Opposing ‘green’ extractivism:
Voices of resistance in the case of the Gállok iron mine, Sápmi

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Abstract

Embedded in a history of global colonial capitalism and the system's crisis ridden tendencies and fixes for capital accumulation, extractivism increases globally. The intensive exploitation of resources is increasingly framed as compatible with and necessary to climate change mitigation for the possibility of a low-carbon future, opening new extractive frontiers through a path of 'green' extractivism (GE). The present case study seeks to understand implications of GE in the context of the political economy of expanding commodity frontiers for a green economy in the Swedish part of Sápmi. It examines motivations for and contestation of extractivist practice and frontier racism in the zone of a planned iron ore mining project in Gállok (so called Kallak) highlighting voices and acts of resistance to it. The thesis finds that the project is promoted in the name of climate change mitigation with significant cumulative impacts on indigenous Sámi reindeer herding and people living in the closest city Jåhkåmåhkke (so called Jokkmokk). It suggests that the 'greening' of capital accumulation and a focus on capitalist technological 'solutions' to the climate crisis perpetuate expropriation and exploitation for the profit of few, socio-ecological destruction, frontier racism and the expansion of capitalist energy-intensive large-scale infrastructures. This is important to highlight deeper roots of the intersecting global crises, contradictions of capitalism and fuel organised resistance and just transitions.

Keywords: *political ecology, 'green' extractivism, energy transition, frontier racism, colonial capitalism, Sámi resistance, just transition*

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List of Abbreviations

CEO	Chief Executive Officer
EU	European Union
FPIC	Free, Prior and Informed Consent
GE	Green Extractivism
ILO-169	Indigenous and Tribal Peoples Convention
LKAB	Luossavaara-Kiirunavaara Aktiebolag, Swedish government-owned mining company
NGO	Non-Governmental Organisation
OHCHR	Office of the United Nations High Commissioner for Human Rights
UNFCCC	United Nations Framework Convention on Climate Change

List of Images

Table of Contents

1 Introduction

We are in the midst of enormous intersecting social and environmental crises. Fossil-fuels are a central means for industrialism, capitalist production and state formation with socio-ecologically catastrophic results burdening some more than others (Malm 2016). It is thus crucial to tackle the climate crisis, rapidly transition away from burning fossil-fuels and limit an increase in global temperature. Coal, gas and oil reserves have to remain in the soil (Shiva 2016). Yet globally, hydrocarbon production has not been declining and decarbonization as a goal still remains utopian despite the urgent need to stop the burning of fossil-fuels (UNEP 2022; IPCC 2022: 10). Around 80 percent of global energy are currently supplied from fossil-fuels and renewable energy technologies compete with subsidised carbon energy technologies on the global market (UNEP 2022: n.p.). Furthermore, different scholars have highlighted that energy transitions in the current capitalist world economic order are successive energy additions or accumulation of new sources of primary energy that is presented as transition (York and Bell 2019: 41; Dunlap 2021a: 5). Thus, an increase in what is called renewable energy sources does not necessarily lead to a decline in fossil-fuel consumption or more fundamental transitions (ibid.).

On the other hand, pressure and awareness are growing internationally for a green transition to decarbonize and reduce greenhouse gas emissions by switching to an economy powered by renewable energies (EC 2019: 4). Globally, mineral extraction has continuously increased in the last decades and is expected to further expand partly driven by increasing interest and demand for materials relevant for a green energy transition (Mármol & Vaccaro 2020: 116; Voskoboynik & Andreucci 2021: 2). The EU has laid out plans for how to achieve carbon neutrality by 2050 (EC 2019: 2). Sweden plans to be carbon neutral in 2045 (UNFCCC 2022). The hegemonic approach to solutions for climate change embraces a resource-intensive and exploitative approach to mitigating the climate crisis (Alonso-Fradejas 2021: 1). It is focused on replacing the scale of the fossil-fuel economy powered by renewables (Gelderloos 2022: 160). However, an uncritical embrace of the dichotomy between 'fossil-fuels' versus 'renewable energy' distracts from capitalist and techno-industrial shifts to diversifying mining infrastructure and attempts of greening extractive practice (Dunlap 2021a: 4). The intensive exploitation of resources is framed as compatible with and necessary to climate change mitigation for the possibility of a low-carbon future which Voskoboynik and Adreucci describe as an evolving era of 'green' extractivism (GE) (2021: 4 & 16).

Also Sápmi[1] and indigenous Sámi reindeer herding lands are being reorganised as a frontier of globalised colonial capitalism for large-scale land-based industries such as mining, logging, hydrodam- and wind power expansion, tourism and enclosures for the military or automobile testing areas (Össbo 2022; Ojala & Nordin 2019: 100; Valinger, Berg & Lind 2018: 934). Oftentimes those expanding industries are related to the green economy such as hydrodam-, windpower, battery factories, green steel production or 'green' mining for critical raw materials for the green energy transition (Ojala & Nordin 2019: 100; Bolger et al. 2021: 24; Ramanujam 2022: 17-19). In Sweden, the Sámi people experience increasing pressures of land grabbing[2] through the Swedish state's policies and pro-mining legislation where rivers, forests, minerals and land are privatised and sold to national or foreign investors (Ojala & Nordin 2015: 7).

1.1 Aim and purpose

As a case study in this context, I study critical voices of resistance to a planned iron ore mining project in Gállok (so called Kallak) on indigenous Sámi reindeer herding lands in the name of climate change mitigation through a green economy, embedded in expanding commodity frontiers in the Swedish part of Sápmi. The aim is to contextualise resistance to a supposedly green mining project in a wider shifting economy to highlight implications of colonial capitalism and increasing commodity frontier racism in the studied area partly enacted through a green transition. This is to recognise colonial capitalist and racist dynamics of hegemonic and techno-industrial climate action and pointing to the deeper roots of the intersecting global crises and contradictions in hegemonic and market-based 'solutions'.

1.2 Research questions and thesis structure

The following research question and sub-questions guided my inquiry:

1. Is the planned iron ore mine in Gállok a case of "green" extractivism (GE) and if so how?
    - How is GE motivated and contested in the case of the Gállok mine and embedded in expanding commodity frontiers in (Swedish) Sápmi?
    - What are socio-ecological implications of the planned mine from the perspectives of people living in Jåhkåmåhkke or active in the environmental movement?

[1] Following Ojala, in this thesis, I use the notion of Sápmi as the traditional core area of the Sámi population stretching across the state boundaries between Sweden, Finland, northern Norway and the Kola Peninsula in Russia (2020: 169). I recognise that Sápmi is a multi-layered notion with different meanings and contested borders (ibid.). In this thesis when referring to Sápmi, I focus on the Swedish part of Sápmi.

[2] Land grabbing or 'green' grabbing as the appropriation of land and resources for environmental ends, is a process of appropriation or transfer of ownership, resource control and use rights that were publicly or privately owned into the hands of the powerful (Fairhead, Leach & Scoones 2012).

To contextualise the case study, I provide some background information on the historical context and recent shifts through the global energy transition with a particular focus on the shifting steel production and mining expansion in Sweden, mainly located in the Swedish part of Sápmi. In the theory section, I lay out the theoretical concepts for this work, including extractivism, GE and commodity frontier racism. I then give an overview of the methodology of this thesis, including reflections on positionality and limitations. Finally, I analyse and discuss the findings with a focus on answering the research questions. First, I look at if and how GE is motivated and contested in the case of the Gállok mine, embedding it in the wider commodity frontier expansion. I highlight some alternatives brought forward by activists. To emphasise critical implications of GE, I point out socio-ecological implications in relation to the planned mine and expanding commodity frontiers in Sápmi which came up during the research. I conclude the findings by discussing the main research question if and how the case of the Gállok mine is a case of GE proceeding with what main conclusions I draw from that.

2 Background

In this section, I lay a background for the study which embeds the planned mining project in Gállok in wider historical and political economic processes of (inter)national politics and industries which are now expanding and shifting in the light of large-scale decarbonisation and climate change adaptation.

2.1 Historical contextualisation

The relationship between the Sámi people, centralized Swedish state power and market dynamics on different scales developed through a centuries-long process of settler-colonialism[3] (Össbo 2022: 2). Historically, Sámi live of land-based practices such as reindeer herding and fishing, however this keeps changing with increasing engagement with the market economy (Ramanujam 2022: 19). Administrative manoeuvres have continuously changed the structures of Sámi society (Lundmark 2007: 15). The cultural-economic practice of reindeer herding was influenced by the needs of the Swedish state and land use policies, shifting from small-scale hunter gatherer herding to more intensive pastoralism and ultimately expansive reindeer herding practice (Lundmark 2007; Valinger, Berg & Lind 2018). The Swedish state imposed rights or rules for where the Sámi herders could graze and when, separated rights for reindeer herders and hunters-fishers, forbid Sámi people to live in wooden houses and forced Sámi to

[3] Settler-colonialism as a structure differs from colonialism in that the colonizers make the place of the indigenous habitants a permanent home by claiming it, destroying or erasing indigenous habitants to clear them from valuable land (Tuck & Yang 1987: 224).

attend schools of inferior quality (Lundmark 2007: 13). From the 17th century, metal extractive industries were established in Sápmi and involved in international networks of trade and capital (Ojala 2020: 161-162). Dutch-Swedish industrialists developed the iron and copper industries connected to the international market and included work of Sámi people for example in the ore transportation (ibid.). The cumulative pressure on livelihoods of people, Sámi culture, tradition and existence as well as the environment continues until today (Ojala and Nordin 2015; Kløcker Larsen et al. 2017; Österlin and Raitio 2020). However, Sámi people applied various strategies of resistance and adaptation to colonial pressures (Ojala & Nordin 2019: 99; Ojala 2020: 161-162).

2.2 The green energy transition and steel industry

In projections of the European Commission the mining of metals and minerals will significantly increase for the use of renewable energy technologies, electric vehicles and the defence and aeronautic space sector (EC 2020a: 1). This is also the case for increases of steel consumption and production which already now dwarfs the production of all other metals combined (EC 2020a: 94-95). It is by far the biggest metal production around the world, accounting for approximately 94 percent of all extracted metals (Brown et al. 2021: 33). Because of the quantity of iron ore and its widespread global production, it is more easily accessible and has more 'secure' commodity chains[4] compared to other minerals for renewable energy technologies. Thus, iron ore is not considered a critical raw material for the green transition (Krane & Idel 2021; EC 2020a: 81).

However, as laid out in a foresight study of the European Commission, all technologies which are pushed as alternatives to fossil-fuel energy production in a low-carbon economy like wind, tidal, solar or geothermal energy depend on steel (EC 2020; Azevedo et al. 2022). This is why actors like states or mining companies increasingly justify the need for extractivist practices in expanding iron ore extraction as 'green' under the narrative that steel extraction is an important contributor to the green economy. It is not surprising in the light of profitability that the World Steel Association focuses on steel-dependent or technological solutions to the climate crisis and proclaims that "as the world looks for solutions to its environmental challenges, all of these depend on steel" (2022).

Until today most of the steel made from iron ore is produced through the use of fossil-fuels

[4] The concept of commodity chain includes all inputs from land, food input to labour, labour, transport, raw materials etc. which culminate in a consumable item sold on a globalised world market (Hopkins & Wallerstein 1977: 128).

using blast furnace as the dominant technology to reduce iron ore (IEA 2021: n.p.). This requires enormous amounts of energy accounting for eight percent of global energy demand and making up seven percent of global CO_2-emissions (IEA 2020: 3; Patisson & Mirgaux 2020: 123). The World Steel Association and major steel producers are developing different technological options in steelmaking to achieve drastic reductions in CO_2-emissions with the aim of being carbon neutral by 2050 (2021: 5). In this context low-carbon steel is defined as "steel that is manufactured using technologies and practices that result in the emission of significantly lower CO_2-emissions than conventional production" (WSA 2021: 5). The term of green steel is used differently by different parties including reused steel, steel produced from scrap, conventional steel with emission offset or as in the case of Sweden, hydrogen-based production through water-electrolysis powered by kinetic energy (WSA 2021a: n.p.).

2.3 Expanding Swedish green steel production and mining

One country which is currently shifting their steel industry from blast furnace to hydrogen-based production is Sweden (Karakaya, Nuur & Assbring 2018: 659). Swedish steel companies are accelerating hydrogen-based steel production to sell green steel with the proclaimed aim of making "a difference for the global climate" (Jernkontoret 2021: n.p.). The Swedish Steel Producer's Association is advocating that the Swedish steel industry is in the front line of changing production methods towards 'fossil-free' steel with "low climate impact" (ibid.). The Swedish company H2-Green-Steel highlights that they are now initiating their growth journey of large-scale green hydrogen production as the key technological pathway to enable a transition of heavy industry toward sustainable operations (H2-Green-Steel 2022). As argued by the Swedish Steel Producer's Association, even if Swedish emissions could increase on a short- or medium-term basis, it would benefit the global climate and emission reduction (Jernkontoret 2021: n.p.). The shift of production methods in the Swedish steel industry is thus propagated as an innovative green process which is expected to be pursuit globally in the coming decades even if more expensive than conventional steel (ibid.).

At the same time, the Swedish state actively supports pro-mining legislation (Mining for Generations 2022). As proclaimed by the Swedish government-industrial initiative, "[a] sustainable mining industry creates positive conditions for future growth" (ibid.). This is also the pathway taken by the EU which adjusted its regulatory framework for mineral extraction legislation pushing to accelerate Europe's self-sufficiency of metal ores in addition to the high import dependency (Mármol and Vaccaro 2020: 43; Bolger et al. 2021: 11). Sweden accounts for 91 percent of Europe's iron ore (Mining for Generations 2022). The country has 23 metal

mines with several projects which have been granted mining concession and are awaiting environmental approval such as in the case of the iron ore mine in Gállok (ibid.). In 2021, Sweden had 586 exploration permits for resource extraction with a large number located in Sápmi (Bolger et al. 2021: 24). Twelve out of sixteen active mines are located within Sápmi (Raitio, Allard & Lawrence 2020: 1; Mining for Generations 2022). The planned iron ore mine in Gállok is thus only one of many other industrial projects in the area. The perpetuation of colonial violence in global infrastructure expansion, acceleration of energy demand and consumption and globally upscaling extractivist production for profit of the wealthiest in these processes are obfuscated (Ramanujam 2021).

2.4 A planned iron ore mine in Gállok, Sápmi

Since 2006 the British Company Beowulf Mining PLC and its Swedish counterpart Jåhkåmåhkke Iron Mines AB ("JIMAB") were permitted by the Swedish government to explore possibilities for the project of a new open pit iron ore mine near the city of Jåhkåmåhkke (so called Jokkmokk) in the area of Gállok (EJA 2020). The area of Gállok is located 40 km northwest of Jåhkåmåhkke. In 2013, the first drilling operations have been pursued and there was a series of protests with several activists being arrested and many police interventions and violence occurring to stop the protests (Persson, Harnesk & Islar 2017: 26). Since then, continuing protests and demonstrations by indigenous Sámi people, other people from the local population, activists and Environmental (Justice) Organisations, have been pursuit in different ways with the intention to stop the mining project (EJA 2020). The project is located on an area where reindeer herding is being practiced by the Sameby Jåhkågaska tjiellde.

Partly also the Samebys of Sirges and Tuorpon are affected. A Sameby is an economic association of reindeer herders and geographical area. There are 51 Samebys in the Swedish part of Sápmi, within one Sameby there are several reindeer herding communities (Tarras-Wahlberg & Southalan 2021: 243). On the 22nd of March 2022, the Swedish government granted an exploitation concession giving the foreign company the right to open the iron ore mine on Sámi reindeer land (SG 2022). As next steps the company must apply for an environmental permit from the Land and Environment Court. Before a mine can legally be opened, further land allocation under the Minerals Act, further examinations under the Planning and Building Act, and other permits such as under the Roads Act, must be sought (ibid.).

3 Theoretical framework

Human ecology studies relationships between humans and their social and physical environments (McManus 2009: 19). Within this field, political ecology focuses particularly on

power relations and the relationships between political, economic and social factors. It highlights the importance of examining individual cases within their broader processual and historical situatedness and struggles over the structure of the political economy (Edelman et al. 2013: 1528). This results in analysing complex multi-scalar and political geographies and power dynamics (Gillespie and Perry 2018: 1094).

Coming from the research questions for this research, I first define extractivism for the purpose of this work as a fundamental aspect of a colonial capitalist economic system. I will proceed by looking at how extractivism is being extended by what is advocated as GE in commodity frontiers that are expanded in the name of mitigating the climate crisis with a focus on the mentioned case in Sápmi. Laying the groundwork for the research, this facilitates an analysis of both economic processes and social and ecological conditions of capitalism in the extractive frontier zone.

3.1 Extractivism

Originally, 'extractivismo' originated in Indigenous Peoples' resistance in the Latin American context (Chagnon et al. 2022: 760). As a concept it has been applied to a variety of cases and regions occurring on different geographical scales in different ways (Acosta 2013; Svampa 2019; Bruna 2022). In this thesis, I understand extractivism as an economic form of appropriating and organising social and natural resources for accumulation and profitability (Diamanti 2018: 55). It depends on extraction over time of an increasing amount of natural resources from the earth through practices of large-scale mining, destructive logging or industrial farming (Acosta 2013: 62). In the capitalist economic system, social or natural resources are turned into finite products whilst benefits obtained go to a limited number of beneficiaries (Ye et al. 2020: 156-158). Extractivism depends on national or international entanglements of states and private capital groups that build a monopoly which Ye et al. call an 'operational centre' of imperial networks controlling commodity flows in the global market (2020: 156-164). For this to be achieved, extractivism necessitates infrastructure such as electricity, security and transport systems to transport globally extracted products often from places declared as margins or places of poverty to richness (ibid.).

Extractivist practice is centred around use and not around reproduction resulting in barrenness that is for example connected with displacing people, pollution and destruction of biodiversity and lived environments (Sauer & Sátiro 2022: 905; Ye et al. 2020: 156-164). The neglect of reproduction makes extractivism a destructive phenomenon that has a need to expand and colonize ever new territories (Gago & Mezzadra 2017: 577). As such, extractivism does not

only generate environmental destruction but is also often a source for socio-political conflict (Diamanti 2018: 55).

Extractivism is inextricably linked with the history of colonial violence and is structured through colonialism to respond to demands of capitalists and metropolitan centres (Hamouchene 2019: 4). Capitalism is the economic framework to occupy land and extract labour, wealth and natural resources (Ramanujam 2022: 6). This relates back to the historical material root of commodity booms which needed colonial agents who decimated people, animals, flora and fauna, creating new extractivist capital frontiers that constructed material superiority (Malm et al. 2021: 245). During the Portuguese colonisation in the sixteenth century for example, the Amazon basin was plundered and shipped to Europe with the colonizers extracting as many commodities in the colonised territories as they could, as opposed to the indigenous populations who had satisfied their needs in a way which permitted regeneration for plants and animals (ibid.). As even implicitly recognised by the UNFCCC, the agency of some humans caused the climate crisis significantly more than others (Gonzales 2020: 120). I would add, also the biodiversity crisis and other intersecting crises. However, the specific ways in which extractive frontiers are played out, have to be analysed in their specific contexts. Following previous research, in this thesis, I focus on how Sápmi is shaped as a commodity frontier zone of the expanding capitalist world system (Lundmark 2007; Ojala & Nordin 2019: 100; Hanaček 2022: 11).

3.2 'Green' extractivism

Worldwide new initiatives that promote climate change mitigation are accelerating under the banner of a green energy transition (Liu, Simcock & Martiskainen 2022: 1). In its Raw Materials Scoreboard the EU constitutes that "raw materials are becoming increasingly important for the competitiveness of Europe's industry, for innovation and for the transition to a low-carbon, more circular economy" (EC 2018: 3). The focus is hereby put on CO_2-emissions shifting policies and investments to 'fossil-free' infrastructure and technologies which are dependent on a large and resource intensive shift of global production. The intensive exploitation of resources is framed as compatible with climate change and necessary to climate change mitigation for the possibility of a low-carbon future and 'sustainable development' through an era of GE (Voskoboynik and Adreucci 2021: 4 & 16).

From this understanding, GE in its broadest sense refers to extractivism of so-called renewable resources from the earth (Dunlap & Jakobsen 2020: 95). In addition, it refers to large-scale resource extraction in the name of 'solving' climate change including colonial violence,

sacrifices of humans and ecosystems (Riofrancos 2019: 8; Whitmore 2021: 4). This refers to increases in an expansion of new enclosures for capital accumulation in extractive industries advocated as climate change mitigation, a process which might altogether be described as expanding GE frontiers (Fairhead et al. 2012; Voskoboynik & Andreucci 2021: 16). It includes projects such as hydrological dams, large-scale industrial agricultural, wind, tidal wave or solar projects as well as new mining projects for iron ore, cobalt, lithium or rare earth minerals for low-carbon infrastructures or green militarization (Dunlap & Verweijen 2022: n.p.). Dunlap and Marin differentiate between direct and indirect GE (2022: 7). Indirect GE refers to the mining and other processes connected to the implementation of low carbon infrastructures, extractivism which secures the metals for technologies to mitigate climate change. Direct GE refers to the harnessing of kinetic energy through the cycles and vital flows of the wind, water, sun or geothermal energies (ibid.).

Theorising GE thus entails analysing contradictions in climate change mitigation strategies that rely on mineral-intensive development (Voskoboynik & Andreucci 2021: 4). The notion of a green economy is criticised by highlighting the systemic downplaying of the social-ecological prerequisites that are needed for so-called renewable energy technologies (Roos 2021: 92-93). Dunlap and Brock argue that renewable energy technologies for climate change mitigation are embedded in "the hegemonic logic of green capitalism" (2021: 92). The political economy of energy with its destructive social and ecological relations, processes of dispossession and accumulation are continued as in the logics and power relations of fossil-fuel production, scarifying racialised communities and ecosystems for profit (Dunlap & Brock 2021: 93). In this case study, I apply the concept of GE in bringing forth some of the socio-ecological impacts of a green transition. I focus on a planned iron ore mine on settler-colonial indigenous territory justified in the name of the green economy and mitigating the climate crisis. I furthermore touch upon how this case and resistance to the mine might be interconnected with wider struggles against colonial capitalism and limitations faced.

3.3 Capitalist commodity frontiers and frontier racism

Embedded in the wider field of human ecology, the concept of the commodity frontier characterises "relational zones of economy, nature and society" (Barney 2009: 146). More specifically, commodity frontiers materialize in frontier zones where the incorporation of new people, places or lands and environments is under negotiation for expanding capitalist relations of production and capital accumulation (Moore 2000; Barney 2009: 147; Cottyn 2019: 20-21). Referring to the extraction of oil, Klein writes about sacrifice zones in racialised capitalism,

where the poisoning or destruction of communities in the name of progress is deemed acceptable (Klein 2014: 406). Peluso and Lund argue that frontiers are not sites where 'progress' or 'development' meets 'traditional lands and people' or 'wilderness' but rather sites where hegemonies or sovereignties are "challenged by new enclosures, territorialisation, and property regimes" (2011: 668).

Commodity frontiers point out inherent contradictions of capitalism (Cottyn 2022: n.p.). A fundamental law of capitalist development is "the annihilation of space through time" (Harvey 2001: 24) reproducing ambiguities inherent to capital onto an expanding geographical terrain (DeAngelis 2004: 72). According to Harvey, "capitalism is addicted to geographical expansion as much as it is addicted to technological change and endless expansion through economic growth" (2001: 24). The inherent systemic tendency towards overaccumulation and crises leads capitalism to spatio-temporal fixes with geographical characteristics, such as in extractivism, as a response for needed incentives to get capital flowing again (Harvey 2003; Ekers & Prudham 2017: 1375; Fraser 2014: 59). These fixes shift the crisis-ridden tendencies of capital temporally and spatially whilst never resolving them fundamentally (Harvey 2001: 26-27; Brent et al. 2020: 32). In connection to this, the lives of populations in spaces where there is a commodity deemed valuable for extraction risks to be seriously disrupted which Fanon calls 'inferiorisation' of people and Malm et al. refer to it as frontier racism (2021: 245). In relation to the colonial aspect of capitalist commodity frontiers, Ramanujam argues that what is extracted and appropriated by people on top of the hierarchy is often at the expense of racialised communities (Ramanujam 2022: 6).

From this perspective, capitalism as an economic system in which the means of production and distribution are privately or corporately owned, is also a political and social system that allows for the accumulation of wealth and profit at the expense of colonial subjects and nature (ibid.). In this thesis, capitalism it is not only understood as economic system but also a socio-ecological regime, a way of organizing and producing nature and changing social relations (Cottyn 2019: 19-20). This means that an increasingly larger arena of the web of life is being used as economic input for the sake of endless accumulation of capital (ibid.). Capital describes the relation between capitalists and workers, it is a process where "money is invested into productive labour to earn more money" (Brent et al. 2020: 32). As Malm writes, whilst labour might be seen as the soul of capital, "extra-human nature is its utterly corporeal body" (2016: 286).

Focusing on the commodity itself omits questions of domination, power, settler expansion and colonialism (Curley 2021: 40). Commodity frontiers are more than just sites of capitalist extraction but also spaces where political structures are altered and new political realities are born (Joseph 2019: 10). In this thesis, I study how the frontier as a process of corporate and state-making is also a site of colonial struggle where Sámi reindeer herders and activists challenge the expansion of new racialised capitalist commodity frontiers that are justified in the name of solving the climate crisis. The massive planned expansion of 'green' infrastructure and extractivist projects that are justified in the name of the green economy are a more recent development. They are part of global socio-economic shifts and arguably a technical fix of capitalism in the name of climate change mitigation which might be theorised with the concept of GE.

4 Methodology

In this chapter I share the methodological process that I follow throughout my thesis research. Qualitative research seeks to develop a complex picture of a problem under study often including the social realities and lived experiences of people in the studied context which is an aim of this inquiry (Bryman 2012; Creswell 2013: 235). I apply case study research, an empirical inquiry which investigates a case or context-dependent phenomenon in depth (Yin 2018: 15). I am interested in understanding if there are structures and experiences of GE in Sámi territory in the case of the planned mine in Gállok and how they play out.

4.1 Philosophy of science

This research is guided by a critical realist epistemology, committed to a material reality independent of our interpretation of it. This epistemology is especially important in times of the climate and biodiversity crises confronting people with the material reality of the world (Sayer 2000; Malm 2018). Whilst acknowledging a mind independent world, critical realism comes from an understanding that there are multiple ways of knowing or interpreting that world (Elder-Vass 2012). It highlights the need for reflexivity about how knowledge is created and represented, recognising the key aspect that all knowledge is an inherently social process and thus socially produced (Benton & Craib 2011: 121). This implies that researchers are themselves "entangled in the co-creation of knowledge" (Flores Golfín et al. 2022: 214). What we know about material reality is "influenced by our knowledge, beliefs and dispositions, which alter according to our experience" (Elder-Vass 2012: 18). I furthermore acknowledge that knowledge is created within social relations of power since knowledge and social action go together (Livholts & Tamboukou 2015: 3). As Bhaskar argues "we will only be able to

understand -and so change- the social world if we identify the structures at work that generate those events and discourses" (1989: 2). This also refers to the social relations and power structures inherently linked to material realities (Benton & Craib 2011: 137)[5].

4.2 Data gathering and evaluation

The main source of data are semi-structured interviews with people from Jåhkåmåhkke and people active against the mine in different ways. These are contextualised with secondary data, with notes from my observations and conversations in Jåhkåmåhkke, documents published by the mining company and Swedish state to improve the validity, credibility and reliability of the research evaluation (Bishop & Purcell 2013: 265). During the research, the material was continuously evaluated in the period of data collection from February to April 2022.

4.2.1 Interview sampling and outreach

I applied a mixture of purposive, convenience and snowball sampling through different stages of the research. Through purposive sampling, I first reached out to a wide range of actors. Interviewees were selected to provide different perspectives about the planned project and its impacts on different scales (Bryman 2012: 418). I continued with snowball sampling asking people in the outreach for further contacts. Before going to Jåhkåmåhkke, I made a post in the Facebook group Gruvfritt Jokkmokk (mining-free Jokkmokk) with 6.705 members (25.03.2022) and contacted Sámi activists active in the mining resistance, Jokkmokk's municipality, several local institutions and a researcher and journalist who write about the planned mine. During my time in the North, I applied convenience sampling by starting conversations with people in different institutions and places across the city. This method relies on data collection from population members who are conveniently available to participate in the research (Creswell 2013: 204). Table 1 in the appendix shows unsuccessful or rejected outreach activity.

[5] For example, the acts and processes that include people's labour power or capacity to work for a process of capital accumulation from which the employer benefits more than the employee in a capitalist system (Benton & Craib 2011: 137). It appears as exchange relation between equal and free agents, however it involves coercive and exploitative structures as a production relation based for example on private property (ibid.).

4.2.2 Observations in the area of Jåhkåmåhkke

I was in the close area of the planned mine from the 28th of March to the 11th of April 2022. This was mainly to reduce the level of abstractness to the studied context and get further insight into current debates, local dynamics and struggles. I observed, familiarised myself with the contexts and asked many questions (Jorgensen 1989: 8). I was also part of an activist camp of forest rebellion (Skogsupproret) who had been successfully blocking a new logging site in a Sámi village North of Jåhkåmåhkke with Greenpeace and in coordination with Sámi people, doing the final patrolling during that time. Shortly before that, activists had also opened a camp in Gállok and were in contact with Sámi people and reindeer herders in the area.

Image 1 Activists in the camp (by author)

Image 2 Decolonize Sápmi (by author)

Images 1 & 2: Activist-camp sites of Greenpeace and Skogsupproret in coordination with a Sámi village

In Jåhkåmåhkke, I was invited to the premier documentary screening of a vocal Sámi person in the case of the Gállok mine called Tor Tuorda. He co-created the documentary about the old-growth forest and logging to which many people against the mining project and other large-scale industry came. Due to language restrictions during the event, I relied on translations of another student whom I met in Jåhkåmåhkke. There was a communal gathering after the screening during which I had the chance to meet and speak to other people active against the mine.

Image 3 Activist film screening (by author)

Image 3: Public screening at the Ájtte Museum and community space in Jåhkåmåhkke

I kept a reflexive journal to write down what I experienced, cross-checking it with preconceived notions. I did voiceovers to capture aspects of informal interview conversations which I was not permitted to record on tape (Jorgensen 1989: 5). During the two weeks I had more than 25 conversations with Sámi people, people with Sámi heritage and Swedish people working or living in the city of Jåhkåmåhkke. Through these different encounters, I got in contact with some of the people whom I interviewed for the purpose of the thesis.

4.2.3 Interview method and guide

Altogether, I conducted 16 semi-structured interviews between February and April 2022 (table 2, appendix). With indigenous Sámi people and other activists from the Gállok Rebellion, Skogsupproret or in more institutionalised spaces of NGOs, private land-owners on the land in Gállok and a person working for the Green party in Sweden. I also interviewed two researchers and a journalist who are critically examining, actively opposing or writing about issues of the green energy transition and implications in Sápmi. This was to gain a broader insight into themes that emerge in the broader resistance around the planned mining project in an open way.

With five people who are either working in the broader field of (raw material) politics or active in the Gállok rebellion resisting the mining project, I conducted exploratory interviews based on a semi-structured and open interview guide to find out more nuances about the politics involved around the planned Gállok mine before travelling to the area.

Prior to every interview, informed consent to record, transcribe and analyse the data and use some of the information in the thesis in an optionally anonymised way was given. I did inform the interviewees about the purpose of the conversation and approximate length and was open about my research interest, the context of my studies and positionality. I gave the option to take out parts of our conversations which they did not want to have written in the thesis. In the camp of Skogsupproret, I presented myself from the beginning as participant and student researcher and got consent to take notes, pictures and record the communal exchange session with a Sámi activist for the purpose of the thesis by all the participants present. Two interviews with a Sámi person were conducted in the presence of other people to reduce the level of extractive research, be less time demanding and merge different questions.

The questions for the interview guide derived from my broader aim of studying responses to and consequences of GE in the context of a planned iron ore mine. Questions were complemented and adjusted in the course of the research to address patters identified in previous research. Parts of the questions were furthermore adjusted to the particular context of the interviewees (Flowerdew & Martin 2005: 111). This means that I partly asked different questions in relation to the specificities which that individual might know about the topic on different scales, for example a private land-owner on the land in Gállok or a person researching green steel production in Sweden. Together I created eight individualised interview guides. I attached the basic interview guide as example in the appendix, excluding the specific questions to people with differing expertise.

4.3 Transcription, coding and thematic analysis

To make the interviews more accessible for analysis I transcribed them (Fuß and Karbach 2014). I uploaded the entire data, fieldnotes, interview transcripts and relevant passages of secondary data such as material from the mining company's website or press releases of the Swedish State and Steel Association to the Software NVivo to make it easier to code and evaluate it.

To analyse the material, I applied a thematic analysis (see parts in table 3, appendix) (Braun and Clarke 2006: 9). The thematic analysis was done with the aim of developing themes that arise from patterned responses or meaning which is relevant for answering the research questions, later relating them to theories or broader generalizations that are compared to existing literature on the topic (Braun and Clarke 2006: 10; Creswell 2013: 99). The importance of a theme from this perspective is whether it captures something that is important for the research question (Braun and Clarke 2006: 10). The analysis involved a constant movement back and

forth through the data. I started with writing down potential coding schemes which I systemised into themes which came up in relation to GE. I applied a more theoretical approach to the thematic analysis which paid particular attention to what came up in relation to the theoretical framework, however remaining open to what came up in the data more inductively.

4.4 Reflexivity and positionality

Research fundamentally involves issues of power and requires reflections and action to avoid extractivist research practice and perpetrating relations of domination (Harcourt et al. 2022). This includes contextualising the research within my context of institutional, social and political realities. Aspects for understanding, experiencing the research and interpreting data are influenced by the individual author and thus my experiences of race, class, gender, abled body, among others (Rossman & Rallis 2012: 91). This thesis further confronted me with my own positionality as a white German woman studying at an academic institution with a responsibility to conduct the research for this thesis in a responsible manner whilst at the same time being tied to the tight framework of academic agendas (Flores Golfín et al. 2022: 218).

This type of research made it necessary for me to get in contact with people and also communities about their concerns, experiences, everyday-lives or social movement organisation. It is thus a process that is imbedded in social relationships (Padmanabhan 2022: 129). As discussed by Sultana, people who conduct international research have to be aware of histories of colonialism (2007: 375). The planned Gállok mine is located in Sápmi where the Indigenous Sámi people lived for thousands of years with experiences of continuous resistance to forced dispossession and privatisation of land-ownership and other forms of violence and racism under Swedish settler-colonialism (Össbo 2022). I was indirectly part of the dominant racial group in the research context being a student at Lund University as a European citizen which put me in a position of power and privilege writing in a settler-colonial context (Flores Golfín et al. 2022: 217). Being an outsider to the area under study, not being part of the Sámi people but also not speaking Swedish and not having mobilised enough resources to stay in the area of the planned mine over a longer period to increase the level of trust and understanding put limitations on the research.

I feared that I was adding to conducting extractive research. This means a person going to the ‘site of study’ with narrow ideas and back to academia to ‘produce knowledge’ (Flores Golfín et al. 2022: 226). However, a Sámi person and activists whom I spoke to, open about my concerns at an early stage, encouraged me that I should nonetheless try to approach people and see if they could make time available for the purpose of this work. I ended up travelling to

Jåhkåmåhkke without a fixed schedule of interviews and a lot of openness to whom I would speak to and what I would encounter in the area. I was aware that preconceived notions and theories might have to be casted off if more complexities arise and are studied (Flyvbjerg 2006: 236-237). Throughout the research, I was confronted with how I incorporated whiteness or practices from the dominant settler-colonial culture for example in terms of neglecting the racial aspects of the capitalist economies. It meant inner conflicts and learnings for me over time, some of which I might still not be aware of from my positionality. However, with building relationships and practicing reflexivity during the time, I was also changed in the process (Kvale & Brinkmann 2009).

From the outreach, I made the broad focus of my study and my position as an international MA student transparent. Regarding the interviews, I offered to be flexible in terms of the time or place to meet. I contributed to the activities of Skogsupproret with what I could in my context and with the aim of sharing what I learned in the spaces of my surroundings. I positioned myself as someone there to learn with the activists and shared my own reflections and interpretations (Flores Golfín et al. 2022: 2018). I looked for financial support for the struggles together with another activist of the Gállok rebellion and other small ways of giving back (Gupta & Kelly 2014). Nonetheless, I was open from the beginning about my limitations and agenda as someone who came with specific aims in the process of data gathering for a master's thesis. In that way, I shared limitations to what I could do and left it up to people if they wanted or had time to interact with me.

4.5 Limitations

Initially, my plan was to critically examine more in-depth the agendas of powerful actors and proponents of the mining project such as the local to national governments, the mining companies or concession authority. However, I did not get access to them and either no e-mail replies or rejections. This posed one critical limitation to the research whilst also shifting the focus of the study more towards the sphere of resistance offering insights into the current situation of the local conflict. From the local government, the reasoning was that politicians cannot talk about it because this is a very controversial case and there are conflicting opinions about it (Notes 03.22). I thus relied on other data sources such as for example the company's website. As all data, published documents have to be viewed critically and within the context of their production and purpose for which they have been produced and published.

Studies that apply convenience sampling are said to be little credible and vulnerable to selection bias (Creswell 2013: 204). However, the conversations in the area of Jåhkåmåhkke were only

one part of the study which served as an additional source of information to the semi-structured interviews. Data triangulation was thus aimed to increase the level of reliability (Kaman & Othman 2016). Case studies are often limited in their generalisability and possibility to upscale knowledge, however by relating it to literature and broader political economic processes, this bias can be limited (Gutberlet, Bramryd & Johansson 2020: 11). Due to my reliance on the responses of people during my outreach, I chose not to limit the response rate further by trying to have a gender-balance of conversations, this however led to an imbalance with a predominantly male rate of interviewees and more gender-blind analysis.

5 Findings and discussion

In the analysis and discussion of findings, I aim to answer the first research question (1) if the case of the Gállok mine is a case of GE and if so how. To answer that, in Chapter 5.1 I look at how GE is motivated and contested in the case of the planned mine in Gállok and embedded in expanding GE commodity frontiers in the Swedish part of Sápmi, answering the second research question (2). Moving back to how racialised communities are deemed disposable in commodity frontier zones, Chapter 5.2 answers the third research question by highlighting some impacts on social relations, socio-ecological implications and double exposure on Sámi reindeer herders in the GE frontier zone which came up in the data (3). Finally, in Chapter 5.3 I conclude the findings of research question (2) and (3) in answering the first research question (1) and bring forth some ideas for further research leading over to the conclusion of this work.

5.1 Motivations for and contestations of expanding GE commodity frontiers in Sápmi

In the following chapter, I aim to answer the second research question how GE is motivated and contested in the case of the planned mine in Gállok. For that, I look at how the mine is justified by Beowulf Mining and the Swedish state putting a focus on the role of state-industrial entanglements and power relations involved in the expansion of commodity frontiers. Then, I analyse contradictions and critical aspects which arose during the research by highlighting voices and acts of resistance from Sámi and other activists. I end the chapter with some alternatives to GE which were brought forward in the data.

5.1.1 Justification of the planned mine by Beowulf Mining and the Swedish state

From the mining company's perspective, mining iron ore in Gállok is considered to be "of national interest to ensure the continued availability of iron ore, an important foundation of the Swedish economy" (Beowulf Mining 2022). Beowulf Mining proclaims on their website that they are "delivering raw materials critical for the transition to a green economy" (2022a). The company highlights that the 389 million tonnes of estimated iron mineralisation are "a potential

source of high-quality iron ore for fossil-free steel making in Norrbotten for decades to come" (2022b). A new CEO of the mining project, who was a director general at the Ministry of Enterprise for the Swedish government, stated that she is "focused on minimising Kallak's impacts on the environment and maximising the positive benefits that flow from the project to the community in Jokkmokk. We can do this by developing a Net-Zero-CO_2-emissions operation, creating employment for local people, and building meaningful partnerships in the community" (2022b). Furthermore, the company states that "[t]he ore deposit in Kallak can strongly contribute to the Green Transition, together with fossil-free steelmakers in Norrbotten, and in doing so, Jokkmokk Iron can play its part in tackling the Climate Emergency" (ibid.).

However, in what way the iron mine and fossil-free steel makers might be connected, is not mentioned. During interview conversations it came up that technically, hydrogen-based steel production facilities such as the H2-Green-Steel project which is being built in the neighbouring area in the city of Boden, use iron pellets not fines in the production process (Arne Müller; see also Patisson & Mirgaux 2020: 125). This means that iron fines, the product of the planned iron mine, is not compatible with the plans of the green steel production plant. As Arne Müller, a journalist who researches aspects of mining, wind energy and hydrogen-based steel production in Swedish Sápmi explained: *"Even if they would produce pellets which they can't because it is too expensive to build such an industry, they would produce more than about half the need of the H2-Green-Steel plant".* Pellets from Canada or Brazil are more attractive to the company according to him. Timo[6], who researches green steel production in Sweden, said that the production of the fines of the mine is said to be produced for the wider European market where the highest rate of steel consumption is used in the building and transport industries. This is a contradiction in the green narrative of Beowulf Mining. As Voskoboynik and Andreucci highlight, institutional actors, companies and state agencies obscure the costs of mining in deploying discursive strategies associating mining with climate action and 'high-tech industries' (2021: 2). This relates to GE as a way of concealing capitalist modes of production and accumulation (Bruna 2022a: 156). Verweijen and Dunlap refer to the evolving techniques of social engineering of extraction when strategies are employed to enable extraction for a neoliberalised green economy in the light of socio-political opposition to obstruct the (re)actions 'from below' (2021: 1). The opening of the iron ore mine is proclaimed as contributing to a green economy, securing national prosperity and local industrial development whilst co-existing with reindeer herding and communicating well with the local communities.

[6] I gave the participants who preferred to remain anonymous different names.

The companies mission statements also reflect the justification of the project by the Swedish government that highlights the important economic role of steel production for the country relating it to "job opportunities, welfare and the extraction of minerals and metals that are important for a green transition" (2022). Capitalist production and industrial extraction of minerals is presented as inevitable and beneficial to sustain local and national development and prosperity whilst mitigating the global climate crisis.

5.1.2 The role of the settler-colonial state and appropriation of land for profit

Property-relations, land use conflicts and settler-colonialism

A fundamental condition for extractivism is the privatisation of natural resources and commodification of nature particularly destined to world markets (Hamouchene 2019: 4). Connected to that, the control, privatisation and conquest of land is one of the most fundamental issues of colonisation (Mbembe 2003). States play an important role in that violent process as Mbembe describes, "[c]olonial occupation itself was a matter of seizing, delimiting, and asserting control over a physical geographical area—of writing on the ground a new set of social and spatial relations" (Mbembe 2003: 25). The history of capitalism, colonialism and modern states are intertwined and persist also in the Swedish settler-colonial context (Össbo 2022). In the case of the Gállok mine, the Swedish government 'sells' land on Sápmi as a privatised commodity in the name of development, a green energy transition and resource extraction mainly for the profit of a capitalist corporation in the UK to extract and sell the commodity of iron ore (Enzo; Jorin; Sia; Timo). The role of the Swedish settler-colonial state in the case came up in different ways. On the one hand as a leading figure on the world market in a shift towards hydrogen-based green steel production (Timo), on the other hand in relation to GE in the powerful position of being entangled with 'green' capital (Jorin; Sia). As Hanaček et al. argue in relation to the expansion of commodity frontiers in the Arctic, state-corporate hybrids impose repressive relations of settler-colonialism through extractive projects (2020: 11).

The land use in the area of Gállok is based on a mixture of private land-ownership, common land-ownership and through the Reindeer Act, Sámi reindeer herders have been given the permit by Swedish authorities to let their reindeer pass on those privatised lands which used to be common Sámi lands (Britta; Denis). When I asked one private landowner in Gállok about coexistence with the Sámi herders, Britta said: *"It's not up to us to decide. I mean, they have the legal right to pass there on our private land with their reindeer, but even if the laws weren't there. I mean, that's no issue, I think we've coexisted for hundreds of years"*. Britta was furthermore clear that she continues to defend the land and environment against the corporate

interests. She stated that if the company will get through and starts drilling *"I will be chained to a tree, I have not given up."* On the one hand there are common interests or solidarity of people living in the local area around the mine which I experienced against the state- and corporate-induced large-scale land deal and resource extraction. However, in many of the conversations I had with Swedish people, there was silence about the violence and racism in settler-colonial legislation which allows the Sámi reindeer herders only to pass the traditionally common indigenous land and also only until it is used for Swedish national interests, such as opening a new mine. In the Swedish settler-colonial legislation, the private land-owners have a right to compensation from the law whereas in most cases the Sámi rely on the mining company's voluntary compensation of damages caused (Tarras-Wahlberg & Southalan 2021: 249). This might be seen as a divide-and-rule tactic used by the Swedish state which exacerbates local conflicts or divides communities which I go further into later (Schilling-Vacaflor & Eichler 2017: 1457). As Fraser explains on the background conditions for capitalism in relation to public power: "Markets need […] the background of trust of a legal order that entrenches, guarantees, and protects property rights […] this includes, of course, the legal system but also repressive apparatus-the policy, military, etc." (Curty 2020: 1330).

The ILO-169-Convention and community consultation

Sia, who is a Swedish person active in Skogsupproret, criticised the state for not taking the consultations with the Sámi and their 'no' to the mining project seriously and added that *"[i]f you destroy somebodies' home, of course, you have to compensate for that, it's just really the bare minimum"*. She stated that the exploitation of Sápmi is also the responsibility of Swedish citizen as part of the majority population *"there is a strong responsibility of how we exploit land we have stolen and what we think belongs to us and how this affects minority and indigenous populations"*. In Sweden, there are no formal consultation rights for indigenous communities and the Swedish state never signed the Indigenous and Tribal Peoples Convention ILO-169 also for reasons of power over land use (Tarras-Wahlberg & Southalan 2021: 249). The Sámi parliament called for a moratorium for mineral exploitation until the ILO-169 and Nordic Sámi Convention are implemented, including a veto-right of affected communities (Sametinget 2014; Lawrence and Moritz 2019). In relation to the state and reparations, Sia added that *"[t]he state could make sure that laws are being followed when it comes to consultations and the reindeer herding law or human rights and indigenous rights laws and to sign the ILO-169 that would be a good start"*. What the activist fights for in an intermediary term relates to resistance to fundamental aspects of GE. As Riofrancos writes, GE entails "the

subordination of human rights and ecosystems to endless extraction in the name of 'solving' climate change" (2019: 8).

The ILO-169 includes extensive consultation processed such as FPIC (Free, Prior and Informed Consent) with affected peoples before adopting and implementing legislative or administrative measures (OHCHR 2018). However, such processes have also been criticised by different scholars as a way to facilitate extractive expansion through a 'politics of recognition' undermining opposition (Schilling-Vacaflor & Eichler 2017: 1443; Verweijen & Dunlap 2021: e4). When I asked one of the current private land-owners in Gállok about the consultation process for the mine the response was that the mining company *"[…] had some meetings to inform the land-owners but I mean it's not in order to get our views, really. It's only to state that this is the way it's going to be"* (Britta). Furthermore, with regards to the compensation which is going to be given to the land-owners Britta said that *"[i]t's only financial and they think that everything can be bought".* Sámi people as well as private land-owners cannot decide about the use of the land in a context where the settler-colonial state uses the sovereign power to side with companies and decide which economic activity on a given land is important for what is considered 'the public good'. As Bruna argues in the context of GE's vehicles for capital accumulation, states are not passive, rather, through actively converting green policies into accumulation strategies, they support the implementation of GE projects (2022a: 144).

In the case of the contested planned mine in Gállok, the government made it a condition to regularly consult the affected Jåhkågasska Tjiellde reindeer herding community and financially reimburse impacts on their ability to use reindeer migration routes and grazing areas and pay for a potential transport of the reindeer on lorries (SG 2022). Another condition is that the company has to regularly consult the Jåhkågasska Tjiellde, Sirges and Tuorpon reindeer herding communities according to the Chapter 6 Section 4 of the Swedish Mining Act[7]. There have been some consultations with Sámi communities. However, whilst the reindeer herders remain firm that mining and reindeer herding in the area do not go together and have now filed a case against the state, the Swedish Government publicly communicates in line with the company that they can coexist (Solbär 2020: 512; Beowulf Mining 2022d; SG 2022). A Sámi person stated that the Swedish government did not respond to the question of sanctions if Beowulf Mining did not comply with the required conditions (Notes 03.22). Not only the competition in land use comes forth in the case, also the resistance against dominating power as state-industrial hybrid

[7] "If operations undertaken in accordance with a concession give rise to considerable inconvenience, which was not foreseen when the concession was granted, the authority responsible for considering applications may lay down such conditions for subsequent operations as are necessary to prevent or reduce the inconvenience".

at stake in acts of land grabs or large-scale land deals for industrial projects under capitalism (Regassa 2021: 7).

5.1.3 Contested GE frontier expansion in Sápmi

Infrastructural expansion and resource intensity of a green transition

To contextualise the state-industrial justification for the planned mining project further, I take a wider look into the use of the Arctic and more specifically for this case the Swedish part of Sápmi as an expanding commodity frontier zone. As Hanaček et al. argue, the region might be regarded a semi-colonial commodity frontier (2022: 9). It is home to local communities and indigenous groups with pockets of autonomic rights, whilst being used as a raw materials supplier for globalised capitalist markets at cheap prices with heavy socio-environmental implications (ibid.). This causes colonial-type violations of local people's rights whose lands are used for new transport infrastructure, the extraction of fossil-fuels and metals amongst which is also iron ore (Hanaček et al. 2022: 10).

Referring to different socio-ecological processes that are connected to political economic dynamics of accumulation, there are two processes which are characteristic for commodity frontiers in the appropriation and transformation of nature (Banoub et al. 2021: 1535). The first refers to commodity-widening, signifying the spatial expansion through an occupation or expansion of lands for the purpose of extraction (ibid.). The other process is commodity-deepening. This involves the intensification of already existing commodity production through socio-technical innovation sometimes also involving the expansion of infrastructure (ibid.). As laid out in the background section, with the aim of becoming carbon-neutral by 2045 through shifting to a green economy, the Swedish government expands its mining activity and is supporting the steel industry to shift to hydrogen-based production. This in turn leads to a massive increase in infrastructure, electricity and raw material demands for large-scale projects (Arne Müller; Timo). Relating to this, some aspects of the material basis of extraction are hidden behind shiny advertisements for a green transition. Bolger et al. highlight how mining, mining machinery and transport as well as the processing of metals are dependent on fossil-fuels, human rights abuses and complex non-transparent commodity chains (2021: 14). A mixture of both commodity-widening and -deepening is present in the expanding commodity frontiers under study.

On the basis of this, in the following, I look at aspects in the data suggesting that the planned iron mine in Gállok is part of a process of commodity-widening and indirect GE. Whereas green steel production through the shift from blast furnace to hydrogen-based production plants and

their needs for new infrastructural expansion and cheap renewable electricity and harnessing of kinetic energy partly rely on processes of commodity-deepening and direct GE. In opposition to what the mining company and state proclaim, voices of resistance highlight some of the extractive consequences of both indirect and direct GE. In the following, I thus draw some connections between the planned mine and wider frontier zone, blind spots and the material basis of the planned large-scale and resource intensive activities for extractivist profit in what is called the green economy.

Infrastructural colonization

Going back to commodity-deepening in the commodity frontier of the planned mine, Timo highlighted some of the other large scale planned infrastructural projects for decarbonisation and green steel production in Sweden: *"HYBRIT converts the existing steel mills in Luleå, H2-Green-Steel builds a new steel mill in Boden and LKAB moves into iron production and basically upgrades all the iron ore in their mines and potential future mines to iron so they do the direct reductions or the hydrogen stuff there".* He added that *"[i]f we go for the all-in big realisation of these projects […] you also potentially need new mines, new iron ore mines if you want to keep this going"*. He furthermore stressed that these projects together *"[…] need a lot of energy and you need a lot of new infrastructure such as for example grid-lines or potentially you would need a lot of steel scrap"*. This furthermore expands to transport where *"to transport scrap you need roads, railways, ships"*.

Transport was highlighted by several of the interviewees as an aspect that is often left aside, however, it is crucial in the extractive project and needs to be expanded to connect it to the wider capitalist market (Ye et al. 2020: 156). Several interviewees mentioned that a transport system needs to be established around the mining area in Gállok (Arne Müller; Denis; Henry Svonni). Arne Müller said: "*[If] you go on the road from Jokkmokk to Kallak, you understand that it's absolutely impossible to go on that road with heavy trucks"*. This infrastructure cuts through the Sámi village as Heller, a Sámi reindeer herder in the neighbouring area of the mine elaborated *"[t]hey need to build roads around the mining area and because the mining will destroy the middle of the Sámi village of Jåkkåkaska Sameby, from the east west border you need to make a road to a neighbour Sámi village, Sirges Sameby"*. The fragmentation of the land was also mentioned by Timo as an issue which relates to what Dunlap calls infrastructural colonialism, meaning the continuous "grid expansion, material and energy-use intensification and sociotechnical alterations to capitalist operational modalities" (Dunlap 2021a: 2; Davies 2021).

In relation to the resource intensity of the green economy and hydrogen-based steel production which the mining company claims to be connected with, Arne Müller stressed that *"[t]here is no such thing as carbon-free electricity"*. Timo highlighted that the promoted change of green steel production as a hydrogen-based and fossil-free production does rely on the usage of carbon which is needed in the steel-making process for example coming from bioenergy. He explained that *"[i]f it comes from biomass, it's still quite significant in terms of the amount of biomass needed. And then again, this needs to be transported somehow, so there's infrastructures that need to be in place to supply the industry with bioenergy"*. Looking at the commodity chains of green steel production, Arne Müller elaborated that *"[i]f you look at the life cycle analyses for wind power, which has about the lowest emissions, it's about some seven to eleven grams per kilowatt hour. That's very low, but H2-Green-Steel needs 20 terawatt hours which is a huge amount of electricity. So even if you make the calculation from the point that they are just using land-based wind power, which is technically impossible, they need more other energy sources to get the whole electricity system working"*. He also stated that the government-owned mining company LKAB communicated that for their green steel project they need around 55 terawatt hours. In comparison, the total electricity demand in Sweden is currently around 140 terawatt hours (Arne Müller). If the different large-scale projects planned are realised, there will be at least 50 percent increase of the current electricity demand in Sweden (Timo; Arne Müller). In relation to direct GE and the harnessing of less CO_2-intensive kinetic energy, Arne Müller added that the Swedish authorities made calculations that 100 terawatt hours on wind power require around five million tons of steel. This in turn relates back to the need for an expansion of mining or the use of steel scrap and infrastructure for a more circular use of metals (Bolger et al. 2021). As Dunlap and Brock argue, GE and 'green' mining are central to reconciliate industrial destruction with socio-ecological 'sustainability' through the 'green economy' (2022: 99).

In relation to power imbalances between different actors, Timo elaborated that *"[i]n Sweden much of the green steel that is being planned by HYBRIT and H2-Green-Steel will go to the European car industry. […] H2-Green-Steel has a carmaker under the investors too, for example, so it's quite clear that that's the goal. [..] The car makers involved in these green steel projects, they're central European and they're among the top employers and largest industries of Europe, so they're quite powerful. […] If it's partly the car industry driving this shift and we actually want a future without cars then that's quite counterproductive what is happening"*. The production of green steel is connected to the capital intensive and powerful role of the car industry in the green economy where a resource intensive focus lies in changing the car fleet to electric vehicles (EVs) with projections of having one billion mostly private EV's in operation

by 2050 (IRENA 2019). The hegemonic path of increasing 'green' industries such as 'green' mining drives unsustainable assumptions reflecting inequalities or power imbalances which themselves fuelled socio-ecological crises (Bolger et al. 2021: 21).

Henry Svonni is a Sámi from Gíron (Kiruna), a city in the Swedish part of Sápmi with extensively established iron ore mining. He lived and studied in Jåhkåmåhkke for a few years and pointing to the consequences of the planned mine in Gállok he emphasised that *"[t]he consequences for the environment and destruction of the possibility to feed the reindeer is not being talked about, more the green production and green industry. If you're making green steel, you need to have more electricity and to get more electricity you need to put up wind power plants and wind power destroys the forests and environments"*. This leads over to the related issue of 'green' colonialism.

'Green' colonialism

Alexander Dunlap is among the researchers who first wrote about GE. In the context of Norway's discourse to justify intensifying internal colonization he said that *"[c]urrently, they are spreading wind turbines all over the country especially in Sámi territory in addition to creating more mines. […] They are colonizing indigenous territories in the North. They are building their own battery factories and creating this industry and all of this for the energy market which is this insane privatisation scheme of money market trading for other industries within a system with the permanent need to trace some kind of profit through the destruction of ecosystems or raw materials needed to create commodities all for capitalist markets. It's madness"*. In addition to the violent aspects of capitalist accumulation, the quote highlights how GE also relates to what came up in some of the interviews as 'green' colonialism. This refers to the continuation of Sweden's colonial land use policies and violence towards the Sámi people in 'green' forms of expansionism similar as in Norway. Different scholars described this as cumulative pressure on livelihoods of people, Sámi culture, tradition and existence, as well as on the environment (Ojala and Nordin 2015; Kløcker Larsen et al. 2017; Österlin and Raitio 2020).

Drawing away from a sole focus on the planned mine in Gállok, it is the accumulation of several infrastructural and industrial large-scale projects as the material basis of what is sometimes referred to as the next industrial revolution which has been highlighted by several of the interviewees (Arne Müller; Alexander Dunlap; Jorin; Ole; Sia; Timo). Henry Svonni described that *"[i]n Jåkkåkaska, a couple of reindeer herders need to stop with the reindeer herding. But in the next village it will also cause effects because the feeding-land will be less, you have less*

people who can work with reindeer herding. It will be a snowball effect growing bigger and bigger and bigger. The consequences if you're not aware of how it works can escalate". The accumulating occupation or dispossession of land is characteristic for the commodity-widening and -deepening in a frontier to control and use 'natural resources' in growing capitalisation of production (Banoub et al. 2021: 1534-1535).

Arguably, protests of the Sámi reindeer herders in relation to the planned mine in Gállok are thus related to this wider GE commodity frontier expansion. Ole, a Swede who lives and works in Jåhkåmåhkke, expressed in relation to protests of Sámi people: "*I think they do that because they have been forced to give up territory so many times now. They gave up a lot of territory for water power. They do give up a lot of territory for forestry and this is one more area where they're supposed to let down. I think a lot of people are tired of backing down. There's not so much left in the end. So, I think it's more of a statement that 'we had enough' […]*." Jorin who is a Swedish activist of Skogsupproret, underlined the mentioned issue of accumulating land grabbing and colonisation connected to GE accumulation: *"I mean there is like 15 other struggles that should be getting if not as much then a lot of attention which aren't. You know, quite close to here in Vittangi Sameby there is a large graphite open pit mine planned that affects three Sámi communities. I think it is going to be used for battery production and there is massive wind farms which are destroying calving lands. But those aren't getting the same amount of attention as Gállok"*.

Contesting promises about local benefits

An important theme which came up in the interview conversations with people in Jåhkåmåhkke in relation to the mine were contested discussions of livelihood practices, jobs and rural (de)population. Ole highlighted the benefits of the 250 direct and around 300 indirect jobs and financial support for the city, promised to be created through the mine. He connected it to a fear of depopulation and that Jåhkåmåhkke will be disappearing without local industries. However, he also said that there is no right choice because it is like choosing between pest and cholera, between creating jobs or 'saving' the local environment. On the other hand, Jorin said that *"actually there aren't many jobs being created. Look at the logging industry and the mining industry. They are extremely mechanised. It is often foreign labour. It can be quite short-lived. So the fact that the narrative of job creation is effective shows that people are maybe desperate for jobs rather than these projects actually generating profits for people"*. Henry Svonni stated that out of experience it is often people working in the fly-in-fly-out scheme and thus communities having more costs than financial benefits through the jobs because in Sweden, the

community gets tax benefits only for workers registered in the community. This was reinforced by Arne Müller who compared it to other cities near mines in the area where the population of a municipality was expected to grow from 6000 to 10.000 inhabitants whilst it actually grew by 30 inhabitants before decreasing again. Furthermore, he argued that in the area the mine *"would have a negative effect on reindeer herding which is a big part of the labour market in Jåhkåmåhkke […] with some 250 or so jobs in reindeer herding and related activities"*.

However, what came up as a counter-argument in some interview conversations is that reindeer herding is not providing strong economic incomes in the area (Notes 04.22; Britta; Denis; Ole). The conflicting and contradictory aspects of systemic discrimination in the settler-colonial context were a recurring theme. Denis, a Swede who lives and works in Jåhkåmåhkke, said that *"[i]t's not so simple because reindeer herders are attached to the area and they can't move away because these are their lands and where they have their reindeers. So they contribute with population, they shop at the stores, their kids are in the soccer team, they fill an essential role in society even though they can't provide as much taxes to pay for it. So it's not so simple that they don't contribute, but their contribution cannot sustain society economically"*. Arguably the colonial and modern gaze on 'real' jobs as opposed to reindeer herding, leads to further dismissal of reindeer herding as a legitimate occupation. This was emphasised by Britta, a local who also did not grow up in the Sámi culture, who said that *"there are some people saying there's no economy in reindeer herding. But I think that's not up to us to decide. It's not only the economy of reindeer herding, it's also our responsibility to maintain the culture of reindeer herding"*.

5.1.4 Resistance and alternatives to the extractivist mining project

The double-movement: A self-reinforcing curse?!

Polanyi argued in 'The great transition' that the demands of a self-regulated capitalist market on people and nature are unsustainable and the exploitation of the environment will become as destructive that it is no longer capable of supporting capitalism. This in turn pushes the creation of counter movements demanding safeguards from the impacts of the capitalist free market (Brechin & Fenner 2018: 407). In the conceptualisation of the double-movement trading classes with profit interests are pushing for an economic liberalisation and commodification of labour and nature which is followed by public uprisings of worried groups and individuals who create movements to demand reparation or regulation by the government (ibid.).

Holt Giménez and Shattuck argue that to build political power, strong alliances distinguishing between superficial reform and structural change will be needed (2011: 134). In the green

economy and also parts of the climate movement, the hegemonic focus is on eco-modernist and large-scale industrial expansion and technological 'solutions' within capitalist economies as responses to the climate crisis. This reflects how social relations are reshaped by market norms (Brechin & Fenner 2018: 409). Whilst on a larger scale, the shift towards hydrogen-based steel production and a decarbonisation of production might be urgently needed to decrease CO_2-emissions in production, the data suggests that the issues are more complex. Also the counter movement to consequences of extractivism and colonial capitalism is fragmented. There are several people, groups and organisations involved who counter and question the corporate expansion of capitalist extractive commodity frontiers in the name of climate change mitigation. Arguably the Gállok resistance is made up of those wider struggles and day-to-day fights of Sámi people, local people and other activists who are resisting the destructive consequences of colonial capitalism.

Alternatives suggested by activists and people in Jåhkåmåhkke

As an alternative to the more conquest-oriented mentality of justifying extractivism for sustaining capitalist development regardless of impacts on reindeer herding and local environments, supporting approaches of stewardship of the environment and more sustainable local-economies in solidarity with the Sámi herders were brought up from activists of Skogsupproret but also people living and working in Jåhkåmåhkke. Jorin explained that eco-tourism or small-scale sustainable forestry could generate more sustainable employment in the area because of their labour-intensity. This was also mentioned by Britta who criticised that the government does not invest more in small-scale economies or practices that also benefit the people on the ground in the area on the long-term. She highlighted to think about the next generations and preservation of Sámi culture instead of large-scale industrial industries for profit. In this relation, Jorin emphasised the need for systemic root questions without which deeper societal change cannot occur. He also referred to people whose livelihoods are dependent on industrial logging or mining and stressed that *"they cannot just switch because the economic geography of this region does not look like that right now"*. He stressed that a comprehensive shift takes time but there is a need for a production system which is actually benefitting people locally and is reciprocal also in socio-ecological terms in the long-term. The challenge highlighted is thus to transition away from extractivism not just with the aim of mining less but more referring to the logic of capital accumulation and colonialism entailing a wider struggle against colonial capitalism.

One Sámi activist explained that being active against extractivist practices such as industrial mining or logging in the area is difficult. Because of the high number of private forest owners and economic importance for people living in the area there is a wide acceptance among the majority population for logging but also mining or wind power (Tarras-Wahlberg & Southalan 2021: 14). Political practice such as blocking a logging or mining site also has indirect impacts on violence against Sámi people (Henry Svonni). There is a risk that acts of racism against people of the Sámi culture increase from people in the settler-colonial majority population also people who are partly dependent on the economic incomes by the mentioned industries (Meeting 03.22). Henry Svonni said that when activists block an industrial project site *"[o]f course this relates to mining and wind power and logging and water power, it is the same. The activists leave the area and it is Sámi people who will have a hard time. Racism grows, Sámi people will be threatened to death sometimes".* This is why he suggested that there has to be a trustful building of connection of people over a longer period which takes time and resources in becoming accomplices in the day-to-day and structural socio-environmental struggles. A comprehensive extension on how this looks like in practice exceeds the scope of this work, however, people continue to fight and contribute significantly to this. With his recent book Gelderloos aims to show that "[t]he solutions are already here" (2022).

5.2 Socio-ecological implications of the GE frontier

In this section I aim to further answer the third research question looking at socio-ecological implications of the planned mine and an expanding commodity frontier through GE in Sápmi from the perspective of people living in Jåhkåmåhkke or active in the environmental movement. I separated this in two main sections, the implications on social relations and implications of the creation of 'disposable' (eco)systems and frontier racism.

5.2.1 Impacts of the planned mine on social relations

When I came to Jåhkåmåhkke it was first graffiti in the streets against the mine and of the ILO-169 that told me about political contestations in the city (Images 4 & 5). Sápmi and Swedish flags were flying outside of buildings creating the image of calm coexistence. However, as Henry Svonni, who is a Sámi, and Ole, who is a Swede, stressed in our interview conversations *"there is a lot of conflict between the Sámi people and Swedish people in those areas".* Another Swedish person from Jåhkåmåhkke said that he was born and lived in the area for all his life but having no relations to Sámi seems to make him less of a local. He stressed that it seems that Sámi want to gain more rights and control over land use in the North and expressed the feeling that the minority population is subjugating the local population (Notes 04.22). White et al. argue

in the context of large-scale land deals that the reactions to it are different and vary amongst classes and positions of people in the area that are differently affected by the project (2012).

Image 4 ILO-169 (taken by author)

Image 5 No mines in Jokkmokk (taken by author)

Images 4 & 5: Graffiti in the city of Jåhkåmåhkke against mining and with the writing ILO-169-Convention which the Swedish state never signed

I was in Jåhkåmåhkke less than a month after the government decision to approve the plans for the iron ore mine in Gállok. During that time, I had conversations with people in the city about the planned mining project, Sámi and Swedish people, land-owners on Gállok and people working and living in the city. However, when I asked about the mining project most of the people were reluctant to talk to me about it. I expected this after having gotten very few responses to my outreach activities. This might have several reasons, including lack of time and trust as a foreign student who is not from the area. The reindeer herders were moving their herds to the summer areas in that time (Notes 03.22). Another reason which came up in conversations was the former experience of extractivist research or journalism since the Gállok mine is a more popular or well-known struggle frequently studied or portrayed in the media. Heller, a reindeer herder, said that *"people come to the area with their own agenda taking your time and then they leave and you never see or hear them again"*. The conscious act of refusing to give certain information in the hand of powerful institutions such as a University in the settler-colonial state is also a form of self-protecting resistance. As Tuck and Yang have written on the politics of refusal, there are certain forms of knowledge which are dangerous to the community, not deserved by the academy or research might not be the needed intervention (Tuck & Wayne Yang 1987: 224).

However, most of the people clearly stated that they were not open to talk about the project since it is so contested and it split the communities more. Britta said *"I know there are some who don't want to publicly share their opinion"*. Without going deeper into what he referred to Ole stated that *"it's hard to speak freely because people are really against or really for and people are not really decent in their behaviour"*. Denis said that he is worried that there is an increasing conflict between different groups of people in the area *"it has influenced the social relations and my worry is that it's only going to get worse with the government decision that has been made".* On the contrary and in relation to social relations in city and ways of public organising, Britta stated that *"having different opinions is not dangerous, I think it's when you stop talking that it could become dangerous".* A Sámi person working at a craft shop stated that they are working there and thus generally do not talk about the mine because they rely on their customers and this project is very controversial in town so they are afraid of losing them when they show that they are against it (Notes 04.22). Next to people who are publicly vocal, organise and speak up against the planned mine or 'green' colonisation of Sápmi, in Jåhkåmåhkke the planned mine seems to be a topic which some can choose to be indifferent or silent about, whilst others are afraid of losing their livelihood, of the destruction of social-relations or important aspects of their culture and living. From sides of activists in the Gállok and forest rebellion, there was also a hope that the government decision would fuel more organised and physical resistance which could raise awareness for the whole situation in Sápmi (Enzo; Jorin). This however, is happening in the midst of negative social impacts of extractivist projects which came up during the research and might be related back to divide-and-rule tactics that were previously studied in the context of extractivist projects with the outcome of weakening social organisation and exacerbating local conflicts (Schilling-Vacaflor & Eichler 2017: 1440-1441).

5.2.2 On 'disposable' (eco)systems and frontier racism

As I laid out in the theory section, extractivism relies on the commodification and continuous exploitation of nature as the ever-exploitable body for capitalist resource production (Harvey 2001). One contradiction of capitalism that is especially visible through extractivism is the need for and simultaneous destruction of nature and environmental conditions such as fertile soil, potable water, a habitable climate and breathable air etc. especially in frontier zones which I focus on in this section (Fraser 2014: 62-63).

The politics of shiny environmental impact assessments

In conversations about the socio-environmental impacts of the planned mining project, political issues of environmental impact assessments were highlighted (Alexander Dunlap; Arne Müller;

Jorin). A link was made to procedural power in decision making processes. Questions were raised about how and by whom environmental impact assessments are being done and what is being included for example asking whether they are participatory and using local knowledges (Lawrence & Kløcker Larsen 2017; Kløcker Larsen 2017). Alexander Dunlap said that *"[t]here are ways of doing participatory environmental impact assessments which in my experience are not done. It's just big companies outsourcing them to these consultancy firms that just produce bullshit"*. Arne Müller compared the mine to another project in the area where the mining company of Kaunis Iron stated that the environmental situation of the mine was unproblematic. However, he continued saying that when they started the mining, sulfur was discovered in parts of the ore body which led to difficulties through emissions of metals into the water. In relation to power, he also stressed that the environmental assessments are often connected to the mining companies *"I have never, ever read a report from one of these consultants that says: "Sorry, this is not possible. You have to start the mine in some other place this won't work." Because if they would say something like that, they wouldn't get any jobs in the mining business and even if I talk to some of these consultants they say that: "We have to conclude that, well, there might be some problems, but it's possible""*. This relates back to vested interests to keep the capitalist system alive at all costs, greening extractivism through shiny impact assessments.

A risky tailing dam and socio-environmental pollution

A common theme that arose in the interviews with people in the area in relation to socio-ecological impacts were worries about further pollution that comes with the mining plans in the area. On the map of the planned mine it becomes visible that the area is like a peninsula close to the little Lule river (Heller). The river system provides the whole region with fresh water and opening up a mine and a tailing pond poses risks to the drinking water in the wider area (Arne Müller; Britta; Heller; Henry Svonni). Another issue highlighted was the tailing dam, a construction which has proven to involve risks that can cause socio-ecological disasters. Some of the most recent and destructive examples being the tailing dam breaks in Brazil near Mariana in 2015 and Brumadinho in 2019 with toxic mud slides killing people and destroying the local environments (da Silva, Go & Pessoa Moreira 2021). The location of the tailing pond on Gállok is still open, however, it was mentioned by Arne Müller that there are no good locations and that the currently planned location is above a village. In one of the conversations in Jåhkåmåhkke a Sámi woman brought up that when the iron ore mines were set up in Gällivare, a neighbouring city, the air quality dropped quite severely. For example, people could no longer

dry their clothes outside as the clothes would end up being covered in a fine dust film from the surrounding mines (Notes 03.22).

Double exposure and double fights of reindeer herders

„[I]n the West you have another Sámi village who already has problems to move the reindeers. People might say: "Okay then the reindeer will swim." "In poisoned water?"" (Henry Svonni).

One aspect that is linked to GE is the 'double exposure' of racialised communities in their vulnerability to climate change at the same time as to economic processes that are pushed forward as responses to climate change (Leichenko & O'Brien 2008; Voskoboynik & Andreucci 2021: 17). Research on frontier zones and racism has shown that investing in large-scale 'renewable' energy often comes at the expense of marginalised communities like indigenous groups (Bruna 2022; Dunlap & Correa-Arce 2022; Ramanujam 2022: 18-20). In the case of the Gállok mine, arguments that reindeer herds could instead walk on the river to avoid the mining area are criticised by Sámi people who say that the ice is so bad that this becomes increasingly dangerous (Notes 04.22). Henry Svonni explained that *"[w]hen you move the reindeer you sometimes need to go over lengths or rivers and in the last ten to twenty years it has been more dangerous to move over lakes or rivers because the ice is not what it has been in the past. The snow starts to fall before the ice on the lakes were frozen which makes the ice more unreliable and you have open waters in places where you never ever before had open waters in specific times so it will be much harder to move and much more dangerous"*.

The state made it a condition that the mining company has to compensate if the reindeer herding communities have to transport the reindeer on trucks (SG 2022). In a conversation with Henry Svonni, he told me that this practice has consequences breaking natural cycles of the reindeer. The reindeer lose some of their orientation in the truck and have to be reoriented in corals. This can mean that the reindeer leave the summer grazing land because they have been interrupted in the natural moving. He furthermore stated that if you put female reindeer in a truck in spring there is a risk for them to have a miscarriage and for the herder to lose the next generation. Issues such as these are deemed less important than the potential profits and industrial development through a new mine. Two reindeer herders said that generally for the younger generation it gets harder to continue with the culture and practice (Notes 03.22). Some work in the mines or other jobs to sell their labour power and make a living because it is harder to live off the reindeer herding. According to the herder Heller, it is hard to get a young person to choose between a life of fights, struggles and without money instead of leaving or working for bigger companies: *"It is hard to compete against money"*. He explained that the land is used

differently, space shrinks and less people can live off the practice which leads to an increase of internal as well as external fights in the communities. One herder in the area explained furthermore that his father only saw two bad years in his career whereas one generation later his brother only saw two good winters in his career (Notes 03.22.). Henry Svonni said that *"[o]f course, the work will be harder with climate change there is ice on the ground so the reindeer have a harder time to get the lichen"*. In bad winters snow that fell early melts with hotter weather and freezes to a hard layer of ice. When winter continues the snow falls on the ice and this makes it harder for the reindeer to reach the lichen on the ground (Meeting 03.22; Ramanujam 2022: 19).

This issue is furthermore connected to the forestry industry where most of the forest has been clear-cut and changed into monoculture plantations (Henry Svonni). Lichen grow on trees that are older than eighty years, yet in Swedish law, the logging companies can take down trees of eighty years or older which is when they become useful for reindeer and Sámi people (Heller). In bad winters such as the passed one, the reindeer herders who are making their living with the herds have to either live with the costs of losing reindeer due to starvation or feeding the reindeer with external feed which means other costs (Notes 03.22; Ramanujam 2022: 19). The reindeer herders who are making their living with the herds have an increase of around 20 Swedish crowns per day per reindeer in bad winters where they feed the animals (Notes 03.22). In herds with 500 to 1000 animals that is a big cost of up to 2.000kr per day only for the food (Meeting 03.22). One Sámi reindeer herder in Jåhkåmåhkke furthermore said that their family does not feed the reindeer with pellets and grass bales because they also die from a changing metabolism and their bodies are not and should not become used to eat like that (ibid.).

As Gonzalez argues, racialisation does justify or naturalise violence in resource extraction zones: "Those who occupy the sacrifice zones of racial capitalism are particularly susceptible to harm due to their classification as […] disposable" (Gonzalez 2020: 119). The Sámi way of life and culture which persisted a thousand-year-old state of settler-colonialism is constantly being fought for. Henry Svonni explained *"[w]e see our culture being destroyed, we are not happy. Our culture is at least 3000 years old […]. Reindeer herding is around 2000 years old. […] So you can destroy our culture with mining for about 20 years"*. The mining project is planned to be running for a period of between 14 to 40 years (Beowulf Mining 2022; Notes 03.22). Two Sámi people stressed in our conversations that what has been preserved for so many years is now being destroyed. A chairman of the Jåhkågasska reindeer herding community turned around the promises of the mining company that there will be 300 jobs for

30 years, with the statement that there were 30 jobs for 300 years in Gállok and the land is still there, pointing to a different way of life and world view of Sámi culture (Henry Svonni).

5.3 Discussion: "Let's be honest, it's not green" it's just straight extractivism

In this section I conclude the discussion of findings in answering the first research question through the findings of the second and third research question and discuss limitations and ideas for further research, leading over to the final conclusion of this thesis.

Whilst iron ore is not considered a critical raw material for the green transition by the EU, the expansion of 'green' mining for iron ore is promoted as significant for the green economy which needs steel in great quantities. The promoted motivations for opening an iron ore mine on the land in Gállok by the mining company Beowulf Mining and the Swedish state have shown that the green economy and underlying assumptions of a resource-intensive economic transition towards industrial 'fossil-free' modes of production are actively used as a reason for promoting and justifying the planned extractivist project. From the perspective that steel is needed in all technologies expanded by the EU with the aim of decarbonisation through a green energy transition and the promotion of the Gállok iron mine for these 'green' industrial large-scale shifts, the case might be positioned as a case of indirect GE in a GE frontier on Swedish Sápmi. It is created for commodity-widening and capital accumulation in the name of mitigating the climate crisis.

The company aims to position the mine in the broader commodity-deepening of direct GE industrial production. The ultimate destination of the extracted iron ore in Gállok is non-transparent. Whilst the company states to be in some way connected to green steel production in the area, activist researchers highlight that selling it to the European market for the building and transport industry is more probable. They argue that the planned produce of iron fines is incompatible with iron pellets used by the hydrogen-based steel production mills and that it is too expensive to shift production to that. This shows some of the contradictions of the argumentative 'greening' of extractivist practice for corporate capitalist profit. Furthermore, the resource intensity of the planned project and broadly associated green steel production was highlighted by activists in terms of infrastructure expansion and transportation networks which are a precondition for extractivism's connection to global commodity markets. Also electricity and bioenergy intensity and associated socio-ecological implications of the planned GE projects in the area were highlighted as contradictions to the promotion of net-zero-CO_2 production of the planned mine and green steel production.

As a typical feature of extractivism, local, racialised or indigenous communities bear the brunt of the extractivist practice and commodification of nature whilst the capitalist corporation benefits most. This is also expected by local people and environmental activists in the case of the planned mine in Gállok. Mentioned issues and risks are the appropriation of land and cumulative pressures on reindeer herding livelihood activities, logging, the pollution of air, drinking water or a tailing dam disaster and impacts on social relations. Promised benefits are expected to be exaggerated and unsustainable in the long term, failing to go to the systemic roots of the climate crisis which lay deeper. They furthermore strengthen power structures created through a history of state-industrial colonial resource superiority and a capitalist economy. The Sámi reindeer herders do not only already disproportionately bear the costs of climate change in their lives and livelihood activities, they are also particularly impacted and vulnerable to hegemonic mitigation strategies. Arguably, in the case of the Gállok mine, infrastructural colonisation and frontier racism materialise, fuelled in the name of mitigating the climate crisis with socio-ecological implications in the settler-colonial context of Sápmi.

This ultimately strengthens the aspect of GE as a concept which highlights that 'green' extractivism is not green but rather a continuation of extractivism in a capitalist-fix for further accumulation (Bruna 2022a: 156). As Alexander Dunlap concluded: *"[L]et's be honest, it's not green. It's just straight extractivism on many different layers and scales. And then what makes this green is marketing and ultimately it is this harnessing of kinetic energy that is less destructive than the active mining for coal and other fossil-fuel resources"*. The thesis suggests that the case has to be seen in its wider context of an expanding GE commodity frontier in Sápmi and might have the potential to draw more attention to the intersecting crises and fundamental shifts needed which go beyond the hegemonic logic and argumentations of 'greening' capitalist accumulation through a 'green' economy.

5.4 Paths for further research

The interconnected crises under colonial capitalism are complex and generally exceed the scope of a single master thesis. Because of the limited scope, there were inevitable simplifications and generalisations in the thesis. This relates for example to numbers or calculations in relation to the CO_2 or resource intensity of decarbonised commodity-chains which are often non-transparent and difficult to access. More interdisciplinary analyses of GE might thus have to be applied in the future. Applying the concept of GE analytically might shed further light on extractivist practice and slow violence of a hegemonic green economy. There are several conceptualisations of frameworks of just transitions and community-based energy justice which

might be interesting to research further in the studied context. Participatory environmental impact assessments were mentioned as approaches which might be a part of that. The combination of different theoretical frameworks draws important interconnections whilst also limiting the depth of analysis or leaving out relevant frameworks. The sphere of reproduction was neglected which asks for further analyses grounded in feminist theory alongside class-based theories.

6 Conclusion

In this thesis, I studied motivations and contestations of GE as a form of conventional extractivism under colonial capitalism that is justified with the expansion of a green economy and energy transition in the name of solving the climate crisis. This was to highlight connections between climate change, capitalism and colonialism. Climate change increases global pressures to shift energy production away from fossil-fuels. New initiatives for climate change mitigation through an energy transition are being promoted leading to new enclosures and an expansion of mining projects for capital accumulation.

I focused on a contradiction of capitalism which is its inherent need and insatiable appetite for the commodification and destruction of nature looking at how the incorporation of often racialised humans, land and ecosystems in a commodity frontier zone plays out in a specific area. This was done through conversations with people in the closest city to the planned mine and semi-structured interview conversations also including written data such as documents published by the mining company. Aspects of reactions 'from below' against the mine in Gállok were central to the study.

The Sámi reindeer herders with accomplices in the area are resisting the mining project on the herding lands since they have to constantly fight for their existence under increasingly difficult circumstances in the Swedish settler-colonial context. Competing land use, fewer food for the reindeer, rising costs through issues of changing conditions in resource frontier expansion and climate change with hegemonic 'mitigation' strategies amongst other issues threaten livelihoods and Sámi culture. Sámi people do not have any legal veto right about expanding large-scale infrastructure projects and Sweden never signed the ILO-169-Convention or established any extensive consultation mechanisms for indigenous people. This is one aspect of the hegemonic state-corporate hybrids which I briefly looked at in the first part of the analysis. This can also be related to the politics of environmental impact assessments which are often made by agencies which are close to the mining industry or paid by the same institutions which might have interest in the mine. Another power aspect which came up was the role of

the industry such as for example the car industry driving shifts towards 'fossil-free' steel production for their decarbonisation with the aim of making profits 'green'. In line with Harvey, this might be theorised as technical fixes of capitalism which fail to go to the root of the problems in the economic system.

The data showed that contrary to what Beowulf Mining proclaims, the produce of the mine will most likely not contribute to green steel production and that the discrepancy between promises made in the local area as opposed to the potential outcomes are huge. In line with literature on extractivism, in this thesis, I argued that the local population to different extends bears the brunt of the profits of capitalists and international markets embedded in colonial capitalism. The case of the Gállok mine can thus be seen as a case of GE which is extractivism promoted for a green economy whilst sacrificing ways of life that are inseparable from the land and ecosystems.

With that I aimed at contributing to show that it is important that the climate movement recognises the connection between climate change and colonialism and acknowledges not only the racist aspects of climate change but also dominant racist approaches of climate change mitigation. I argued in line with others that a focus on technical solutions to the climate crisis without taking the impacts on humans and ecosystems seriously and without connecting anti-racism, anti-capitalism and climate movements, risks to fail to get to the roots and fundamental problems of the climate crisis. The capitalist system continues to reproduce coloniality and extractivism for capital accumulation and profit maximisation in markets of decarbonised production with similar structures and power-structures as it does in the fossil-fuel industries. As this thesis has aimed to show, the focus on technological solutions perpetuates expropriation, exploitation for the profit of the few, socio-ecological destruction, energy-intensive large-scale infrastructures, extractive commodity chains and racism. As such both anti-racist and anti-capitalist ways of energy use have to be taken more seriously as just transitions towards climate justice also in the case of the Sámi people.

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Appendix

Table 1: Further outreach contacts

Outreach e-mails or phone calls to further actors which were unsuccessful, rejected or without reply:

1	Beowulf Mining PLC
2	Jokkmokk Iron Mines AB
3	Bergsstaaten
4	Naturvårdsverket
5	Urbergsgruppen Jokkmokk
6	Naturskyddsföreningen
7	Amnesty Sápmi
8	Sámetinget (Sámi Parliament)
9	Politician Sámi Parliament
10	Sámi Nuorra (Sámi Youth Organisation)
11	Chairmen Sámi Jåhkågaska and Sirges
12	Näringsdepartementet (Ministry of Enterprise and Innovation, Sweden)
13	Politician Swedish Social Democrat Party (Socialdemokraterna)
14	Politician Green Party Sweden (Miljöpartiet)
15	Politician Leftist Party Sweden (Vänsterpartiet)
16	Fridays for Future Sweden
17	Gruvfritt Jåhkåmåhkke (Outreach message through anti-mining facebook group)
18	Outreach to several vocal Sámi activists in the Gállok case mainly through social media or phone
19	Yes to Life No to Mining Network

Table 2: Conducted interview conversations

Semi-structured Interviews:	Person	Date	Method & Place	Comments	Time
1 (prep) Anja and Sven	2 people working in the field of raw material politics	19.02.2022	Zoom Call		1 hour
2 (prep) Tibor	Person active in mining resistance through the Gállok Rebellion	20.02.2022	Phone Call	Technical issues with recording	45 min
3 (prep) Enzo	Person active in mining resistance through the Gállok Rebellion	15.03.2022	In person in Malmö		1 hour
4 (prep) Leila	Person working for the Swedish Green Party Milieupartiet	16.03.2022	Zoom Call		1 hour
5 Denis	Person living and working in Jåhkåmåhkke	30.03.2022	In person in Jåhkåmåhkke		30 min
6 Ole	Person living and working in Jåhkåmåhkke	01.04.2022	In person in Jåhkåmåhkke		1 hour
7 Heller	Sámi reindeer herder in the area	01.04.2022	In person in Jåhkåmåhkke		1 hour
8 Meeting 03.2022	Sámi activist and other activists supporting Skogsupproret in a meeting	02.04.2022	In person during activist camp in Sámi village		2 hours

9 Henry Svonni	Sámi activist from Gíron (Kiruna) who lived and studied in Jåhkåmåhkke for a few years	03.04.2022	In person during activist camp in Sámi village		1.5 hours
10 Jorin	Person active in mining resistance through Skogsupproret	03.04.2022	In person during activist camp in Sámi village		45 min
11 Sia	Person active in mining resistance through Skogsupproret	02.04.2022 & 20.04.2022	In person during activist camp Sámi village & in a park in Lund		1 hour
12 Alexander Dunlap	Alexander Dunlap researching transnational-super grids and connections between conventional and renewable energy extraction operations	11.04.2022	Phone Call		1 hour
13 Arne Müller	Arne Müller author and journalist on mining in Sweden with a focus on Norrland (in Sápmi)	12.04.2022	Phone Call		1 hour
14 Timo	Person researching green steel production in Sweden	15.04.2022	In person anonymised place	Technical issues with recording: questions were re-answered via voiceovers	1 hour
15 Britta	Person living and working in Jåhkåmåhkke and private land-owner in Gállok	27.04.2022	Zoom Call		45 min
16 Andy	Person working at the London Mining Network and author of the report 'A material transition'	18.03.2022	Questions answered via e-mail due to time constraints		-

Table 3: Parts of the coding and thematic analysis

RQ 1: How is the case of the planned iron mine in Gállok a case of GE?					
2. RQ 2: Motivations & contestations of GE in the case of the Gállok mine embedded in commodity frontiers					
Themes	**Codes**	**Codes**	**Codes**	**Codes**	**Codes**
Role of Sweden and settler-colonialism	Legislation: ILO169, Reindeer Herding Act, Mining Act	Granting rights and sovereignty over land use, land grabbing, 'green' colonialism	Power in environmental impact assessments	Socio-economic impacts on reindeer herders	Leading role in hydrogen based 'green' steel production
Promoted reasons for opening the mine from Beowulf Mining and the Swedish government	Contributing to the 'green' economy through, net-zero mining and sustainable supply chains	Connections with 'fossil-free' steel production in Norrbotten to 'mitigate the climate crisis'	Creating jobs in the local area	Contributing to the Swedish economy	Producing high quality iron for modern industries for decades in cooperation with the local population
Reasons for the mine from people in Jåhkåmåhkke	Bringing jobs and tax revenues to the area	Decreasing depopulation and economic decline	Increase in local infrastructures	Closer working place for people working in mining	Reindeer herding will continue even with the mine
Reasons for opposing the mine from environmental activists and people in Jåhkåmåhkke	Landscape destruction, biodiversity crisis, wrong answer to global crisis	Slow violence humans and the more-than-human	Communal risks for profit of a foreign company	Extractivist practice, no local benefits in the long-term, wrong solution, 'green' techno-fix	Iron fines do not even contribute to 'green' steel production, no trust in company
Opposition to 'false promises' from environmental activists and people in Jåhkåmåhkke	Not so many and unsustainable Jobs (fly-in-fly-out)	Population growth as a myth compared to other mining cities	New resource demands, more electricity & still CO_2 emissions	Iron fines not pellets for 'green' steel	Root causes of the crises are ignored to continue with business as usual for profit
Connection to cumulative exploitation, resource & energy intensity of the green economy	Infrastructure expansion, transport and roads	Neglected material base and resource demands of renewable energies, acceleration of electricity consumption	Accumulating effects on reindeer herding lands	Interconnection of large-scale logging, hydro- and wind power, mining, car and military testing zones, biodiversity crisis	Focus on increasing large-scale industrial shifts and economic growth
Alternatives proposed to the mining project from environmental activists and people in Jåhkåmåhkke	Support of local, small-scale economies: reindeer herding and Sámi culture, small-scale forestry, small-	Nationalisation of climate change adaptation, not for corporate profit	System change with the state as intermediary actor in the short-term	Full capacity of circular economies and expansion of steel scrap production instead of new	Mines that are needed in a non-capitalist system should not be opened on indigenous territory & only with FPIC (free

	scale tourism, arts & crafts etc.			primary iron mines	prior & informed consent)
3. RQ 3: Socio-ecological implications of GE in the case of the Gállok mine					
Impacts of the planned mine on social relations	Expansion of constant settler-colonial resistance	Social conflicts in the local area, splitting social relations	Silence about the mine and underlying issues	Short-term increase of taxes, jobs, infrastructure	Changing the city of Jåhkåmåhkke in the long run
Further socio-ecological implications	Livelihood disruption (especially reindeer herding) on indigenous territory, land fragmentation, land use change	Water pollution, danger of the tailing dam, toxic emissions, drop of water quality	Air pollution, noise and toxic dust	Double impact climate change issues and climate change mitigation issues (especially on Sámi herders)	Infrastructure and logging expansion

Semi-structured interview guide

I) Obtaining the informed consent of the interviewees:

- Format and approximate length of the interview
- Purpose of the interview
- Terms of confidentiality
- Authorization to record the interview

II) Introduction and situating

- Do you have any personal connection to the area, did or do you live there? Do you work here?
- Are you part of any organisation or group? What is your position in that context currently?
- Can you tell me a little bit about what your connection is to the planned mining project in Gállok? How do you feel about the plans of mining iron ore in Gállok?

III) Social and Environmental Impacts of the mining Project in Gállok

- Would you like to tell me more from your perspective what you think the impacts of the mine in Gállok will be on humans and the environment?
- **Social Impacts:**
    i. Who do you think benefits from the mine and how?
    ii. Who do you think loses through the mining project how and what?
    iii. From your perspective what are the main aims of people resisting the mining project?
    iv. How might the Sámi people in the area be affected by the planned mining project? How other people living and working near the mining area?
    v. What do you think will economic impacts of the planned mining project be? Where do you think will the iron ore go to? What will it be used for?
    vi. How do you think social relations of people in the area are impacted by the mining project? Did your relationships to people change?
- **Ecological impacts:**
    vii. What is your connection to the land in Gállok?
    viii. How does technology harnessing energy in the area impact the landscape?
    ix. Do you experience a difference in the ecological context, (possibly) impacts of climate change/ logging/ other large-scale infrastructure projects in the area/ on Sápmi already today and if so, how?
    x. How do you think could these issues worsen in the future e.g. also through the mining project?
    xi. What effect does this have on you?

IV) 'Green' Mining, 'Green' Steel Production and Carbon-Free Commodity-Chains:

- Beowulf Mining profiles itself as delivering raw materials critical for the transition to carbon-free steel production and sustainable raw materials production saying that this is important for the green economy to address the climate emergency.
  How do you see this? What justifies this iron ore mining project?
- Can you describe the Swedish government's vision for this project?
- Do you know more about the position of the local government?

V) Closing Questions:

- What else do you consider important for me to know about the case? Is there anything you would like to add?
- Do you have any contacts to people who you know are active in the resistance or know more about the Gállok case and might be open to talk to me as well?
- Can I email you if I have any follow up or clarifying questions?