dependent on occidental expertise.

Moreover, an official partnership between the DRC and the EU might lead to tensions within the China-RDC relations, the African country not being able to deal with the economic consequences of such an event.

The Neocolonial Aluminum Trap

Once plundered by France for its agricultural wealth and forced labor during colonial rule, Guinea today remains ensnared in a neocolonial trap, this time driven by the world's hunger for aluminum - a metal critical for everything from electric vehicles to renewable energy infrastructure. Guinea holds 25–30% of the world's bauxite reserves, the raw material for aluminum. Under French colonial rule (1891–1958), Guinea's resources fueled Europe's industrialization, while its people endured forced labor on plantations and mines. Guinea's reserve of aluminum is one of the biggest in the world, having the second most aluminum produced in the form of critical raw material.

As in the previous case of the DRC, Guinea isn't refining its aluminum production, being the 29th in the world in the refined aluminum category, while its exports and economy are being highly dependent on the trade with bauxite. This dependency not only impacts their economic stability, but also the Guinean territory itself, rural communities complaining about the destruction of ancestral farms and pollution of vital water sources because of the bauxite mining sector. (Human Rights Watch, 2019)

The main companies which drive this sector are Compagnie des Bauxites de Guinée (CBG) with 51% private ownership, and SMB-Winning Consortium, a company set up in Singapore and China. The similarities to the RDC case are striking, showing a pattern of *raw material curse* and negligence of ecological costs for the greater good of the developed countries. While there is a Guinean company that could locally process the aluminum, named Guinea Alumina Corporation, its CEO is French and its funds and foreign interest are minimal, leaving the African state forced to export unprocessed natural resources.

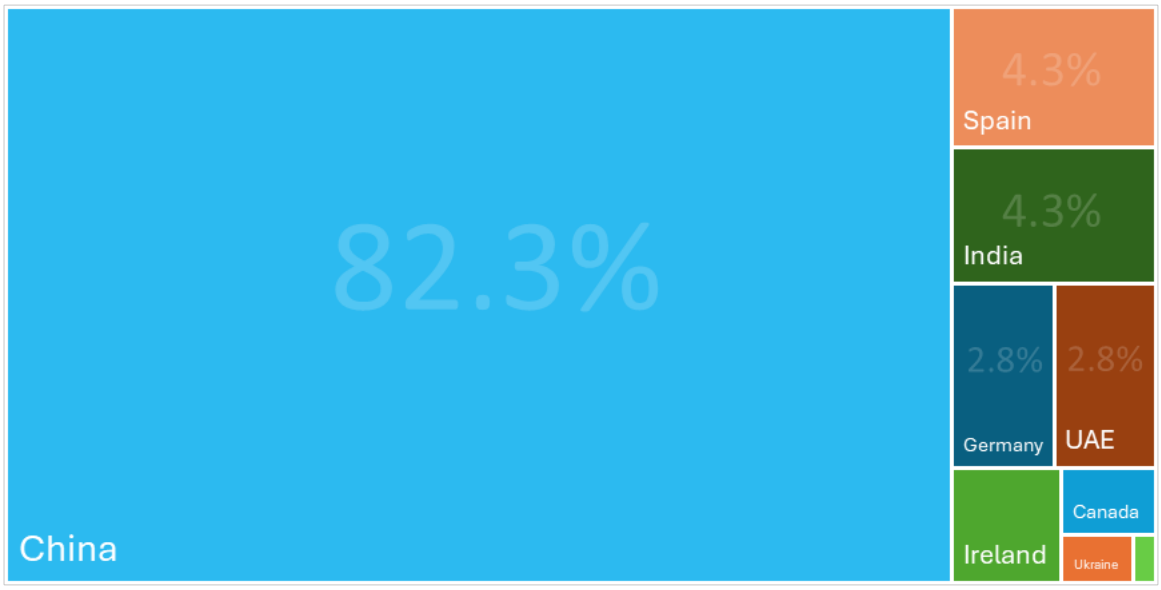

Figure 3 Where does Guinea export Aluminium Ore to? (2022)
Data source: The Observatory of Economic Complexity (OEC), own elaboration.

We notice China also appears as an intermediate between the European continent and Guinea in the marketplace of aluminum ore, 82% of the African country's aluminum (4.5 billion

dollars) being exported directly to China and only 534 million dollars' worth of aluminum being exported to Europe (Figure 3). The situation was different in 2012-2016, when the EU obtained its bauxite directly from Guinea in proportion of 73% while China was only supplying 1%. Nowadays EU members like France and Belgium are being supplied directly by China by a minimum of 35% of the total imports of aluminum ore. (Joint Research Centre, 2021)

In 2023 EU recognized aluminum as a Critical Raw Material and China tremendously increased their production and refining capacities, producing 19% of the global aluminum and refining 58% of it, while also being by far the biggest importer in the world, with over 4300 million dollars more than the EU in 2022. Aluminum ore is highly sought after for its properties: lightness, corrosion resistance, good thermal conductivity and affordable price and for its usage in the production of computers, batteries, electric cars, solar panels, satellites or heat sinks. (Home, 2023)

Following the supply chain, we observe China exported in 2022 computers valued 181 billion dollars (Figure 4). From that total, 49.2 billion dollars are exported to Europe, from which almost 44 billion dollars are exported to members of the European Union. That means that 27% of the entire export value is heading into the European continent, only 3% of that going to the economies of countries outside of the EU.

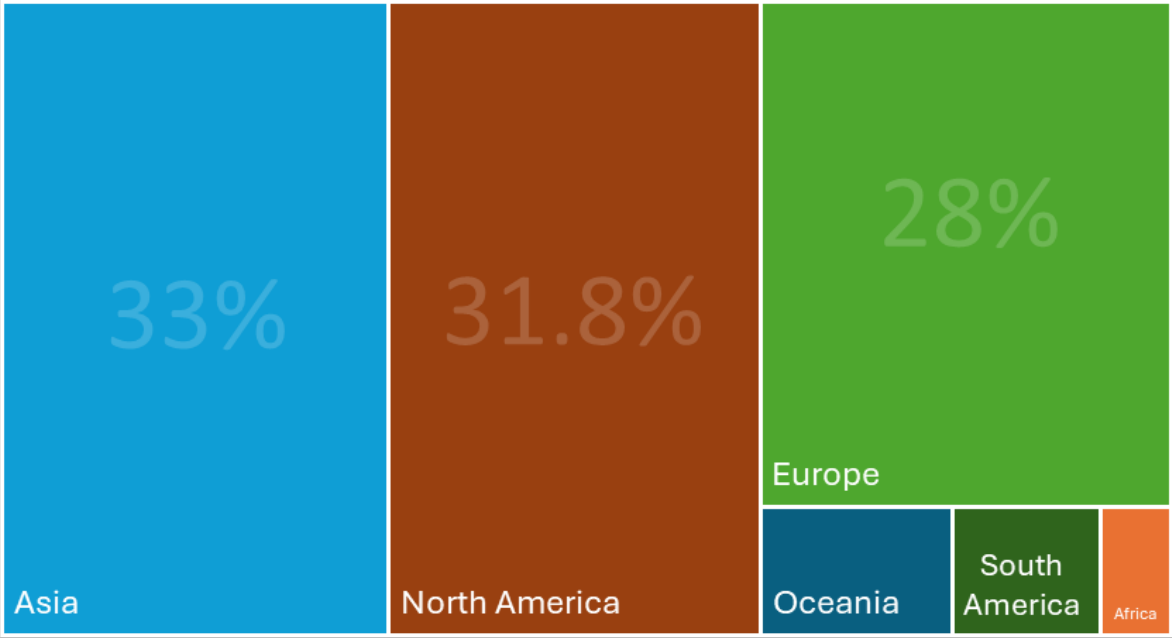

Figure 4 Where does China export Computers to? (2022)
Data source: The Observatory of Economic Complexity (OEC), own elaboration.

When looking at the exports of electric batteries, China exports summed up 60.4 billion dollars in 2022, 25.7% of those going into Europe, of which 22% directly into the EU economies. While having the biggest aluminum reserves in the world, Guinea is low on lithium or cobalt, that resulting in only being able to export electric batteries valued at 300.000 dollars in 2022. This is also a result of the limited processing industry, a colonial legacy of the past that impacts the African country even today.

The EU Sustainability Paradox

The European Union is a global leader in advancing digitalization, ecological transition, and pollution reduction, championing groundbreaking initiatives such as the European Green Deal and the Digital Decade strategy. However, these ambitions face a critical obstacle: Europe lacks the natural resources required to achieve its goals independently. For green technologies (solar panels, wind turbines, electric vehicle batteries) and digital infrastructure (semiconductors, 5G networks), the EU relies heavily on imports of rare earth metals (lithium, cobalt, dysprosium) and other raw materials from countries in Africa, Latin America, and Asia. (Jora et al., 2025) The EU is dependent on imports of cobalt, lithium, manganese and highly dependent on imports of natural graphite and nickel. As an example, the domestic extraction of cobalt represented only 12% of the total input to the EU manufacturing, while the domestic extraction of lithium represented only 9% of the total input to the EU manufacturing. (Joint Research Centre, 2020)

This dependence however reveals a paradox: while the EU builds a cleaner future within its borders, its enormous demand for resources risks devastating ecosystems in supplier states. Cobalt mining has led to deforestation, water pollution or displacement of local communities, while lithium extraction requires an important amount of water that could have been used in the many drought-stricken regions in which natural resources is mysteriously found. (Davey, 2023)

Moreover, practices like carbon leakage picture the EU in a better image regarding pollution, even if European actors are important in the industry sectors of countries or regions where there are little to no restrictions on CO2 emissions compared to their homeland. The case of the DRC where the EU would like to build their own cobalt refinery shows that the Europeans are more interested in their air, their water or their forests, not interested in air, water or forests in general. The EU's projects therefore risk to be counterproductive on a global scale, turning sustainability into a regional luxury that's paid for by the less economically independent or stable economies of the world. The partnerships of the EU must also be looked upon, this study highlighting the toxic relation the Europeans have with China, indirectly benefiting from exploitation and even colonialism, where the former European empires are at fault from the start.

Even if sustainability might become a secondary priority in the newly developed geopolitical context, considering latest events and the additional pressure on EU to increase its defense spending, research and technology will still represent a strategic investment bucket. The extractive nature of European practices will affect countries from the Global South regardless of the political priorities they respond to.

To conclude the study, in our opinion, a true and real ecological and sustainable future must be looked upon in a holistic way. The EU is responsible for the actions of their partners, funneling money into the pockets of potential exploiters being an offense that must be avoided. As a global superpower, the EU must be an example of responsibility in the economy, especially considering their regrettable past relations with their colonies.

Conclusion

This study examines how digital colonialism continues patterns of exploitation and dependency in the modern world. The rapid expansion of digital technologies is not just a sign of progress but also a reflection of historical extractive systems that have long shaped global inequalities. By looking at the extraction of key resources like cobalt from the Democratic Republic of Congo and aluminum from Guinea, we see how today's digital economy depends on the same types of resource exploitation that defined colonial eras. The growing demand for these materials—driven by the

push for green and digital technologies—ties directly into the European Union's sustainability and digital agendas, raising critical questions about whether these transitions truly break from past injustices or simply reproduce them in new forms.

The paper highlights the paradox of the EU's sustainability efforts: while working towards a greener and more digital future within its borders, the EU's reliance on resource extraction from the Global South perpetuates environmental degradation, social injustice, and economic dependency in supplier nations indirectly. The cases of the DRC and Guinea illustrate how colonial legacies continue to shape global economic relationships, with raw materials being extracted under exploitative conditions, refined abroad, and ultimately consumed in wealthier nations. This dynamic reinforces global inequalities and undermines the ethical foundations of sustainability and digital progress.

Moreover, the study highlights the presence of intermediary powers like China, which dominate the refining and manufacturing processes, creating a complex web of dependencies that further marginalize resource-rich but economically vulnerable nations. The EU's indirect complicity in these exploitative practices raises critical ethical questions about the true cost of its green and digital transitions. To address these challenges, the study proposes a holistic and globally inclusive approach is necessary. EU must take responsibility for the broader implications of its resource dependencies, ensuring that its sustainability and digitalization efforts do not come at the expense of marginalized communities and ecosystems, which might deem their projects counterintuitive.

The discussion on digitalization as a modern form of colonialism is intricate and closely linked to historical patterns of exploitation and control. The rise of digital colonialism, techno colonialism, and data colonialism showcases the persistent impact of colonial legacies on today's power dynamics in the digital space. Looking into the future, cyberspace, a realm of technological power and geopolitical-economic calculations (Jora et al., 2022), not only redistributes resources but deepens the digital dependencies of the Global South, mirroring the exploitative logic of traditional colonialism. As researchers delve into these complex relationships, it is becoming increasingly evident that tackling the issues raised by digital colonialism demands a collective effort to decolonize digital practices and infrastructures, ensuring that marginalized voices are acknowledged and valued in the digital era.

Our paper raises awareness towards the counterintuitive nature of EU's project and addressing how the quest for digitalization might have more than a positive local effect. One aim of this study is to urge the scientific community to publish more about all the effects of digitalization, in order to pressure the decision-makers to take into account all manifestations and conditions of existence of digital EU.

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