Green and climate colonialities: Evidence from Arctic extractivisms

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Abstract

This article examines 16 environmental conflicts across the Arctic that demonstrate resistance to both climate and green extractive colonialisms. Resistance movements counter green-labelled developments, such as a 350 km road project in Ambler (Alaska) needed for copper extraction; large-scale wind power industries on Sámi territories; palladium and platinum mega-projects on Dolgan, Evenks, and Sámi lands in the Russian North; as well as the biggest natural gas project in the world on the Yamalo-Nenets peninsula, promoted as "the cleanest" of all fossil fuels. The article contributes to the field of political ecology by arguing that past colonial ties mediated by fossil fuels are inextricably linked to the increase of green extractivism and climate colonialism in the Arctic, both of which are embedded in socio-ecological crises that deepen colonial relations. In most places these crises drive new extractivisms, but in others, they function as possible barriers, increasing risks and costs of extraction while not reducing the will to pursue extractivist endeavors.

Keywords: Green extractivism, climate colonialism, Arctic, environmental conflicts

Résumé

Cet article examine 16 cas de conflit à travers l'Arctique qui démontrent une résistance au colonialisme climatique et extractisme vert. Les mouvements de résistance s'opposent aux développements labellisés verts, comme un projet de route de 350 km à Ambler (Alaska) nécessaire à l'extraction du cuivre; des industries éoliennes à grande échelle sur les territoires Sámi; des mégaprojets de palladium et de platine sur les terres Dolgan, Evenks et Sámi dans le nord de la Russie; ainsi que le plus grand projet de gaz naturel au monde sur la péninsule de Yamalo-Nenets, présenté comme « le plus propre » de tous les combustibles fossiles. L'article contribue au domaine de l'écologie politique en affirmant que les liens coloniaux passés médiés par les combustibles fossiles sont inextricablement liés à l'augmentation de l'extractivisme et du colonialisme climatique dans l'Arctique, qui se développent tous les deux à travers des crises socio-écologiques qui approfondissent les relations coloniales. Dans la plupart des endroits, ces crises suscitent de nouveaux extractivismes, mais dans d'autres, elles fonctionnent comme des barrières potentielles, augmentant les risques et les coûts de l'extraction, sans pour autant réduire la dynamique extractiviste.

Mots-clés: Extractivisme vert, colonialisme du climat, Arctique, conflits environnementaux

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Resumen

Este artículo examina 16 casos en el Ártico que muestran resistencia tanto al colonialismo extractivo verde como al climático. Las resistencias contrarrestan los desarrollos de etiqueta verde, como por ejemplo proyecto vial de 350 km en Ambler, Alaska, necesario para la extracción de cobre; industrias de energía eólica a gran escala en territorios Sámi; megaproyectos de paladio y platino en tierras Dolgan, Evenki y Sámi en el norte de Rusia; así como el proyecto de gas natural más grande del mundo en la península de Yamalo-Nenets, promocionado como "el más limpio" de todos los combustibles fósiles. El artículo contribuye a la ecología política argumentando cómo las relaciones coloniales históricas a través de los combustibles fósiles son indivisibles del aumento extractivo y el colonialismo climático en el Ártico, cuales se expanden atreves de crisis socioambientales y profundamente crean relaciones coloniales. En la mayoría de los lugares, estas crisis impulsan nuevos extractivismos, pero en otros, funcionan como posibles barreras, aumentando los riesgos y los costes de la extracción, y aun así, sin reducir la voluntad extractivista.

Palabras claves: Extractivismo verde, Colonialismo climático, Ártico, Conflictos ambientales

1. Introduction

The Arctic region is home to 4 million people, including over one million members of more than forty Indigenous groups (The Arctic Council, 2015). Half of the population are reindeer herders, who have their own cultures, languages, and lifeways (Bladow, 2019; Kuokkanen, 2023). The Arctic contains large territories with past and present unequal global relations that are colonial in character. Several Arctic regions have been turned into key resource frontier sites for the extractive fossil fuel, metal mining, energy and forestry economies supported by key global North states, such as Norway, Sweden, the United States, Canada, Finland, Denmark, and the Russian Federation (Bennett, 2016; Keil, 2014). These Arctic extractivist frontiers have been resisted by local peoples, often Indigenous (Hanaček *et al.*, 2022; Nygren *et al.*, 2022). Resistance arises against fossil fuels, but there are also movements opposing green or low-carbon energy projects (Lassila, 2018; Össbo, 2023).

The Arctic is especially affected by the cascading impacts of the climate catastrophe, with its climate warming four times faster in comparison to other regions (Herrmann, 2015; IPCC, 2019). The climate crisis and its purported solutions currently play an increasing role in shaping Arctic life. Climate change is creating a discourse and actions leading to the expansion of green extractivism across the region. While risks are increasing, the Arctic is paradoxically perceived by many domestic and transnational companies as a central point for so-called new green energy solutions and mining of transition minerals (Duxbury, 2021; Hanaček *et al.*, 2022; Len, 2021). For example, western Greenland, where coastal glaciers have been melting, has been a target of new mining ventures seeking to offer minerals for the electrification of energy (Gronholt-Pedersen, 2022). While the climate crisis has been caused mostly by colonial actions and extractivist frontier expansion by the elites and corporations of the core areas of the capitalist world-ecology (Moore, 2016), the Arctic suffers excessively, and is furthermore cast as a "sacrifice zone" for extracting minerals and energy for supposed climate change solutions (Össbo, 2023). The crisis of the capitalist world-ecology, meaning a rush to dwindling natural resources, is fueling a desire to expand extractivist activities in the Arctic, creating a complex and perilous feedback loop, as Arctic extractivism can directly drive the breaching of global climate tipping points (Kröger, 2023). For example, flaring and increased atmospheric soot and dust from mining cause quicker melting and make ice sheets less reflective. An extractive push has increased in some parts of the region alongside worsening socio-climatic crises (Kröger, 2016a, 2018).

The Arctic remains a prime target for extractivism, notably for obtaining the commodities to produce "green" or low-carbon infrastructures instrumental in climate change mitigation policies (Kuokkanen, 2023). Moreover, the attack on Ukraine by Russia in February 2022, and the subsequent rush for alternative energy and raw material sources especially in the European Union, has led to major new expansion pushes, also in the Arctic (Kopra & Wall, 2022). The sanctions against Russia, and the worsening climatic-ecological conditions for extraction due to collapsing permafrost for example, have brought difficulties for the sector in some parts of Arctic Russia (Kröger, 2023). Visible resource conflicts and resistance movements are thus just the tip of the iceberg when it comes to local grievances due to environmental, cultural, and livelihood losses experienced by many Arctic peoples (Heininen *et al.*, 2022). This is a topic that can be explored more deeply through the

intertwined concepts of extractivism and colonialism, which examine the structural, historical level where extractivist hegemonies have been created for the Arctic.

Extractivism describes those activities that violently remove or extract large quantities of natural resources, causing major social and ecological damage (Acosta, 2011). The type, character and degree of extractivism vary depending on the sector, style of extraction, and context (Kröger, 2022). According to Gudynas (2021), extractivisms – in the plural, as there are many forms, such as mining, fossil fuels, commercial agriculture and forestry – entail breaking down existing local economies and their ecological relationships, with extracted products profiting national or international business classes or governments. Extractivisms, however, are not limited to biophysical overexploitation and transformation of the environment (Acosta, 2011; Kröger *et al.*, 2021; Svampa, 2019). They are based on onto-epistemic violence against Indigenous ways of relating to the Mother Earth (de la Cadena & Blaser, 2018). For example, replacing the latter with modernist assumptions and ideas where nature is seen as external and available, "free" of people or any constraints to exploit and appropriate in whatever manner, as fast as wanted. Therefore, Durante *et al.* (2021: 20) refer to extractivisms as "a particular way of thinking and the properties and practices organized towards the goal of maximizing benefit through extraction, which brings in its wake violence and destruction." Such forms of colonialism and extractivism, when part of capitalism, do not only mean imposing domination from foreign countries and corporations. Colonialism can also be imposed and continuously sustained internally within a nation state (Casanova, 1965; Churchill & LaDuke, 1992; Maldonado-Torres, 2016). Arctic extractivisms exist with several forms of colonial relations (Hanaček *et al.*, 2022).

The concept of climate colonialism refers to how glaciers melting, sea levels rising, and storms negatively affect those who have least contributed to the climate crisis, such as Indigenous peoples, ethnic minorities, and the impoverished (Landrum & Holland, 2020; Naykanchina, 2012). Systems supporting colonialisms, such as patriarchy, racism, Eurocentrism, and extractivism not only contribute to such conditions, but also further impose their own climate change perspectives and "solutions" (Sheller, 2023). Climate change is in part a result of colonial extractivism, and a greater discussion of this connection in the literature has long been necessary (Bhambra & Newell, 2023; Moore, 2016). For instance, projected green solutions and global climate interventions reproduce extractive understandings and dominant discourses, including viewing climate as merely a biophysical problem to be remedied with technologies, finance, and better economic modelling (DeBoom, 2022; Sultana, 2022). Apolitical approaches, with little to no acknowledgment of global colonial histories, also include adaptation, vulnerability, and mitigation strategies that continue to displace historically impoverished peoples from their land, disrupting plural ways of life and knowledge (Cameron, 2012). According to Gelderloos (2022) and Osborne & Carlson (2023), industrial expansion and present forms of pollution are intrinsically linked to the colonial state. The current climate crisis is the result of a state-corporate nexus responsible for atmospheric change. However, the mainstream crisis solution to this nexus is based on a carbon reduction 2030 goal, which is inherently linked to existing fossil fuel and green extractivist initiatives (*ibid*).

Put simply, both green extractivism and the climate crisis perpetuate logics of colonialism and imperialism through negative socio-environmental impacts, discursive (green) ignorance, climate crisis denial, and attempts to create domination and hegemony by extractivist forces – all these actions further driving the climate catastrophe (DeBoom, 2022; Dunlap & Riquito, 2023; Sultana, 2022; Voskoboynik & Andreucci, 2022). The term "necrocene," or the new era of death and extinction on Earth, refers to such denial and silencing of historical and present struggles against socio-ecological breakdown (Batalla, 2020; Clark, 2021; Mbembe, 2019). Therefore, the poly-crisis including climatic breakdowns should be seen primarily as a political state and a colonial condition (Sheller, 2023). Combined, green extractivism and climate crises form part of ongoing colonialities.

There is however resistance to extractivisms, challenging their long-lasting systemic and environmental oppression (Acosta, 2011; Escobar, 2011; Kröger, 2020; Scheidel et al., 2020; Svampa, 2016; Willow, 2016). Environmental conflicts exist around the appropriation of nature through efforts to preserve and protect ways of relating to nature (Jerez *et al.*, 2021). Connecting climate change and green extractivism with acts of colonialism allows us to see how such constant invasion of territory, exploitation, and industrial infrastructure in the name of saving the planet fit into the larger picture of oppression (Bhambra & Newell, 2023).

The Arctic is a colonized territory. It has been historically subjected to extractivism and additionally, it has been colonized by climate change (Fjellheim, 2023; Kuokkanen, 2023; Össbo, 2023; Stuhl, 2016). Most recently, "green" developments elicit additional opposition (Bruna, 2022; Willow, 2016). Bladow (2019) shows that in Northern Sweden, for example, with various kinds of protest going on including artistic expression, activists create global networks and links in their protests against extractivism, climate change, and other challenges to Sámi self-determination. Our article shows how green extractivisms and climate colonialisms are two sides of the same coin by analyzing sixteen socio-environmental conflicts across the Arctic, identified in the Global Atlas of Environmental Justice (ejatlas.org) (Hanaček *et al.*, 2022; Scheidel *et al.*, 2020; Temper *et al.*, 2015) and through a literature review. The article contributes to the political ecology of green transition by conceptualizing these processes as extractive, with climate colonialisms continuously affecting the region and its people.

2. Methods

The sixteen cases are assessed in terms of their particularities and similarities. We look at the impacts of, and reactions to, green extractivism and climate colonialism by different actors in the region. In particular, we focus on the types of green extractivisms that do not have a green outlook or color (e.g. avoiding trees and crops), mainly wind energy, transition metal mining, hydropower, and LNG. They are currently framed as "green" by their proponents, but they mostly belong to the old "brown economy" (Dunlap & Jakobsen, 2020; Wilson, 2013). They affect Indigenous and non-Indigenous peoples.

In our database are projects overlapping with the territories of Indigenous Peoples of the Arctic, which include the Sámi in northern Finland, Sweden, Norway, and Northwest Russia (the Kola peninsula), as well as the Nenets further east on the Yamal Peninsula. Moreover, Indigenous groups in the Russian Far East include the Chukchi (Chukchi peninsula of the Arctic Ocean), the Khanty (North-West Siberian Plain), as well as the Evenk and Dolgan on the Taymyr peninsula. The Indigenous peoples of Alaska are the Aleut, Yupik, and Inuit (Iñupiat). Inuit (Inuvialuit) and Kalaallit (Inuit) are Indigenous peoples of Greenland and Canada's Arctic, respectively. Of course, Indigenous peoples are heterogenous and their viewpoints on extractivist projects are diverse and varied. However, opposition to environmental damage and climate catastrophe has been central to Indigenous political discourses and actions (Jarratt-Snider & Nielsen, 2020; Osborne & Carlson, 2023; Whyte, 2017).

We use cases from the Global Atlas of Environmental Justice (EJAtlas). The EJAtlas is a widely used database for socio-environmental conflict analyses (Scheidel *et al.*, 2020, 2023; Temper et *al.*, 2015). As of April 2024, about 4,000 cases have been reported in the database by environmental activists and academics (Temper *et al.*, 2018). The database allows for examination of the commodities being extracted, actions related to extractivism across different geographical regions or even on global level, and social actor protests. Patterns and determinants of repression of environmental land defenders (Le Billon & Lujala, 2020), resistances against expansion of wind and solar mega-projects in Mexico (Avila *et al.*, 2022), or mapping the mining impacts of the energy transition in the Americas (Walter *et al.*, 2021) are recent publications using the database.

The selection of EJAtlas cases for this article was based on three criteria. The first was a location above the Arctic circle, 60º North. The second was the presence of wind industrial complexes, mining of "new" transition metals such as cobalt or rare earths, natural or liquified gas (LNG) or nuclear power projects. In such cases, governments, multinational corporations, and some scientists argue for gas extraction or nuclear power as sustainable sources of energy (Fedorova & Mitryaykina, 2021), but these claims are contested. The third criterion was the conflictive nature of such projects, and this may include street protests, media based activism, artistic expressions, or even blockade actions (Scheidel *et al.*, 2020). In addition, we reviewed published literature on the 16 cases, finding 30 texts interrelating axes of green extractivisms and climate colonialities (Annex 1).

One part of the data analysis consists of descriptive statistics from established categories in the EJAtlas and include commodities, affected actors, and specific protest by Indigenous groups (Scheidel *et al.*, 2020). The second part of the analysis consists of qualitative line-by-line coding methods which traced the interrelated axes of green extractivism, climate colonialism, Indigenous and non-Indigenous dimensions, as well as resistance to

such interrelated processes. The coding method assists in finding new unexplored interconnected processes of social and environmental transformations. In this case, the theoretical and analytical background presented in sections 3 and 4 served as a guideline in identifying such processes. The method is a reliable approach to comparative studies that trace common patterns of green extractivism, climate coloniality and resistance across different cases at the regional scale.

To allow for a broad regional overview, our data has some limitations in terms of ethnographic depth. The analysis is primarily based on secondary material, including academic case studies, newspaper articles, and reports. The sample is skewed towards the European and Russian part of the Arctic, rather than Canada, Greenland, and the US. Two cases under consideration were identified through a conversation with Sámi reindeer herders in Norway by the first author in November 2021. Another two cases were identified in collaboration with activists in Sweden and Russia in 2021 and 2023. Only EJAtlas text descriptions were used for those cases that could not be identified in the literature (n=3).

3. Theory: (Green)extractivisms, climate colonialisms, and environmental conflicts

Policymakers, mainly in the Global North, have been implementing new green growth strategies or Green New Deals. The narrative of sustainability and development behind these policies relies on ecological modernization ideology, whose proponents do not question growth (Wilson, 2013). According to them, these tactics promise more sustainable industrialization and downscaling of critical emissions (Chuffart *et al.*, 2021; Dunlap & Riquito, 2023; Zografos, 2022; Zografos & Robbins, 2020). Such strategies create opportunities for national and transnational companies to develop so-called sustainable mining for transition minerals, battery-grid-electrification complexes with major low carbon infrastructural expansion, large scale hydroelectricity projects, industrial wind power or large-scale solar power projects in the global South and North (Avila, 2018; Dunlap & Laratte, 2022; Zografos, 2022). However, these approaches focus on the addition of new sources of energy and materials, rather than their full substitution. Coal production continues to increase (Roy & Schaffartzik, 2021; York & Bell, 2019), not least in the Arctic (Savin *et al.*, 2021). Even nuclear energy and natural gas are seen as two of the solutions to meet net zero targets on the decarbonization journey (IEA, 2022; Kemfert *et al.*, 2022; Namaganda *et al.*, 2023). Nonetheless, nuclear or natural gas-powered projects also face opposition (Temper *et al.*, 2020).

The term "green extractivism" is related conceptually not only to studies (particularly after about 2015) that analyze conflicts around so-called transition minerals for electrification (Dunlap, 2017), but also to the critique of the so-called bioeconomy and conflicts and policies to replace fossil fuels, dating back to the 2000s (Gudynas & Acosta, 2011). Flex crops (such as sugar cane or palm oil) and 'flex trees' led to increased cultivation and extraction for agrofuels, feed, and fiber, facilitated by land grabbing. These "green" plantation expansions perpetuated social inequality and environmental destruction (Borras *et al.*, 2016; Dorn *et al.*, 2022; Kröger, 2011, 2016b). We consider green extractivism as a subset of extractivism, with those activities under the green economy including more than the bioeconomy (Levidow, 2014). Hence, green extractivism does not simply relate to forests and agriculture. The current conversation about green extractivism and the climate crisis focuses on windfarms, solar, battery complexes, and mining the metals needed for all of these. Thus, extractivism manifests itself in many forms and degrees, with diverse effects and consequences (Kröger, 2022a: 47). Green extractivism fuels capitalist expansion through so-called sustainable development policies, with implications for international and national legal and political frameworks. These policies jeopardize social, ecological, and political realities, and create "green sacrifice zones" in which certain lives exposed to contamination are regarded as having less value than others (Mejia-Muñoz & Babidge, 2023; Zografos, 2022).

Green extractivism arises in the name of climate change mitigation or green economic "development" (Dunlap & Riquito, 2023). Green extractivism is therefore a process, and in addition to flex crops, may include bioplastics, carbon offsets (e.g. REDD+) (Kröger, 2016b), transition mineral mining and related infrastructure and transportation services (Brock & Dunlap, 2018; Bruna, 2022). The term "green" added to extractivism has, however, typically little to do with sustainability and solutions to the climate crisis (Zografos, 2022). Green extractivism often causes interrelated socio-environmental pressures through overexploitation of socio-ecological territories, including their culture, spirituality, lifeways, food and customs, and social relations in

general (Andreucci & Zografos, 2022; Brock & Dunlap, 2018; Jerez *et al.,* 2021). Thus, extractive "green" processes have typically neocolonialist characteristics in the Global South (Acosta, 2011; Hughes *et al.*, 2023; Jerez *et al.,* 2021; Svampa, 2019). They also appear within the immediate semi-peripheries of the Global North, such as the Arctic (Hanaček *et al.,* 2022).

In biophysical terms, extractivist economies depend on the extraction of energy and materials, and generate waste (Georgescu-Roegen, 1971; Martinez-Alier, 2022). In social terms, control, access, and use of natural resources, disproportionate toxic pollution, and climate impacts are typically part of this process. There are also intersectional processes of "Othering", violence, and death brought about by the creation and abuse of social divisions, along the lines of gender, class, race, sexual orientation, caste, and cultures (Andreucci & Zografos, 2022; Batalla, 2020; Pulido & De Lara, 2018; Tran & Hanaček, 2023). We identify such processes in varieties of extractivism aiming to achieve a carbon-free future, and to slow the climate emergency "ticking clock" (Bruna, 2022; Clark, 2021).

Activists and academics have highlighted how "green" opportunities are not a solution to this crisis, but rather a continuation of extractivism. Green extractivism, despite its name, still relies on intense material extraction (Andreucci & Zografos, 2022; Dunlap, 2018, 2021; Jerez *et al.,* 2021; Voskoboynik & Andreucci, 2022). In theory it promotes sustainable development and prosperity for all, but in practice turns into intolerable levels of hardship for Indigenous Peoples, fisher, and peasant communities (Akbulut *et al.,* 2019). In what follows, we argue that the extension of green sacrifice zones, as well as the new consensus surrounding the decarbonization path, can be seen as an expansion of commodity and waste frontiers (Martinez-Alier, 2023), building on historical patterns of colonialism and extractivism.

Del Bene and colleagues (2018) argued that "renewable" energy hydropower projects are associated with the oppression of those who oppose them though protest, undermining diverse epistemologies and world views. Meanwhile, industrial wind and solar power development projects shape uneven land conflicts (Avila *et al.,* 2022), occasionally involving occupation and militarization of local territories and displacement of populations. In some documented instances there have been assassinations of activists (Dunlap, 2018; Dunlap & Fairhead, 2014; Fanari, 2021; Tran & Hanaček, 2023).

The mining of green transition minerals have also brought environmental, social, and economic harms (Jerez *et al.,* 2021; Voskoboynik & Andreucci, 2022). Minerals and metals identified as critical to the development of four key green energy technologies—solar, wind, electric vehicles and energy storage—are listed by Church and Crawford (2020).[2] They include aluminum, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, molybdenum, nickel, rare earths, selenium, palladium, silicon, silver, zinc, etc. Some are newer transition metals (Dunlap & Laratte, 2022). The rush for rare earths includes various attempts to extract the minerals from the ocean floor or submarine hydrothermal deposits (Glasby, 2002; Levin *et al.,* 2020). Smelters and tailings continue to expose local communities to toxicity (Dunlap & Jakobsen, 2020). We find empirical evidence across Latin America, South-East Asia, Eastern Europe, and the African continent (Núñez *et al.,* 2022; Siti *et al.,* 2022; Sovacool *et al.,* 2020; Zografos, 2022).

As the ice across the Arctic recedes, infrastructure-related projects are on the rise (Hildyard & Sol, 2017). For example, the Polar Silk Road, part of China's Belt and Road Initiative, involves expanding local economic partnerships through investments in major infrastructure, nuclear powered icebreakers, and other extractive projects along the Northern Sea Route (Tillman *et al.,* 2018).[3] The start of the war in Ukraine saw an increase in trade along the route (Silk Road Briefing, 2023). This Northeast Passage across Russian Arctic waters is currently usable only for a few months, and requires suitable vessels due to floating ice (Kröger, 2023). In the next decade however, even a "low-carbon" global climate model predicts warming and melting of the ice (Kim *et al.,* 2023). The route could reduce by 40% the distance between Northwest-European ports and the Far East, compared to the Suez Canal route (Kovalenko *et al.,* 2018). There is also a railroad in the planning stage to link southern Finland to the Arctic Ocean, passing through reindeer herding territories (Junka-Aikio, 2023). But

[2] See also Melcher (2024).

[3] China has announced the Belt and Road will involve green low-carbon energy, transport, and mining to "make a positive contribution to addressing climate change" (China Dialogue, 2022).

what of the "gradual elimination" of local cultures and livelihoods in these necropolitical "death-dealing assemblages" (Truscello 2020: 6; Dunlap & Laratte, 2022)?

Climate colonialism is also based on this logic of necropolitics (DeBoom, 2022; Mahony & Endfield, 2018; Sultana, 2022). Imperial and colonial processes shape climate questions, and have been widely recognized in the literature (Dunlap, 2020; Kallianos, Dunlap & Dalakoglou, 2022). Meanwhile, erasure of Indigenous knowledge, imperial climate infrastructure visions, and extraction are the most common features shaping the socio-environmental and political characteristics of a place (Locher & Fressoz, 2012; Mercer & Simpson, 2023). The current climate crisis highlights the importance of understanding colonialism (coloniality) and reacting to the undesirable situation that perpetuates it through "green" extractivism (Bhambra & Newell, 2023; Dorn *et al.*, 2022). A recent publication by Vela Almeida *et al.* (2023) indicates that the European Green New Deal not only provides opportunities for greater profit, but also buttresses the imperial power structure, leaving little space for anti-colonial ecologies. Altogether, ongoing developments in the Arctic region, such as gas, nuclear, wind, hydropower and the new transition mineral rush in the wake of climate change (Boersma & Losz, 2018; Össbo, 2023), as well as resistance to such projects (Hanaček *et al.*, 2022) illustrate climate colonialities and "green" extractivisms, from old to new (Gritsenko, 2018; Sultana, 2022).

Academics including geographers, journalists, activists, Indigenous and non-Indigenous people, as well as Knowledge Keepers in the Arctic, have increasingly agreed that climate change and the low-carbon transition projects reproduce colonial attitudes. Such attitudes also impose non-stop structural blindness about ontological, epistemological, and axiological struggles on the ground (Cameron, 2012; Lassila, 2020; Normann, 2021).

> The green shift is nothing more than a continued extraction of resources [...] The difference is that resource utilization has been given a nice color, green; we call it 'green colonization.' We were first colonized by people from outside our lands, then colonized by climate change itself, driven by people from outside our lands, and are now being colonized a third time by responses to climate change. (Gunn-Britt Retter, head of the Arctic & Environment Unit, Sámi Council). Source: *Arctic Today* Newspaper (2021).

In this context, significant colonial dimensions of climate change in the Arctic are massive expansion of the extractive, industrial, and shipping sectors (Cameron, 2012), including those emerging from "green" sustainable development promotions (Gritsenko, 2018; Len, 2021). Acknowledging not only colonial history and ongoing colonial effects of such extractive projects but also resistances against multiple imperial and colonial "shades of green" (Carminero-Santangelo, 2014), are important for critical examination of these interrelated dynamics. Huggan (2016) explains that colonial aspects in the Arctic context continue through economic, geopolitical, epistemic dominance by the nation states and transnational companies. These aspects are incorporated into ideologies of modernization, green development and progress that rely on Arctic resources. Colonialism, thus, continues to shape debates and developments in the fast changing Arctic today, as well as informing contested visions for its future (Sörlin *et al.*, 2022).

4. Political economies of (green) extractivisms and colonialities in the Arctic

The colonization of Greenland by Denmark until 1953 is an example of external colonialism, when it was integrated as a county into the Danish state (Avango *et al.*, 2014). However, the colonization of Sápmi region by Norway, Finland, Sweden, and the Russian Federation was an example of internal colonialism under different nation states (Reeploeg, 2019). Likewise, the Russian Far North-East also had internal colonization (Etkind, 2015). In both the United States and Canadian contexts, Churchill (1993) and Churchill & LaDuke (1992) argue that within the resulting settler-states' claimed territories, the colonial powers continue to control Indigenous peoples long after the first arrival of the European invaders. Iceland, however, is described as an "unsettled" land claimed by first Scandinavians in the 11th century (Smith, 1995). It is exception that affirms the colonizing rule of most Arctic regions.

During the Soviet era, the Russian Arctic underwent vast industrialization and extractivist undertakings, such as heavy metal mining and construction of smelters, with highly controversial political, social, and national economic reforms (Bartels & Bartels, 2006). Known as the Soviet colonialism of the Arctic, Central Asia, and South Siberia (Caroe, 1953), an imposed system of domination by "Great Russians" took place over all other Indigenous and non-Indigenous Nations in the Union. This included use of the official Russian language and Cyrillic alphabet, displacement of Indigenous and other peasantry from their ancestral lands, forced collectivization and labor in mines, heavy metallurgy, a nuclear industry, and military occupation (Aspaturian, 1972; Schmid, 2011). Today, the development of the Russian Arctic is highly focused on hydrocarbons, metal mining, and nuclear powered infrastructure with the aim of expanding regional and international shipping routes to both Asia and Europe (Soroka, 2016). The Russian Federation's gas reserves come from the Yamal peninsula, the Indigenous Nenets' homeland. Although based on heavy extraction, the project is promoted as the cleanest in the world, "with 30% below the sector average in terms of emission intensity given its high fuel efficiency" (TotalEnergies, 2019). Carriers along the Northern Sea Route, which run on LNG, are also promoted as "the cleanest maritime fuel" (*ibid*).

In the northwest part of Russia, the Kola peninsula, two green extractive projects are inherently related to the modernization of the Monchegorsk nickel and copper refinery (Venovcevs, 2021; EJAtlas, 2020a). For decades, environmentalists have protested the air pollution from the smelter on the peninsula, and the case even became a transnational border pollution issue between Finland, Norway, and the Russian Federation itself. Currently, development of Monchegorsk takes place through "sustainable" mining and new technologies. The first green project is the Kolmozero field, mining lithium for production of batteries in electric cars and the like (Pripachkin *et al.*, 2022; EJAtlas, 2022a). Indigenous Peoples and supporters oppose the project as it will further damage their homelands, already affected by mining and heavy industrial processing in the region. The second case is the Fyodorova Tundra platinum and palladium mining project on Sámi ancient burial places and reindeer pastures (EJAtlas, 2022b). In addition to the mine, "The 30 kilometers of dirt road leading to the Fyodorova Tundra will need to be renovated, as well as the 80 kilometers of high-voltage electrical lines" (The Ministry for the Development of the Russian Far East and Arctic, n.d.). The Sámi defend lands, rivers, and cultural traditions related to the place. Still, the lands have been put under (green) Arctic development plans by the government. Explaining the whole situation on the Kola peninsula and elsewhere across Sapmí, Sámi people explain how development projects, green or otherwise, are oppressive, exploitative, and intrinsically colonial.

Similarly, the palladium, platinum, and nickel project of Russian Platinum and Norilsk Nickel is taking place in Taymyr, Siberia (EJAtlas, 2021a). In their efforts to raise concerns about the project, activists travelled more than 4,000 kilometers to Switzerland to call investors' attention to long-lasting historical consequences related to the state-owned Norilsk Nickel company on their lands. However, much is at stake for Russia because these two palladium/platinum projects (Kola and Taymyr) make the country perhaps the biggest producer of these rare metals in the world. In an open letter to the company Tesla, Indigenous activists across the Russian Arctic expressed their worries regarding new nickel mining on their lands, asking the company to pay attention to the historical environmental degradation of their territories (Voskoboynik & Farrugia, 2022; EJAtlas, 2020b). The activists also called Tesla to stop purchasing commodities from Russian Norilsk Nickel until the Russian company accepts responsibility for socio-environmental damage, including a massive oil spill in the Arctic that took place in June 2020. The spill is related to permafrost thaw and eroding infrastructure (Hjort *et al.*, 2018, 2022). As a result of the initiative, more than 70 Indigenous, climate, and mining justice organizations around the world, have signed the letter urging Tesla to reconsider colonial and extractive relations in the Arctic through these and other proposed mines (Indigenous Russia, 2020; Picture 1 a).

Norway ratified the International Labor Organization Convention No. 169 on the Rights of Indigenous and Tribal Peoples (ILO 169) in 1990, following the Alta protests *"La elva leve!"* [Let the river live!] against a hydropower project. Despite a wave of protests and blockades, and a hunger strike from 1968 until 1982, the project was finalized in 1987. Nonetheless, the protests had a significant influence on legislation, and the politics of Sámi rights, and hence anti-colonial struggles in the country (Sand, 2022) (Picture 1 b). Yet Norway relies on a political economy of oil and gas production in the Arctic and beyond (Kristoffersen & Dale, 2014). In

Norway as elsewhere in the Arctic, the legal structures of Indigenous self-determination or rights, whether respected or not, have an influence on the forms of resistance.

More recently, Lofoten, Vesterålen and Senja (LoVeSe) have been targeted by the Norwegian state-corporate complex to expand already existing oil and gas extraction. As of December 2022, 93 fields were in production: 70 in the North Sea, 21 in the Norwegian Sea and two in the Barents Sea. The ambitious plan to expand extraction across the Barents Sea has not gone unchallenged by People's Action for a petroleum-free LoVeSe[4], fisher communities, environmental NGOs, and green political party members. Their primary concerns are ontological: preserving their identity, sense of place, livelihood, and also climate change impacts (Kristoffersen & Dale, 2014). There has been a moratorium on geophysical exploration in the Lofoten islands since the 2010s. Nevertheless, with a forward-looking perspective to low carbon transition, Norway has a green-labeled proposal, which includes manganese extraction from the Arctic Ocean floor (Bryan & Milne, 2023; EJAtlas, 2023a). Scientists and environmental activists explain, however, that seabed environments are not yet fully studied, and seabed mining will probably harm ocean habitats irreversibly. Still, the Norwegian government is pushing the project forward.

Similarly, Fosen's onshore mega wind projects in Norway (EJAtlas, 2021b) particularly harm Sámi Indigenous reindeer herders, because they are built on their traditional, culturally, and environmentally important pastures. Normann (2021) interprets wind power extraction on Sámi lands in Norway as a continuity of (green) colonial relations. These wind projects were nullified according to the country's Supreme court, which ruled that "In those States in which ethnic, religious, or linguistic minorities live they should not be denied the right to enjoy their own culture" (The Supreme Court of Norway, 2021). Three years after the verdict, the installations remain on Sámi lands.

The Swedish state still controls large areas of the Sápmi region within its borders (Össbo, 2023). The Swedish internal colonial economy has always had extensive mining activities in the region (Reeploeg, 2019). Today, both new and old mine sites serve as a reminder of this extractivist history (EJAtlas, 2020c). One of many is related to iron ore to be extracted from Sámi lands, the Gállok/Kallak project (Bladow, 2019; Spangen *et al.*, 2015). The Luleå River in this area is already dammed. The project would bring two types of extractivism together, hydroelectricity and iron ore mining (Öhman, 2019). Strong opposition by the Sámi people and environmental activist supporters prevented the start of the project, with police interventions to suppress protests in 2013 and several arrests (EJAtlas, 2020c; Picture 1 d).

The Finnish political economy, especially in rural areas, including the North where reindeer herders' livelihoods are based on healthy forests, has an industrial forestry system based on clearcutting for the production of pulp, paper, and wood energy (Holz, 2023; Kellokumpu, 2022; Kröger, 2016b; Kröger & Raitio, 2017). Most old-growth forests have been clearcut, with severe damage to Sámi ways of life, and the pressure on Arctic forests is increasing due to new "bioeconomy" focused growth strategies, including a new huge pulp mill in Kemi developed by the Metsä Group, which is also damaging the slow-growing Arctic tundra (Holz, 2023). Since 2005, there has been a massive increase in mining projects, with foreign investors heavily involved and negatively affecting local populations (Kröger, 2016b; Lassila, 2020). In Inari, for example, there is a strong reaction against copper-nickel mining by the Swedish company Arctic Minerals (EJAtlas, 2022c). Sámi peoples, the Council, and the local government have joined forces to explain why the mining is damaging. Historical resistance has kept the industry away on many occasions. Most recently, under green development claims by the company since 2021, people in Inari have restated that it is illegal to establish mines in municipalities without support from the local council/government or the local residents. Although mining has not yet started, it is a constant threat. Mining or forestry both involve extractive attitudes, structures, practices, and policies. They continue to assimilate, erode, and may ultimately eliminate the Sámi (Junka-Aikio, 2023). The promotion of Sámi lands as one of Europe's domestic supply of critical raw materials perpetuates such attitudes (see European Comission, 2021; Fjellheim, 2023; The Greens/EFA, 2023).

[4] https://folkeaksjonen.no/content/english

Greenland has had less extractivism in comparison with other colonized territories (Sörlin *et al.*, 2022). However, its independence struggles with Denmark have revolved largely around some Greenland government plans to support uranium mining, with opposition from Denmark and the EU (Jacobsen, 2014). Denmark has also pushed extractivism in different ways, and political negotiations around the US aerospace and military installations, for example at Thule, have been complex. Two cases are the lead-zinc Black Angel Mine (Sörlin *et al*., 2022) and radioactive waste stored in Camp Century, an abandoned Cold War-era US military camp (Colgan *et al.*, 2016). Today, bans are in place for uranium and thorium mining, following demonstrations and public consultations (Bjørst *et al.*, 2022). But the country is open to developing its economy with green transition mining in "an environmentally and socially responsible way" (Wilson Center, 2022). This is part of an agenda to pursue economic independence from the Kingdom of Denmark; however, over 30 mega-mines would be needed to attain the same amount of revenue that Denmark is currently contributing to the Greenland budget yearly (around US$500 million) (van Halm, n.d.). This makes the geopolitical use of mining futile, since extractivism and outside influence would likely be strengthened, not weakened by *de jure* but not *de facto* independence. Nonetheless, most Greenlanders are not opposed to mining. Furthermore, Bluejay Mining CEO Bo Moller Stensgaard stated for CNN that, "Climate changes overall have made exploration and mining in Greenland easier and more accessible" (René Marsh for CNN, 2020). In northern Greenland, Bluejay owns the titanium ilmenite project at Dundas (EJAtlas, 2021c). It is not only ilmenite that companies are trying to exploit. For instance, they are "looking for a deposit that will be one of the largest nickel and cobalt deposit in the world," Kurt House, CEO of Kobold Metals stated (René Marsh for CNN, 2020).

Imperialist extractivisms in Alaska and around the Bering Strait began around 1740 under Russian rule, with the fur and wild animal trade that drove depletions and extinctions of entire species (such as Hydrodamalis gigas, Steller's sea cow, up to 8m in length, extinct after just 27 years of their rule) and the exploitation of Indigenous peoples. The history of Alaska also involves British and later American settler colonialisms since the territory was sold by Russia in 1867 (Gibson, 1980; Hixon, 2013). Alaska's history is reflected in land ownership patterns, but also in the salmon industry. There was a military boom from 1940-1960; the discovery of the Prudhoe Bay oil field discovery in 1968; pipelines built in 1970s, and the State oil-revenue boom in the 1980s (Foster, 2006).

More recently, Kivalina in Alaska, an island severely threatened by sea levels, has become an emblematic climate justice court case (EJAtlas, 2020c). The Iñupiat Indigenous peoples brought Federal public nuisance claims against 24 fossil fuel giants such as Chevron, ConocoPhillips, ExxonMobil, Peabody Energy and Shell (see Johnson, 2013). Their main argument is that corporate contributions to global warming through their emissions of carbon dioxide and other greenhouse gases are causing damaging coastal storms and erosion that continuously swallows their land, disturbs fishing practices, and access rights to their fast disappearing ancestral territories. It is estimated the island will be completely submerged by 2025. Although the case was dismissed, the inhabitants of Kivalina appealed to the United Nations in January 2020, together with other peoples in Louisiana also threatened by climate change (EJAtlas, 2020d).

In yet another part of the Alaskan territory, a private 350-kilometer-long road project named Ambler has been pursued by the Alaska Industrial Development and Export Authority (Picture 1 c). Ambler is a Trump-era "development" project currently being challenged in court, and is under administrative review by the Biden administration. Pro-project actors argue that the Ambler Mining District, known for decades to be rich in copper, magnesium, and gold cannot be fully developed unless there is extensive access to the deposits (EJAtlas, 2021d). Indigenous and non-Indigenous peoples formed the Brooks Range Coalition (BRC) and have brought to attention potential impacts to caribou migration from the road infrastructure[5]. Mine workers, however, have partnered with Ambler Metals company behind the project, to safeguard their jobs (EJAtlas, 2023b). Finally, on April 19, 2024, the US Interior Department refused the Ambler Road proposal.

Settler-colonial extractivisms persist throughout Canada, which has an internal colonial structure, manifested in massive hydroelectric developments, clearcut logging, mining, tar sands exploitation, gas

[5] https://www.nytimes.com/2023/10/13/climate/alaska-ambler-road-mine.html

production, and big infrastructure (Gobby *et al.*, 2021; Willow, 2016). For instance, Baffin Island in the ancestral northern territory of Nunavut, has iron-ore, silver, lead, and zinc, exploited in the Mary River Mine by both national and transnational companies (EJAtlas, 2021f). Increasing volumes of iron ore output per year require new infrastructure. Current mining has already had enormous environmental and socio-cultural impacts, including negative effects on marine mammals, leading to food insecurity of the Inuit peoples (Taarup-Esbensen & Gudmestad, 2021). The expansion of the mine and shipping load would, furthermore, worsen the harvesting, cultural integrity, and land use options of the population. To protect their territory, a group of Inuit hunters blockaded the expansion of the mine. During the protest, there was also concern raised surrounding the construction of a proposed 110 kilometer long railway, and again, the potential impact it could have on caribou populations as well as on sensitive permafrost hunting grounds. Given the negotiation process and because one part of the local population supported the proposal, the project is going forward (EJAtlas 2021f).

Picture 1: (a) Resistance to green extractivism #AnswerUsMusk social media campaign rising awareness about historical pollution of the Arctic related to Norilsk Nickel company with whom Tesla company is associated. © Collage by Vera Shcherbina *via* Indigenous Russia; (b) The Alta protest, *La elva leve!* © Foto: Jørn Thomassen/Verdensarvsenter for bergkunst, Alta Museum, Norway; (c) Ambler Road proposal. © Map by Trilogy Metals Inc., *"dedicated to supplying the world with metals critical for a greener future;"* (d) Resistance to Gállok/Kallak iron mine and hydropower, Sweden (2006): "Decolonized zone." © https://kolonierna.se/

5. Results and discussion: How do green extractivisms and climate colonialities take shape in the Arctic region?

Green extractivisms and climate colonialities are intertwined with past oil exploitation, uranium and iron mining, LNG extraction, and the effects of climate change in the Arctic area (Figure 1). Colonial consequences affect land and socio-ecological disruptions, which in turn trigger resistance (Ford *et al.*, 2021; Holz, 2023). Similar findings showing resistance by Indigenous peoples, reindeer herders, and other supporters against these activities have been reported in the previous work of Hanaček *et al.* (2022) as well as Naykanchina (2012). The

16 cases, as explained below, involve indivisible sequences of historical and contemporary struggles against extractivism and climate coloniality in the Arctic, imposed by different nation-states. Counter-extractivist struggles, both local and worldwide, are a call for real transformations towards sustainability and social equity (Scheidel *et al.*, 2018).

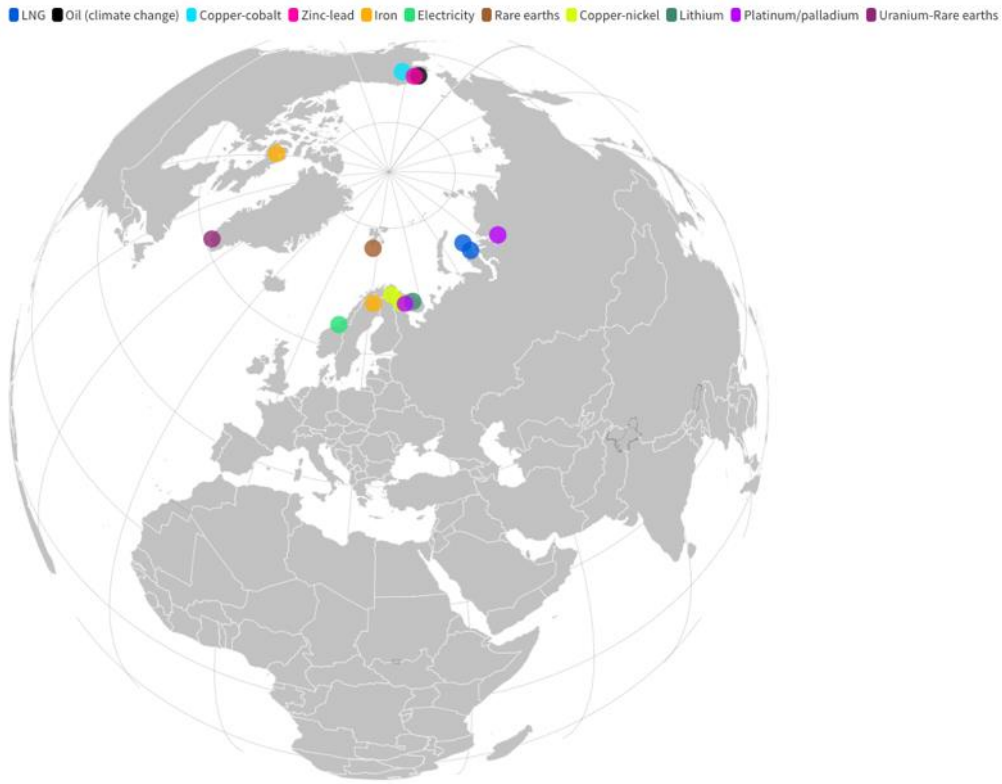

Figure 1: Commodities involved in socio-environmental conflicts related to (green) extractivisms and climate colonialities in the Arctic region. N = 16.

The sixteen cases reveal four significant tendencies surrounding green extractivisms and climate colonialities in the Arctic (Figure 2). The first is a *positive solution framing of new Arctic extraction by its proponents*, in which discourses, promotions, technological innovation, as well as support from nation states and multinational companies, are performed in an environmentally responsible manner. This includes greening the full supply chain including raw material extraction, processing and production, waste management, transport, and distribution (Garbis *et al.*, 2023). The trend also involves specific references to the Nordic context, where oil and mining activities have (supposedly) always been committed to environmental and socio-economic improvements (Egerman *et al.*, 2003).

In Russia, greening the supply chain is associated with the modernization of industrial (Soviet) facilities, which would allow for further development of emerging energy transition materials, LNG and nuclear power utility in the supply chain, and overall global trade (Venovcevs, 2021; Wu *et al.*, 2021). In the Canadian and

the US parts of the Arctic, the need for additional infrastructure or expansion of existing mines (copper, iron) are justified and promoted because of the growing demand for energy transition metals and infrastructure. In Greenland, uranium and rare earths, both of which are radioactive, are promoted as helpful for combating climate change and for independence. These findings are in line with the work of Össbo (2023), who proposes that green colonialism blends past expropriation with contemporary deprivation. Historically contested energy and mining projects have previously been discussed as part of the contemporary green transition and "sacrifice zones" in the Arctic. We connect such processes to the climate emergency affecting Arctic peoples. The region's extractivism-based development has resulted in a scenario in which the interests of the fuel, mining, and now green energy complexes are framed as "required" to deliver a "solution" to climate change (Dorn *et al.*, 2022; Gelderloos, 2022; Voskoboynik & Andreucci, 2022). Arctic Indigenous peoples regard climate change problems and solutions to it as a continuation of colonialism, with strong ties between capitalism and extractivisms' past and current acts (Callison, 2014; Whyte, 2017).

The second tendency is that *Arctic socio-environmental and atmospheric violence becoming inextricably linked* (DeBoom, 2022; Hughes *et al.*, 2023), forming colonial atmospheres through a variety of political, social, economic, and environmental means (Mahony & Endfield, 2018; Osborne & Carlson, 2023). In this (neo)colonial climate-led resource frontier expansion, non- and anti-extractivist forms of knowledge and ways of being are systemically ignored (Kröger, 2022), and serve as a foundation for global green extractivism, increased energy use, and the destruction of human and other-than-human nature (Sheller, 2023; Sultana, 2022). We came across several Arctic "sacrifice zones" that can be compared to other studies explaining climate-induced crises of green accumulation and hegemonic profiteering in colonized countries and regions (Andreucci *et al.*, 2023; DeBoom, 2022; Dunlap, 2023). Here, epistemic, ontological, infrastructural, and atmospheric violence are central to colonial-extractivism(s).

The third tendency is the *increased harm done to Arctic Indigenous Peoples' territory, cultures, knowledge, practices, health, and lifeways* (Figure 3 a). Fifteen out of the sixteen cases reported these life and death concerns (Batalla, 2020; Kuokkanen, 2023). The Sámi, Iupiat, Nenets, Doglan, Evenki, Dena, Entsy, Inuvialuit, and Nganasan are Indigenous communities actively resisting them (Figure 3 b). Their primary concern is the loss of reindeer herding or caribou migration and survival, along with their knowledge, practices, landscapes, sacred sites, and overall human-nature relationships. This *cultural revival* throughout the examples analyzed reveals that reindeer herding is essential to Sámi and Nenets culture. Normann (2021) explains that shared memories, interactions with other communities, and collective activities are effective modes of mobilization against green colonialism, which continue to damage reindeer herders and other Arctic peoples. Thus, the continuation of historical extractivist colonial pressures intensifies through the green shift, territorial invasion, and socio-cultural and environmental erasure (Clark, 2021; Kuokkanen, 2023). Access to hunting, fishing, whaling, and sealing is also a source of contention. As Inuvialuit hunters and community members of Baffin Island stated "[…it is] our right to eat, and our right to continue to live off the land as we choose, as we have always done" (Bennett, 2021). Yet, the long history of anti-mining and anti-oil struggles has had a significant influence on both the physical, the emotional, and mental wellbeing of the Arctic peoples (Bjørst *et al.*, 2022). Extractivisms cause emotional anguish to locals by turning highly political issues into apolitical and technical questions (*ibid*). Corporate-state nexuses also try to dissuade people from radical resistance, but instead to express their views by colonial and often Eurocentric forms of private negotiation, participating in certification, stakeholder dialogue and other non-contentious politics, such as sustainable mining roundtables or even state consultation and corporate dialogue in green colonial contexts (Fjellheim, 2023). Dunlap & Riquito (2023) discuss in depth the psycho-social damage that the pro-mining corporate-government nexuses contribute to in green extractivism attempts, such as lithium mining.

Figure 2: Interrelated axes of green extractivisms (blue) and climate colonialities (orange), and their resistance (pink), involving Indigenous (grey) and non-Indigenous (yellow) dimensions across the Arctic. Analysis is based on qualitative line by line coding of published literature (n= 30).

The fourth tendency is *rising resistance to Arctic extractivisms*. Impacts of climate change have long influenced mobilization of socio-environmental conflicts across the Arctic (Balzer, 2015; Fedorova & Mitryaykina, 2021; Magomedov, 2019). In fact, the links between land and nature, livelihoods, and survival and resistance are all intertwined with Arctic climate challenges. Concerns over water, land, culture, hazardous waste, and climate change have surfaced as key elements in the anti-colonial efforts in the Arctic (Figure 2). In the Arctic, the resistance revolves around historical and green extractivisms in particular. This is because green extractivisms perpetuate climate colonialities and establish an uninterrupted axis of false climate solutions, exacerbating an already worrisome situation on Arctic changing territories and climates. Increasingly, anti-colonial movements, in the broad sense, reshape extractivist trajectories. Opposition does this by similar strategies to those used in other contexts, including for example collective resistance, media activism, and blockade actions against extractive colonialities that devastate the people and the Earth (Dunlap & Jakobsen, 2020; Kröger, 2020).

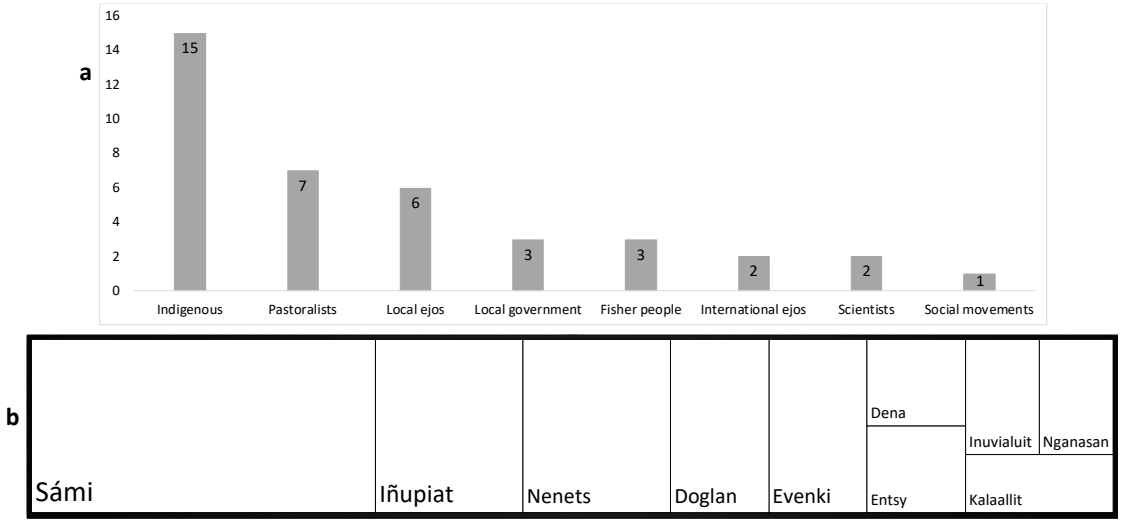

Figure 3: Actors (a) and specific Indigenous groups (b) involved in conflicts. N = 16. Analysis is based on quantitative statistics of non-mutually exclusive EJAtlas variables.

Finally, we also observed non-Indigenous dimensions, but these were so limited that they cannot be called a tendency (Figure 2). Lassila (2020) previously reported on non-Indigenous dimensions in green mining disputes (i.e., the Sakatti project in Sodankylä, Finland) with ramifications for Finnish reindeer herders and disagreement over the mine's proximity to a conservation area. Although an important factor for better understanding of how green extractivism develops and the forms it takes across the region, we do not observe such a pattern in our dataset. The cases we observed included disagreements by non-Indigenous people over seabed mining and potentially hazardous waste leaking into the ocean between mining and large-scale fishing industries. Scientists, international, and national environmental justice organisations (EJOs) typically mobilise in such situations (Figure 3 a). Instead of forming their own resistance to extractivism, these actors typically offer support for Indigenous struggles.

6. Conclusion

This article analyzed sixteen Arctic historical and contemporary "green" and "brown" extractivist cases identified in the Global Atlas of Environmental Justice, and existing literature. The results have important implications for addressing the climate-ecological crisis and the proposed response through (green) extractivisms. We found that climate colonialities and extractivisms closely intertwine, in multiple ways and over history. Green extractive tendencies in the Arctic region are closely tied to ongoing colonial legacies. These extractivism-based colonialisms, whether from East or West, internal or external, "green" or conventional, can result in the expansion of oppressive necropolitical systems.

Climate change has been globally caused by the historical exploitation of resources, peoples, and cultures, which are core elements of colonial relations in the Arctic and elsewhere (DeBoom, 2022; Sultana, 2022; Whyte, 2017). Especially in fragile and rapidly changing Arctic environments, where climatic-ecological disruptions are making extraction more difficult but also opening up new areas and resources as ice recedes, green extractivisms are increasingly portrayed as opportunities to solve this global problem (Kröger, 2023). These green-labeled processes can barely be separated from historical fossil fuel, natural gas, or hydropower related extractivisms (Dunlap, 2021). Actually, they are exacerbating crises, while simultaneously being challenged by them. Extraction is still expanding in the Arctic.

Greening destructive mining and similar industries throughout Indigenous and non-Indigenous Arctic homelands cannot conceal the effects of climate change, extractivisms, and the roll-out of infrastructure. While old and new transition metal mining, wastes, and toxic dusts are the "new green" along with infrastructure

projects (Barbesgaard & Whitmore, 2022), peoples across the Circumpolar North challenge and oppose the interconnected axes of green extractive practices and climate change impacts (Batalla, 2020; Clark, 2021; Truscello, 2020).

Colonial legacies involved in extractivism and climate issues continue to be a barrier to self-determination, as well as ontological, epistemological and axiological elements of the struggle, including recognition of the knowledge systems and values of many Arctic Peoples (Fjellheim, 2023; Lassila, 2018; Watson & Huntington, 2008). Through opposition, colonial ties in climate change and green extractive solutions can be challenged: as can state-corporate control over Arctic territories through technological-industrial greening in the climate emergency (Dunlap & Jakobsen, 2020; Fjellheim, 2022; Magomedov, 2019; Osborne & Carlson, 2023; Zografos, 2022).

This article contributes to the political ecology of green extractivism by suggesting how historical colonial relations through fossil fuel extraction, hydropower, and metal mining are indivisible from new green extractivism, climate colonialism, and necropolitics (Batalla, 2020; Bhambra & Newell, 2023; Clark, 2021; Davies, 2018 *via* Mbembe, 2019). The conflictive projects we have analyzed across the Arctic are inherently extractive: colonial embedded in "green."

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Annex: Identified cases in the Global Atlas of Environmental Justice (EJAtlas)

Case	Longitude	Latitude	Commodity	Link
1) Yamal Mega natural gas project, Arctic Russia	71.49	72.06	LNG	https://ejatlas.org/conflict/mega-natural-gas-project-yamal-arctic-russia
2) LNG 2, Gydan peninsula, Arctic Russia	71.18	73.68	LNG	https://ejatlas.org/conflict/liquefied-natural-gas-project-lng-2-gydan-peninsula-arctic-russia
3) Kivalina climate change court case, Alaska, USA	-164.54	67.72	Oil (climate change)	https://ejatlas.org/conflict/kivalina-climate-change-court-case-alaska-usa
4) Ambler 350 km mining road project, Alaska, US	-157.87	67.08	Copper-cobalt	https://ejatlas.org/conflict/ambler-mining-project-northwest-arctic-alaska-us
5) Red Dog mine toxic tailings to Kotzebue and Kivalina, Alaska, USA	-162.87	68.06	Zinc-lead	https://www.ejatlas.org/conflict/red-dog-mine-toxic-tailings-to-kotzebue-and-kivalina-alaska-usa
6) Iron Ore mining in Baffin island, Nunavut territory, Canada	-80.89	71.87	Iron	https://www.ejatlas.org/conflict/iron-ore-nunavut-canada
7) Fosen Vind project, Norway	10.06	63.69	Electricity	https://ejatlas.org/conflict/fosen-vind-project-norway
8) Gállok/Kallak Iron Mine, Sweden	21.05	67.81	Iron	https://www.ejatlas.org/conflict/gallok-kallak-iron-mine-sweden
9) Deep-sea mining of rare earth minerals in the Svalbard Archipelago, Norway	17.00	76.50	Rare earths	https://ejatlas.org/conflict/deep-sea-mining-svalbard-archipelago-arctic-norway
10) Copper-nickel project Inari, Finland	28.40	69.26	Copper-nickel	https://ejatlas.org/conflict/copper-nickel-projects-inari-finland

11) Modernisation of Monchegorsk nickel and copper smelter, Kola peninsula, Russia	31.90	67.94	Copper-nickel	https://ejatlas.org/conflict/closure-and-modernisation-of-old-nickel-and-copper-smelter-monchegorsk-kola-peninsula-russia
12) Kolmozero lithium mining, Kola peninsula, Russia	36.94	67.97	Lithium	https://ejatlas.org/conflict/lithium-mining-kola-peninsula-russia
13) Khibiny Mountains - Fyodorova Tundra platinum and palladium mining, Kola peninsula, Russia	33.71	67.73	Platinum/palladium	https://ejatlas.org/conflict/khibiny-mountains-platinum-and-palladium-mining-kola-peninsula-russia?translate=es
14) Palladium/Platinum mining, Taymyr, Arctic Russia 15) Related to collective actions against Tesla battery metals from Nornickel company)	87.43	70.72	Platinum/palladium	https://ejatlas.org/conflict/a-new-palladium-project-norlisk-taymyr-arctic-russia/?translate=es https://ejatlas.org/conflict/battery-metals-from-nornickel-ar?translate=es
16) Kuannersuit/Kvanefjeld Rare Earth-Uranium Project, Greenland	-47.44	61.15	Uranium, Rare earths	https://ejatlas.org/conflict/greenland-mineral-ltds-kuannersuit-kvanefjeld-rare-earth-uranium-project-greenland

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