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Energy Colonialism: A Category to Analyse the Corporate Energy Transition in the Global South and North

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Abstract: This article aims to define the category of energy colonialism in order to analyse the conflicts that are arising due to the deployment of renewable energy megaprojects in the Global South and in the peripheries of the Global North. First, the limits of the corporate energy transition are questioned, and based on an exhaustive bibliographic review, the category of energy colonialism is formulated along with six dimensions that characterise it: geopolitical; economic and financial inequalities; power, violence, and decision making; land grabbing and dispossession; impacts on territories and commons; resistance and socio-territorial conflicts. Based on this framework, we analyse and juxtapose different expressions of energy colonialism in four case studies; the isthmus of Tehuantepec (Oaxaca, Mexico), the territories of Western Sahara occupied by Morocco, the Saami territory in Norway, and the rural territories of Spain. The results from this study allow us to conclude that energy colonialism is a useful concept for understanding and critiquing the effects of the corporate energy transition and establishing a base for grassroots and decolonial alternatives in both the Global North and South.

Keywords: energy colonialism; renewable energy megaprojects; corporate energy transition; Indigenous territories; rural territories; climate change



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1. Introduction and Objectives

The 21st century is marked by climate change and the rapid depletion of fossil fuels. Around 2005, we crossed “peak oil”, which indicates the decline in oil reserves essential for the functioning of the industrial economy [1,2]. However, it was after the oil crises in the 1960s that the urgency to transition from fossil fuels to renewable energy sources began to be addressed. This led to what we call “the energy transition”, a term that was introduced for the first time by the German Óko-Institut in 1980 [3].

Thus, from the Kyoto Protocol to the Paris Agreement [4], following the rest of the international summits on climate change, the need to decarbonize the economy through an energy transition has played a central role in international energy policy [5,6]. Governments are modifying their legislation and redesigning their energy schemes to speed up the transition. The European Union is a paradigmatic case due to its high energy dependence, thus showing a leading commitment to the deployment of renewable energies. This commitment has been strengthened after 2022 due to the armed conflict in Ukraine, increasing the goal to produce renewable energy by up to 45% by 2030 [7]. Renewable energy can be harnessed through a variety of technologies and allows for meeting different kinds of energy uses such as movement, heat, electricity, etc. [8], but the current energy transition is mainly focused on the development of wind turbines, photovoltaic panels, and their associated infrastructure [9], which are the energy projects analysed in this paper.

One of the main critiques of the current energy transition is that fossil fuels and renewable energy sources are treated as equivalents, disregarding the enormous qualitative changes that its infrastructures imply. Unlike fossil fuels, renewable energies are intermittent in their operation, they have a much lower energy density, and the construction of direct and indirect infrastructure requires much higher energy and material inputs [10], in sum demanding higher territorial extension. Renewable energy sources present a lower Energy Return on Investment (EROI), a ratio used for describing the net energy output that any energy source returns to society [11]. This highlights the need for socioeconomic transformations if the costs and benefits of the transition to renewable energy sources are to be just.

The current hegemonic energy transition described above does not modify or question the economic model and energy framework of current industrial societies, which would be a precondition for a sustainable flow of renewable energy [6]. In contrast, it constitutes a “corporate energy transition”, a term coined by the Latin American Energy and Equity Working Group [12,13]. We will use this term throughout the article to refer to the economic interests of states in collusion with large global corporations that, among other issues, proclaim the virtues of renewable energies while intensifying neo-extractivism and inequalities in populations and territories of the Global South and peripheries of the Global North. The infrastructure required for this transition paradigm is characterised by gigantism, which reduces the number of actors, centralises decision making, and maximises benefits for a reduced corporate sector. The cornerstone of the corporate energy transition is its reliance on renewable energy megaprojects [14].

Apart from the inherently unjust nature of this approach, the corporate energy transition faces important limits that make it virtually impossible to realise in the medium-long term, one of the bottlenecks being the scarcity of minerals, such as iron, aluminium, copper, lithium, and other rare earth elements. In particular, the production of electricity from renewable energy megaprojects demands huge amounts of materials, many of which are located in remote areas with high biodiversity rates, severely impacting the livelihoods, cultures, and rights of Indigenous peoples [8,10,15–18]. In line with this critique, the International Energy Agency recognised that current data show a clear mismatch between the material needs of the energy transition and the availability of minerals [19]. In addition, the mutual dependence of mining and renewable energy megaprojects is evident, as some of the case studies of this article show. This also displays a clear example of technological continuity or fossil “lock-in” of renewables [20], which is multiplying socioeconomic and environmental conflicts in the territories of the South and the peripheries of the Global North.

Another substantial limit to the corporate energy transition is that, due to the low energy density of renewable infrastructure, a significant demand for surface area is generated to install energy production and transport systems. For example, in the case of Spain, the Ministry of Ecological Transition has estimated an average direct impact of 2.2 hectares per MW in solar photovoltaic energy production and a direct impact of 32 hectares per MW in wind energy production [21]. This data aligns with similar findings in other countries [22].

In addition, it should be noted that when we refer to renewable energy megaprojects, we are also referring to the construction of roads and the high and very high voltage infrastructure that is required to evacuate energy from the production spots to the large consumption centres, as well as the electricity substations that connect the electricity produced with the transport networks, or high voltage lines. The continuous nature of the corporate energy transition is identified in its structure set around high voltage. It should be noted that high voltage arises as the demand for a high concentration of power is imposed by fossil fuel energy sources, requiring transportation from a few production points to consumption centres. The uncritical promotion of high voltage under a renewable paradigm only responds to the continuing effort to treat renewable energy sources as extended fossil fuel sources. This approach, enormously lucrative in economic terms, is inefficient in terms of energy. Let us take the case of Spain in Europe as an example. According to the cost–benefit analysis of the Spain–France Interconnection Project via the

Bay of Biscay considered in the Ten-Year Network Development Plan (TYNDP) 2020, close to 40% of the additional renewable energy allowing it to be incorporated into the European electricity system would be lost throughout the transmission network [23].

Finally, the dispossession, fragmentation and transformation of land by renewable energy megaprojects represents a serious problem because it implies severe impacts on cultural, ecological, and agricultural practices and values [24,25]. This, precisely at a time when the planetary boundary in terms of land use change has been irreversibly exceeded [26,27]. Despite intending to mitigate climate change, the land transformation caused by renewable infrastructure poses various problems, including deforestation and the destruction of soil that regulate the climate on a global scale via different biophysical processes [27].

The limits, impacts and inequality resulting from the acceleration of the hegemonic corporate energy transition makes it necessary to proceed with an in-depth analysis of its characteristics, paying particular attention to the enormous amount of territory required for the deployment of the infrastructure for renewable energy in the territories of the Global South and in the peripheries of the Global North. Thus, the main objective of this article is to define the term energy colonialism as a category to analyse how renewable megaprojects are being imposed under the corporate energy transition. Specifically, this article proposes a definition of “energy colonialism” that includes six dimensions, namely: (1) the geopolitical dimension; (2) the dimension of economic and financial inequalities; (3) the dimension of power, violence, and decision making; (4) the dimension of land grabbing and dispossession; (5) the dimension of impacts on territory and commons; and (6) the dimension of resistance and socio-territorial conflicts. The analysis is based on four case studies concerning wind- and photovoltaic energy development, covering both cases in the following areas of the Global North and South: the wind corridor of the isthmus of Tehuantepec in Oaxaca (Mexico), the Fosen Vind DA project in Sápmi (Norway), rural territories in Spain, and occupied territories of Western Sahara.

The article is structured as follows: Section 1 presents the introduction; Section 2 presents the methodology; Section 3 presents previous research relevant to the analytical framework of energy colonialism and the six dimensions we propose in Section 4; Section 5 presents the four case studies; in Section 6, we discuss the four case studies according to the six dimensions proposed; and Section 7 outlines our conclusions.

2. Materials and Methods

The methodological approach applied in this article is based on literature review and the analysis of four case studies. First, we engage in a broad review of relevant literature concerning energy justice and decolonial critique of the dominant model of energy transition. Then, we build our analytical framework around the concept of energy colonialism and the six dimensions that we elaborate on more thoroughly in the section below. The case studies (except Western Sahara) are selected based on the authors’ long-term engagement, commitment, and situated positions [28] in the struggles of the rural and Indigenous communities impacted by the wind energy projects discussed in this study. Two of the authors are Indigenous (Zapotec and Saami), and two are non-Indigenous engaged in rural struggles in Spain. We maintain that our situatedness across similar yet different struggles, in both the Global North and South, is a strength. Using the same categories to analyse structures and impacts from large-scale wind energy infrastructure in contexts conditioned by substantially different social, economic, and political realities, furthermore, enables us to explore how energy colonialism is manifested and resisted in diverse and locally contingent ways. In this exercise, we are informed by juxtaposition rather than comparison to discuss the overlap between the dimensions more freely and avoid prior assumptions of similarities and differences [29].

The situated positions and knowledge of the authors orient the literature reviews and specific methods applied to analyse the four case studies according to the six dimensions that characterise the proposed category of energy colonialism. The material is drawn from constant field work and experiences in the impacted territories for more than a decade,

including participation in assemblies, citizen mobilisations, administration meetings, consultations, and legal processes that are described more in-depth in previous publications about the case studies [30,31]. In the case of Western Sahara, we rely solely on literature review and document analysis since it is a territory at war and because it has already been widely described in other reports and studies [32–35].

3. Exploring the Category of Energy Colonialism

Our reflection on the category of energy colonialism is supported by a vast literature that has addressed and critiqued the corporate energy transition from social, economic, and political perspectives. It is worth noting the approaches to environmental justice that focus on the impacts subaltern communities suffer due to increased inequalities [36–39]. Some of these approaches point out the importance of spatial injustices [40] and address the paradox of a corporate energy transition that provides unproportionate benefits for the powerful while concentrating the negative impacts on subaltern populations [41–43]. Other studies intersect with the field of political ecology, addressing economic structures, power relations, and the dominant role of big corporations and nation states that oppress Indigenous and rural populations who suffer the impacts of the corporate energy transition [36,44–46]. As Batel [47] points out, however, the environmental justice framework is insufficient to understand the colonial imperative that we consider to be key to explain the structures that uphold and legitimate the injustices caused by the corporate energy transition.

Applying a decolonial lens is thus necessary to identify how the dominant energy model and expansion of large-scale energy projects renew historical colonial injustices, and as such, constituting a useful instrument for imagining alternative visions of a more just energy future. Growing scholarship engages in colonial critique when addressing tendencies of the corporate energy transition, proposing concepts such as “political energy regime” [32], “climate necropolitics” [48], “green dispossession” [49,50], “climate apartheid” [51], “multiple colonialisms” [52], “low-carbon colonialism” [53], “carbon colonialism” [52], “sustainability colonialism” and “resource capitalism” [54], “green colonialism” [29,30,55,56], “infrastructural colonialism” [57], and “transnational colonialism” [39]. Although these contributions are not exempt from controversy [39,58], they concord from different perspectives that the corporate energy transition is based on old colonial relations that enable a continuation of territorial and resource dispossession, perpetuating environmental, cultural, epistemic, and psychosocial harm in Indigenous and rural territories.

However, even though our proposal maintains important similarities with previous approaches, we prefer to use the term “energy colonialism”, as it is developed at the intersection between social movements and committed academic research, including the situated knowledge and experience of our research team. Our use of the concept is, furthermore, based on its application in previous research on renewable [13,47,59–64] and fossil-fuel sources [65,66]. As a contribution to this field of research, we propose a coherent and comprehensive definition of energy colonialism, which includes six dimensions that we find useful to analyse the corporate energy transition and its implications for rural and Indigenous communities.

Energy colonialism is undoubtedly a conclusive and provocative term both for the states and companies that promote the corporate energy transition as well as for the dissertations generated in academia and the social movements resisting these increasing tensions and promoting alternative transitions.

4. The Category of Energy Colonialism

We postulate that the corporate energy transition is built on economic relations of accumulation via dispossession, which in very broad terms refers to the renewed forms of capital accumulation and the commodification of nature, resources, and public goods with the opening of neoliberalism [67]. It is worth remarking on accumulation by defossilisation [2,68] as a concept that synthesises the exacerbation of dispossession due to the energy transition [40], including accumulation by wind energy described by Siamanta

and Dunlap [69]. We want to highlight how that the current corporate deployment of renewable infrastructure exacerbates old capitalist economic relations of accumulation by dispossession. It not only increases the extraction of minerals but also exacerbates the privatisation of land, natural resources, and basic public services such as electricity.

The logic of accumulation by dispossession is linked to long-standing colonial relations, where the continents of America, Asia, and Africa and some areas of Europe continue to play the role of suppliers of raw materials and energy that have been violently extracted throughout history. We return here to the understanding of energy colonialism as a continuation of long-term historical processes of cultural, economic, and political domination of the peripheries by the metropolises. These processes occur both internally and externally, in and among states of the Global North and South. Historically, the industrialisation processes of the metropolises have been possible because they have been supported by the extraction of large quantities of minerals and other raw materials from the territories of America, Asia, and Africa under a colonial subjugation that began in the 16th century, and which experienced a boom in the 18th century with the industrial revolution [70]. These unequal historical relations between colonies and metropolises became more acute precisely with the configuration of an industrial society and its dependence on fossil fuels in the 19th and 20th centuries. Even though the vast majority of the Global South formally declared their Independence, the legal frameworks and economies of these countries remained subservient to the metropolises of the Global North or even increased their dependence in the context of the international division of labour and energy colonialism linked to fossil fuels [66]. Thus, in economic terms, their role in the global economy has continued to be that of suppliers of raw materials and energy in such a way that kept them in a colonial condition.

Today, the deployment of renewable energy megaprojects exacerbates these old colonial and capitalist relations. Clear examples of this would be the DESERTEC megaproject that proposed the production of renewable energies in Africa to be consumed in Europe [60] or GOBITEC, a project that promoted the production of renewable energy in Mongolia for consumption in China, Japan, and the two Koreas [71].

Energy colonialism through renewable energy megaprojects is, furthermore, a continuation of the fossilist model [65,66] that does not change the pattern or model of energy generation. On the contrary, it sharpens asymmetrical power relations while ignoring the strong limits of renewable flows [15]. The content and application of the Energy Charter Treaty in the countries of the Global South constitute a good description of how energy colonialism is unfolding internationally both in terms of fossil (which are specially protected in this treaty) and renewable energies. The treaty includes clauses such as unidirectionality, that is, a whole legal architecture by which companies can sue states for at least 26 years for any measure that may affect their investments, while states cannot sue the companies [60].

We conclude this section by defining energy colonialism as a global phenomenon that, in the 21st century, constitutes a continuation of historical relations of domination exercised by states and corporations of the Global North over the Global South, even within the peripheries of the Global North. This translates into an asymmetry of power in relations with impacted communities, whether they are Indigenous, pastoralist, or peasant. Therefore, inequalities unfold through different forms and degrees of violence carried out by land grabbing and dispossession. Energy is also obtained based on biocultural destruction and the dismantling of common and communal goods. Unequal distribution of costs and benefits from energy production is intrinsic to this phenomenon since the negative impacts are concentrated in sacrifice zones [64] while the profits go to distant places. This is legitimised by the neoliberal, racist, and patriarchal discourses of those who promote a corporate energy transition in the context of the climate crisis. In this convulsive scenario, energy colonialism is being contested by Indigenous, environmentalist, rural, and peasant movements who continue to resist and protect their territories, lives, and biocultural memory, present and future.

Attending to this definition and previous studies, we have developed six dimensions that characterise energy colonialism, allowing us to analyse the four case studies of this article.

(1) The geopolitical dimension.

This dimension analyses the deployment of infrastructure in space [57] with spatial references to the topologies of high-voltage lines as a clearly colonial element. Likewise, it allows placing the preconditions that have determined the forms of the current corporate energy transition in a historical context [47,49,50,62,63] to evaluate if they are installed to meet the needs of nearby communities or if the energy generated is destined for other countries or distant areas [71] for the production of mining or other extractivist interests [62]. Finally, this dimension attends to the particular expressions and scales of colonialism and makes it possible to establish whether it is functioning at an internal, international, or transnational scale [47].

(2) The dimension of economic and financial inequalities.

This dimension analyses the centralisation of the energy economy and the inequalities that are generated in the production, distribution, and consumption of energy in general [43,72,73] and renewables in particular [2,32,43]. It includes key aspects such as the predominance of large companies with access to credit and administrative benefits [49]. This includes favourable distribution monopolies [74] and access to carbon credits to increase profits from extractive investments [52,75]. An evident characteristic of colonialism in its energy format is that states and companies benefit, while rural and Indigenous communities experience energy poverty [8,12,76,77].

(3) The dimension of power, violence, and decision making.

This dimension analyses how decision making is articulated in the deployment of renewable energies in different territories. It addresses the power asymmetries Indigenous and rural communities face when decisions with severe impacts on their territories are made, the risk of internal social fracture, and the different types of violence that companies and governmental institutions inflict on impacted communities and especially on those who actively defend their territories [45,64]. This dimension addresses the energy sovereignty of countries and territories, describing and evaluating the dominant role played by the occupying or foreign actors of the territory or country in which the mentioned deployment takes place [32,44,47].

(4) The dimension of land grabbing and dispossession.

This dimension analyses the dispossession, fragmentation and land use changes suffered by the territories where these infrastructures are installed, which, as we have already pointed out, require much larger surfaces per energy unit than those of the fossil energy system [24,78]. For this dimension, attention is paid to changes in the type of ownership and other legal aspects that hinder the free use of these territories by the impacted communities [40]. This includes farming, fishing, pastoralism, and other practices which sustain Indigenous or rural livelihoods and cultures.

(5) The dimension of impacts on territory and commons.

Large-scale renewable energy infrastructures generate biocultural destruction and give rise to the privatisation of commons [24,25,79]. This dimension analyses the ecological, social, and cultural impacts suffered within the lands dispossessed by megaprojects compared to the minor benefits obtained by affected communities [45] whose resources are extracted for use in distant places. This process of distancing the production from the consumption areas, moreover, reinforces the colonial narrative of the corporate energy transition since it also generates a false impression in the consumer population that the new renewable energy infrastructure has no impact and can be expanded freely and unlimitedly [47].

(6) The dimension of resistance and socio-territorial conflicts.

We consider this dimension to be the most important, as social movements build their knowledge in resistance and during these conflicts [19,32,36,80,81]. The critique from these movements not only reveals the colonial character of the deployment of renewable

energy infrastructure in peripheral territories. It also confronts the “Not In My BackYard” (NIMBY) argument, which negatively characterises movements that resist renewable energy development and downplays their broader structural critique of the corporate energy model, also in the Global North [82].

5. Case Studies of Energy Colonialism

5.1. First Case: *The Wind Corridor of the Isthmus of Tehuantepec, Oaxaca, Mexico*

The isthmus of Tehuantepec is located in the south of Mexico and geographically forms part of the narrowest strip of land that connects the Pacific Ocean with the Atlantic. Within the isthmus, the area that we have analysed is administratively delimited in the state of Oaxaca and is a region made up of two districts, Juchitan and Tehuantepec, which comprise 41 municipalities and have a total population of 595,433 inhabitants, of whom approximately 231,952 belong to Indigenous groups, mainly from the Ikoots (Huaves), Angpøen (zoques), Chontales, Binnizá (zapotecos), Chinantecos, and Tzotziles [83].

Most of the land in the isthmus of Tehuantepec is collectively owned and constitutes an important habitat for biodiversity, highlighting that of birds, both native and especially migratory, given the special biogeographic configuration of this territory and taking into account the existing wetlands.

The isthmus of Tehuantepec is one of the windiest areas on the planet, with an average annual wind speed that exceeds 10 m/s [84], which implies a great interest in the installation of wind power megaprojects.

5.2. Second Case: *The Fosen Vind DA Project on Saami Territory in Norway*

Fovsen Njaarke, the southern Saami name of the Fosen peninsula in central Norway, is the home of six southern Saami families who have practised ancestral nomadic reindeer herding in the area since the 17th century. The Saami are an Indigenous people whose ancestral territories (Sápmi) transcend the colonial state borders of Norway, Sweden, Finland, and Russia, constituting a minority population in Norway. The southern Saami belong to one of nine different Saami language groups and inhabit the southernmost part of Sápmi, claimed by both Norway and Sweden. Reindeer herding is not only an important livelihood but crucial for maintaining Southern Saami language and culture, as a large proportion of the population own reindeer or have relatives who are reindeer owners [55]. This traditional land use is also essential for protecting the survival of a fragile ecosystem with environmental values. Norway was the first country to ratify the ILO Convention No. 169 on the Rights of Indigenous and Tribal Peoples in 1990, adopted the UN Declaration on the Rights of Indigenous Peoples in 2007, and the Norwegian Constitution and Human Rights Law protect the Saami's right to enjoy their culture through reindeer herding [30].

The Fosen peninsula has among the best conditions for wind energy development in Europe, with many locations showing average wind velocities over 10 m/s, so the state of Norway and the transnational companies have an interest in the deployment of renewable energy megaprojects in the area. The Fosen Vind DA projects were constructed during 2017–2020, while the legality of the licences was considered by the court.

5.3. Third Case: *Rural Territories of Spain*

Spain is located in the southwest of Europe and has belonged to the European Economic Community (later the European Union) since 1986. It has an area of 505,370 km² and 47 million inhabitants. The population is concentrated in the coastal areas, in the Guadalquivir Valley, and in certain inland enclaves, including the capital, Madrid, which means that a substantial part of the territory has a low population density.

The Iberian Peninsula includes numerous ecosystems of high environmental value that hold significant levels of biodiversity in such a way that 27% of the land surface is protected, and 12% constitutes Biosphere Reserves.

The geographical situation of the Iberian Peninsula implies that it has a high solar potential with annual accumulated irradiation between 1600 kWh/m² and 1950 kWh/m²

in most of the territory, being only lower (1200 kWh/m²) on the Cantabrian coast (northern strip) [84]. The wind potential is high in many territories of the country. Most of the coastal areas have important winds (above 6 m/s), becoming greater than 10 m/s in a significant part of the north and south coasts and in the Canary Islands. In inland areas, Aragon and Galicia stand out, and most of the Spanish territory has winds that exceed 5 m/s on average [85]. These characteristics, added to the decoupling of wind patterns with respect to the interior of the European continent, make the Iberian Peninsula especially appropriate for transnational renewable supply. Thus, the physical construction of the European Energy Union through large electrical interconnection projects only increases the pressure on the territory [86].

For all these reasons, it is a place of great interest for renewable energy megaprojects that seek to make the most of the country's energy potential and the lack of population in an important part of its surface, even though it is an ecologically valuable and fragile territory that, in most of the cases, is agricultural land.

5.4. Fourth Case: Occupied Territories of Western Sahara

Western Sahara is a territory located in northwestern Africa that has been illegally occupied by the Kingdom of Morocco since 1976, according to the United Nations [87]. It has an area of 266,000 km² and 582,000 inhabitants, mostly belonging to the Saharawi people. It is a land with a very high solar potential with an average of more than 1825 kWh/m² in almost the entire territory and with a regime of strong winds with a wide area above 4 m/s and with coastal areas that can reach 11 m/s, which also implies enormous wind potential [88]. In addition, it is also a highly fragile ecosystem due to its particular bioclimatic conditions that are being seriously affected by colonial extractive practices and occupation through war [89].

6. Discussion

The current corporate energy transition is proving incapable of dismantling the fossil regime, as it develops under the same logic and dynamics, and ignores the limits and conditions of renewable infrastructures. Under this framework, the imperative to mitigate the climate and energy crisis is being used as an excuse for the deployment of renewable megaprojects, which is a constant in all cases considered in this article. The findings from the four case studies systematised in Table 1 determine that the category of energy colonialism is useful to explain the effects of, and resistance to the corporate energy transition in the Global South and the peripheries of the Global North, as shown by the following discussion of the results:

Table 1. This table synthesises the four case studies according to the six dimensions of energy colonialism.

	The Wind Corridor of the Isthmus of Tehuantepec, Oaxaca, Mexico.	The Fosen Vind DA Projects on Saami Territory, Norway.	Occupied Territories of Western Sahara.	Rural Areas of Spain.
The geopolitical dimension.	Twenty-nine wind farms in operation currently represent the installation of 1564 wind turbines developed on a total area of 31,000 ha of social (communal) tenure territories. Production for large companies, far away from the producing territories.	Six wind farms with 278 turbines produce 3.6 TWh a year. A total of 151 turbines, transformation stations, and 130 km of roads were built on Saami reindeer herding lands.	Occupied by Morocco since 1976. Nine wind projects (1870 MW) and five solar photovoltaic (655 MW). Energy for Morocco and in the future for Europe.	The production forecast is 209,386 GW in a country with an average consumption of 30 GW. The energy would be transported to Europe through two electrical interconnections with France and another three within the 5th list of Projects of Common European Interest.
The dimension of economic and financial inequalities.	The main investors in this wind farm corridor are European and US companies. There is a direct relationship between mining and extractivism in nearby territories and wind farms.	More than half of the investments come from Norwegian state and regional companies, while the rest mainly comes from German and Swiss pension funds. So-called "green certificate" schemes were introduced by the Norwegian government to boost the expansion of the industry, and wind energy companies enjoy favourable tax rates.	Four of the nine wind megaprojects are from a company owned by the king (NAREVA). Multinationals benefit from megaprojects. The refugee population and indigenous neighbourhoods suffer from energy shortages.	A total of 80% of the Spanish electricity sector is in the hands of private companies. A total of 17% of the population spends a very high percentage of their salary on energy. The operator of the electrical network (TSO) is 80% private.

Table 1. Cont.

	The Wind Corridor of the Isthmus of Tehuantepec, Oaxaca, Mexico.	The Fosen Vind DA Projects on Saami Territory, Norway.	Occupied Territories of Western Sahara.	Rural Areas of Spain.
The dimension of power, violence, and decision making.	There was a breach of the International Labor Organization's Convention No. 169 on the rights of Indigenous Peoples'. Indigenous queries were poorly developed. Violence and systematic violations of Human Rights.	Consultations were carried out with the impacted communities, but lacked free, prior, and informed consent (FPIC) from the Saami people and their representative institutions. The UN Committee on the Elimination of Racial Discrimination (CERD) requested to temporarily halt the construction, but this was ignored by the Norwegian state in 2018. In October 2021, the Supreme Court of Norway ruled that two of the projects violate Article 27 of the International Convention on Civil and Political Rights (ICCPR) as they prevent the impacted Saami reindeer herding communities from practising their culture.	The Saharawi people have never been consulted. The violence of the occupying state is extreme, as has been documented by Human Rights organisations.	In 2012, the EU, the ECB and the IMF forced Spain to complete its electrical interconnection with Europe. Legislation that favours megaprojects (82% of photovoltaics in 2017 were large-scale > 1 MW). Low-intensity violence against the opposition to this deployment.
The dimension of land grabbing and dispossession.	The privatisation of communal lands is intensifying due to the fact that companies do not respect communal ownership and assembly figures that are recognised in the Mexican regulations and in ILO 169, the Indigenous and Tribal Peoples Convention. Companies make individual contracts with small landowners that only gain 1% of the benefits over 50 years.	The projects occupy crucial winter pastures for reindeer. Despite the verdict from the Supreme Court that ruled the expropriation of Saami land-use rights illegal, the Norwegian state has not removed the infrastructure and returned the lands to the impacted reindeer herding community.	The megaprojects continue with the Moroccan dispossession of the land and homes of the Saharawi people according to the illegal occupation of Western Sahara. Mining companies and agri-export industries as examples of extractivist activities use the energy produced in megaprojects.	Regional and state regulations, such as the Law of 16 December 1954 on forced expropriation, allow increased land grabbing because expropriation can be performed by declaring the renewable energy projects as public utilities, even though most projects are private.
The dimension of impacts on territory and common goods.	Serious impacts on traditional land use as farming activities are forbidden in the area occupied by renewable energies. Serious effects on biodiversity, especially birds.	Research and experiences from Saami herders show that reindeer avoid areas of wind energy infrastructure up to 10 km. The loss of crucial winter pastures and their cultural landscape is threatening the existence of the entire southern Saami culture on the peninsula.	The transformation of traditional agricultural and livestock territories destroys the landscapes and biocultural practices. The water used by megaprojects means more water stress in a place that is already very dry.	The occupation of 2,837,740 ha has been planned. Large territorial impacts of current megaprojects and enormous future impacts from this deployment. There is no territorial planning for renewable energies, and the current regulations do not require impact assessments.
The dimension of resistance and socio-territorial conflicts.	Grassroots assemblies are recovered to resist wind megaprojects. Collectives and organisations are created by environmental defenders where there are no assemblies. Demonstrations and legal complaints are filed. Two wind megaprojects have been halted as a result of the resistance.	The impacted communities and Saami institutions have mobilised to stop the projects through political and legal means. Saami organisations and environmentalist allies have carried out protest marches and civil disobedience actions since 2016. In February 2023, hundreds of protesters blocked several Ministries to demand that the Norwegian government complies with the Supreme Court verdict.	The anti-colonial movements and the POLISARIO Front have mobilised against the energy megaprojects.	There are several hundred organisations that are resisting the energy megaprojects, in some cases, for at least a decade. In 2020 the Energy Alliance (ALIENTE) was created as a platform for more than 200 collectives.

Figure [30,31,33–35].

(1) According to the geopolitical dimension, we found in all cases that wind and photovoltaic energy infrastructures, roads, and evacuation and transportation power lines, are deployed in various forms as a continuation of the historical colonial domination by states and corporations over Indigenous and rural territories in the Global South and North.

(2) According to the dimension of economic and financial inequalities, we found that the energy produced is unequally distributed and used in the analysed territories. In three of the cases, more energy is produced than consumed in the areas in question. The surplus is exported from the peripheries, and the consumption is much less per inhabitant than the rich territories they supply. This issue is also evident in the Saami case. As most communities are ethnically diverse, the Saami have equal access to energy as the majority

population, but their ancestral practices, such as reindeer herding, leave few environmental footprints and ultimately consume less energy per capita than other land uses in Norway.

(3) According to the dimension of power, violence, and decision making, we found that there is an asymmetry of power between states, corporations, and impacted communities, as decisions are made without effective consultation and participation and lack consent in all four cases. States and corporations use various forms of violence to impose energy projects, and the methods used depend on the context of each case study. This includes extreme physically violent attacks on protestors in the occupied territories of Western Sahara and the isthmus of Tehuantepec in México to more soft bureaucratic forms of repression evident in the cases of Spain and the Saami territories. The Saami case moreover illustrates how dispossession of reindeer herding lands can constitute a form of cultural violence that threatens the future existence of ancestral Saami knowledge, worldview, and practices.

(4) The dimension of land grabbing and dispossession of land was evident in all cases, and we found that these processes reproduce and perpetuate colonial injustices in Indigenous and rural sacrifice zones. These processes are legitimised by an urgency for a so-called “green” energy transition and enabled by legal frameworks that favour state and commercial interests. These findings are key for questioning the continuity of colonial practices in the current corporate energy transition.

(5) According to the dimension of impacts on territory and commons, we found that there is biocultural destruction in all cases. The extensive infrastructure, as well as the extraction of minerals and materials that are necessary for photovoltaic and wind energy production, causes direct and indirect environmental footprints with implications for the continuation of economic, social, and cultural practices of impacted communities. In the isthmus of Tehuantepec, the Occupied Territories of Western Sahara, and the rural areas of Spain, the agricultural land transformed by the renewable energy megaprojects can no longer be used for farming, apart from some domestic animals that occasionally can continue to graze. In the Saami case, the reindeer cannot access the remaining fragments of pasture in between the infrastructure because they avoid the whole area due to fear. The common goods are destroyed in and around the energy production sites, while the benefits go to the energy producers and distant places where people are not affected by these impacts.

(6) According to the dimension of resistance and socio-territorial conflicts, we found that in all four case studies, there are various expressions of resistance from rural and Indigenous communities. Communities in resistance seek to protect their territories and their biocultural memory and practices in the face of a threat that they perceive as a continuation of colonial processes that they have suffered for centuries. This is particularly evident in the cases concerning Indigenous peoples whose identities, cultures, and values are strongly connected to their ancestral lands, such as in the isthmus of Tehuantepec in México, Saami territories in Norway and the occupied Saharawi territories of Western Sahara. Our findings also strongly contest the argument that resistance to renewable energy development is underpinned by NIMBY attitudes, as all four cases show that communities who are directly impacted by the projects engage in broader alliances and networks that express a strong structural critique of the corporate energy transition model.

Additionally, we identified some nuances and differences between the four case studies that we analysed and juxtaposed which we find important to elaborate further. For example, racialization as a key element in energy colonialism [47] is very clear in the three cases where the affected population belong to Indigenous peoples (isthmus of Tehuantepec, Saami territory in Norway, and occupied Saharawi territories of Western Sahara) and not in the Spanish context, where the subalternisation of the population of the rural regions due to race is less evident. The Moroccan model of energy colonialism in the case of the occupied Saharawi territories of Western Sahara can be considered an extreme case, constituting itself as a climate apartheid [51] or as a proposal for dominance through energy typical of the era of Trump in the US [66].

We use the same category of energy colonialism to analyse cases in the Global North and South which could be questioned because of the different geo-political placement of these

states. For example, the rural territories of Spain and the territory of the Saami people in Norway are located within the perimeter perceived as metropolises rather than colonies [47,90–93]. However, as shown in other studies, colonial mechanisms and effects may occur in rural areas of Europe [57,62] and on Indigenous Saami lands in northern Scandinavia [29,55,74]. Undoubtedly, the history and location of the four case studies in the global colonial order, as well as the dimension of inequalities and the types of violence impacted communities experience, reveal substantial differences. Resistance movements in the occupied Saharawi territories of Western Sahara and the isthmus of Tehuantepec in Mexico take place in contexts of high- and low-intensity war, threats, and brutal violence, which in most cases is sustained by the impunity of the perpetrators. However, our study shows that the corporate energy transition and the spatial configuration of the 21st century allow a democratic welfare state, such as Norway, to impose large-scale wind energy projects at the expense of the lands, livelihoods, and culture of the Saami—the only Indigenous people recognised in Europe. The domination of the Nordic states in Saami territories can be characterised by more “soft” and bureaucratic forms of “internal colonisation” [74] and “settler colonialism” [94], or “green colonialism” in the case of wind energy development that is legitimated by the current global climate crises [29,55]. In the case of Spain, energy colonialism is manifested through a huge deployment of renewable infrastructure that, only with the connection permits already granted, would mean producing four times more electricity than demanded in the country. Together with the ambitious interconnection plan, the motivation for exporting this surplus to central and northern Europe seems evident. This generates a continuity of colonial processes previously existing in rural territories of southern Europe, for example, through the production and export of agri-food commodities [95]. Although these processes do not affect Indigenous peoples, renewable energy megaprojects in peripheral and rural territories of Europe represent capitalist destruction with characteristics of internal colonialism [63,67].

7. Conclusions: From Energy Colonialism to Decolonial Energy Futures

The climate emergency and its necessary mitigation add a moral imperative to the discourse legitimating the energy transition, hides the costs and violence, especially inflicted on Indigenous peoples’ territories and racialised communities. Energy colonialism promotes a biased and paradoxical narrative intending to establish that renewable energy development is sustainable and benign, or in the worst case, the “least bad” way of coping with the climate crises, while, in fact, renewing the capitalist system based on extractivist destruction of biocultural commons of rural and Indigenous communities. In this article, we have shown that territories of the North, its peripheries, and the Global South are going through climate crises and corporate energy transitions in similar yet differentiated ways. However, colonial territorial ordering in the 21st century has not changed substantially on a global scale with respect to the historical dynamics of accumulation by dispossession [67]. In fact, asymmetric colonial relations deepen in satisfying the growing consumption of the metropolises of the Global North and its corporate energy transition. Extractivism and territorial dispossession in the Global South and the peripheries of the Global North intensify, despite the fact that the latter consumes much less energy than the elites to whom they supply [8,76]. Logically, these processes increase socio-territorial conflicts, provoking resistance from Indigenous and rural communities against colonial dispossession in a way that delays the deployment of renewable megaprojects. For example, the “Mareñas Renovables” and Gunaa Sicarú megaprojects on the isthmus of Tehuantepec (México) have been paralysed, the Fosen Vind megaproject in the Saami territory of Norway has been declared illegal by the Supreme Court, some transnational corporations have withdrawn from Western Sahara due to pressure from the Polisario, the Saharawi people and international organisations, and finally, dozens of projects have been cancelled in Spain due to citizen pressure.

As a response to this resistance, communities and movements have been accused of being selfish and of slowing down the corporate energy transition and climate change mitigation. However, we hold that these processes of resistance importantly serve to shed light on many

of the following problems generated by energy colonialism: (1) the excessive demand for land and the serious territorial impacts it generates; (2) the unsustainability of large-scale renewable infrastructure due to obvious bottlenecks concerning the availability of materials [8,16,19]; (3) their low energy return [10]; (4) their storage and transportation difficulties [8]; (5) their dependence on the fossil fuel regime [1]; (6) the violation of human and Indigenous rights, and undemocratic practices that impede citizens from influencing decisions.

Colonial dominations are not only constituted through asymmetric and exploitative power relations between the “Global North” and the “Global South” but also within Europe and European states. This article juxtaposes cases from both contexts considering energy colonialism and its six dimensions, recognising nuances and differences. Findings from all four cases, however, show that energy colonialism is a rapidly advancing and global phenomenon to which no territory is exempt.

There is a need to find alternatives to the corporate energy transition agenda that is based on technically inefficient energy colonialism and chimerical narratives that are impossible to fulfil. A grassroots energy transition is necessary [12,13], one that emerges from some key critical questions: Energy for whom? Energy for what? Energy how? A decolonial approach to the current climate and ecological crisis undoubtedly needs to be based on degrowth in the Global North by reducing consumption, as well as direct and indirect CO₂ emissions. This also includes a change towards low-impact technologies, both electric and, above all, non-electric [96], and an energy distribution that can eliminate inequality gaps between the peripheries and metropolises, and the Global South and the Global North. Finally, a just energy transition cannot be realised at the expense of Indigenous and human rights.

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