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"Vittangi saves the world"

Five actors' perspectives on justice conflicts and critical raw materials

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Titel
”Vittangi räddar världen”: Fem aktörers perspektiv på rättvisekonflikter och kritiska råvaror

Title
”Vittangi saves the world”: Five actors´ perspectives on justice conflicts and critical raw materials

Författare
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Sammanfattning
Denna studie syftar till att belysa samhällsaktörers perspektiv kring gruvbrytning av kritiska råvaror i led med klimatomställningen. Studien undersöker hur samhällsaktörer belyser effekterna av en eventuell kommande gruvetablering i byn Vittangi i norra Sverige. Genom semistrukturerade intervjuer med fem samhällsaktörer, i kombination med en tematisk analys, har olika rättvisekonflikter undersökts för att skapa en insikt och ge ett nyanserat kritiskt perspektiv. Analysen av resultatet har utgått från teorin av miljörättvisa och påvisar flertalet målkonflikter som uppstått i samband med den potentiella gruvetableringen i Vittangi. Slutsatserna tydliggör intressekonflikter och baseras på hur det påverkar aktörerna, vilket synliggör perspektiven på gruvbrytning av kritiska råvaror som ett led av klimatomställningen.

Abstract
This study aims to shed light on the perspectives of social actors regarding the mining of critical raw materials in connection with climate change. The study examines how social actors highlight the effects of a possible future mine establishment in the village of Vittangi in northern Sweden. Through semi-structured interviews with five social actors, in combination with a thematic analysis, various justice conflicts have been investigated to create insight and to provide a nuanced critical perspective. The analysis of the result has been based on the theory of environmental justice and demonstrates the majority of goal conflicts that arose in connection with the potential mine establ ishment in Vittangi. The conclusions clarify conflicts of interest and are based on how they affect the actors, which makes the perspectives visible on the mining of critical raw materials as part of the climate transition.

Nyckelord
Kritiska råvaror, Miljörättvisa, Rättvisekonflikter, Klimatomställning

Keywords
Critical Raw Materials, Environmental Justice, Justice Conflicts, Climate Adjustment

Preface

First of all, we would like to thank our supervisor Per Gyberg who helped us on the way to completing this study. Thank you for all the supervision meetings that started with question marks and ended with exclamation marks!

We would also like to take the opportunity to thank all respondents who took the time to participate in interviews and brought many exciting perspectives and experiences. Without you, the study would not have been possible.

Lina Swartling and Amanda Axelsson

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Summary

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Abstract

This study aims to shed light on the perspectives of social actors regarding the mining of critical raw materials in connection with climate change. The study examines how social actors highlight the effects of a possible future mine establishment in the village of Vittangi in northern Sweden. Through semi-structured interviews with five social actors, in combination with a thematic analysis, various justice conflicts have been investigated to create insight and to provide a nuanced critical perspective. The analysis of the result has been based on the theory of environmental justice and demonstrates the majority of goal conflicts that arose in connection with the potential mine establishment in Vittangi. The conclusions clarify conflicts of interest and are based on how they affect the actors, which makes the perspectives visible on the mining of critical raw materials as part of the climate transition.

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1. Introduction

As global climate change intensifies, there is an increasingly urgent need for a transition from fossil fuels to newer, lower-carbon energy systems. Reducing climate impact requires efforts to transition to more environmentally friendly energy production with, among other things, renewable energy sources, green economy, environmentally friendly means of transport and improved communication (Hofmann, Hofmann, Hagelüken & Hool, 2018). Similar to this insight, the EU's vision of net-zero greenhouse gas emissions by 2050 states that greater investment is needed in renewable energy sources, batteries and energy storage (European Commission, n.d.).

Against this background, it can be concluded that it is required, among other things, to extract a larger amount of metallic materials, usually defined as *critical raw materials*. This process is done through mining. Critical raw materials are used in advanced technology such as low-carbon technology and batteries, which are found in wind power generators and electric vehicle motors, for example. These minerals are considered critical because there is a shortage of supply (Depraiter & Goutte, 2023). The limited supply is considered a problem in itself, but the resources are also unevenly distributed between different parts of the world. This means that there are both geopolitical and economic challenges with very strong interests in gaining control of resources, as well as strong profit interests (Hofmann et al., 2018).

Today, China accounts for the majority of the world's mining of critical raw materials for battery manufacturing. This, in turn, has given rise to debates about security, resource utilization, imbalances, and supply chain shocks (Fan, Omura, & Roca, 2023). Against this background, the EU wants to ensure a long-term and stable supply of critical raw materials by recycling, processing, extracting and creating safer supply chains within the EU. In addition, the EU has the ambition to significantly reduce dependence on imports and invest in domestic extraction of the critical raw materials (European Commission, n.d.c.).

As a member state of the EU, Sweden's national environmental goal is to reach net zero emissions by 2045. To achieve this goal, the availability of critical raw materials is crucial. Sweden is at the forefront of the battery industry, but further investments in various areas are required to continue to contribute to Swedish competitiveness, growth and development (Swedish Energy Agency, 2023). At the same time, these developments can result in significant negative impacts on the local environment and affected residents, which can be exacerbated if mining companies do not integrate social, environmental and political factors into the planning process (Guzik et al., 2021).

Due to the increased interest in critical raw materials, the number of explorations in Sweden has increased recently. This has led to several deposits of critical raw materials. The ongoing explorations being conducted are primarily focused on critical raw materials such as graphite, fluorite, phosphorus, vanadium and lithium. The Swedish mining company LKAB together with Boliden accounts for 78 percent of the explorations, but these are also carried out by smaller, Swedish and foreign companies. However, exploration permits rarely lead to an established mine, but only 1 in 1000 explorations globally. One of the exploration projects that has come a long way in the permit process is the mining establishment in the village of Vittangi in Norrbotten (Ericsson, 2024).

Sweden's mineral resources are expected to contribute to the EU's and Sweden's electrification and digitalization processes, especially as Sweden is at the forefront in Europe with its regulations and higher requirements for sustainable practices. Sweden as a supplier of critical raw materials will provide a competitive advantage, both for the EU and globally, as well as for the Swedish economy and mining companies (Ericsson, 2024). On the other hand, the requirement for increased extraction of critical raw materials through mining in turn gives rise to increased exploration and land development, which causes greater environmental pressures (Hofmann et al., 2018).

Human impacts and land-use change through natural resource extraction also often have significant ecological, social and cultural impacts on local indigenous communities. For example, there is a long history of competing land use and the traditional customs of the Sámi in the areas where the extraction of natural resources takes place. In many cases, land use processes are not adapted to the rights and needs of the Sámi, which creates local and national goal conflicts with negative cumulative effects on Sámi reindeer husbandry (Österlin & Raitio, 2020). Although the extraction of critical raw materials is necessary to meet today's energy needs, it can have detrimental societal effects for nearby communities (Hofmann et al., 2018).

Being able to resolve the conflicts of objectives and interests that arise around the need for critical raw materials is important, both from a societal perspective and for the inhabitants affected by the mining of minerals. To explore the potential consequences of a mining establishment on a nearby community in a Swedish context, we have chosen to conduct a survey of different actors' perspectives and interests. We have interviewed a Sami belonging to the Talma Sami community, a worker at the mining company Talga, a resident of the village of Vittangi, a worker at Kiruna municipality and a researcher in Sami issues and green

transition (see section 3.4. Selection of respondents). We have analysed how these actors reason about fairness aspects in connection with the ongoing climate transition.

1.1. Purpose and research questions

This study examines different actors' perspectives on mining as part of the climate transition. The study intends to investigate what these actors experience that mining has for consequences on the environment and society from the perspective of justice. The aim is to shed light on societal actors' perspectives on the conflicts of justice in mining and to create an insight and provide a nuanced critical perspective on how it can affect the actors' lives. This provides an in-depth understanding of the challenges and opportunities associated with the mining of critical raw materials in the specific cases of the study.

1.1.1 Issues

- *How do societal actors reason about the challenges and opportunities surrounding the mining of critical raw materials?*
- *How do the (fair) perspectives on the mining of critical raw materials differ and are justified among different societal actors?*

2. Background

The following sections present previous research and other evidence that is deemed relevant to meet the purpose of the study. By reviewing previous research and other relevant sources, the section aims to provide a knowledge base that justifies the study and puts it in context.

2.1. Previous research

"Previous research" discusses the problem of dependence on China as the main supplier of critical raw materials and the global increasing demand for energy. It also highlights the consequences of mining operations in terms of health and environmental effects and how the EU can proceed to reduce its dependence on imports.

Hofmann et al. (2018) write that energy is the foundation of the global economy, transportation, industries, the expansion of large cities, and the general well-being of society. According to the US Energy Administration (EIA), it is estimated that total global consumption of energy will increase by 48% by 2040. The authors argue that changes in the global financial, political and economic environment, combined with increased consumption, have led to imbalances between supply and demand of certain raw materials in the material markets, thereby creating uncertainty in the supply of materials and for resource security. The authors highlight that problems and conflicts have already arisen in the security of resources for energy and the extraction of critical raw materials for energy production. As an example of this, China today accounts for 90% of the mining of critical raw materials globally and is the only country in the world that has an entire value chain for critical raw materials within its own borders, from mine to finished product.

The EU has greater opportunities to extract critical raw materials than is currently being implemented. In 2015, the EU accounted for 5% of the production of photovoltaic modules, while China and Taiwan had a leading share of 67%. A broader awareness and policy initiatives around resource security were triggered between 2010-2014 when Chinese exports created restrictions on critical raw materials, which led to an increase in price by between about 10-40 times depending on the material. These conflicts have in turn led to critical raw materials no longer being seen only as geological issues, but as political, economic, environmental, and social issues worldwide (Hofmann et al., 2018).

Rabe, Kostka, and Smith Stegen (2017) write that the Chinese government is concerned about

the serious health and environmental risks caused by the mining of critical raw materials. The activities are responsible for environmental pollution as a result of chemical contamination in soil and water and radioactivity, which in turn negatively affects human health and food production. The government of China is also concerned about the country's own resource security as China will need critical raw materials for energy technology within the country's borders. To increase resource security, China's government has tried to eliminate the illegal extraction of critical raw materials, which today account for about 40% of the country's production. Despite the government's efforts, local authorities have a high level of interest in continuing their local mining activities, even though the risks of health and environmental hazards are high (Rabe, et al., 2017).

Rabe et al. (2017) write that governments and industry analysts have been raised by concerns about the strong dependence on China as the sole supplier of critical raw materials that countries are now facing. They argue that the countries that have access to specific critical raw materials pose political risks due to the relationship between supply and demand in the market. For example, China's materials industry aims to raise the prices of materials, thereby increasing China's market share for their applications and supporting technological updating. Therefore, it will be important for the EU to follow China's industrial policy in order to detect early any changes in policy that may be significant for the supply and resource security of raw materials in the future. To reduce the EU's dependence on China, alternative supply chains can be considered as stepping up joint research efforts with countries that have similar interests to the EU, such as Japan (Rabe et al., 2017).

2.1.1. Impact on the environment

Previous research shows cases of mining operations in South Africa that have had negative environmental impacts, such as loss of biodiversity, increased greenhouse gas emissions, and mine runoff. This, in turn, highlights how mining establishments can affect the environment in the immediate area.

In a study by Nair (2023), the author writes that the investment in the renewable industry in the Mpumalanga province in South Africa through electric car batteries and solar panels has had negative consequences on the environment in the local area. The mining activities cause, among other things, acid mine runoff into rivers, which has led to the destruction of biodiversity in the area. Local fish species, frogs and crocodiles are affected and die from the acidic runoff. Other

negative consequences that can occur during mining are topographical changes, loss of vegetation, geological transformations, and severe disruption of ecosystems. Mining waste mining operations in Mpumalanga also contribute to the deterioration of water and air quality in the area (Nair, 2023).

Research by Jiskani et al. (2021) shows that mining operations require large amounts of energy and resources that cause waste and increased exhaust gases leading to environmental pollution. Mining also leads to climate change through the emission of greenhouse gases during the smelting and enrichment processes, as well as the high energy and fuel consumption (Jiskani et al., 2021).

2.1.2. The pros and cons of mining

This paragraph shows previous cases about the advantages and disadvantages that mining activities can bring. The management of the negative impacts of mining activities includes consideration of social, political and environmental issues. The positive effects reduce the EU's dependence on imports.

In a study by Guzik et al. (2021), the different effects and impacts of mining operations on the local environment are identified through a number of case studies. As part of the climate transition, mining activities and the extraction of critical raw materials can bring economic benefits to local areas. Some of the identified benefits are securing supply chains of critical raw materials, enabling the development of national industries within the EU and minimizing supply risks. It reduces the EU's import dependency on critical raw materials and the risk of vulnerable price changes in the market for minerals and metals. However, the authors clarify that mining activities can have a negative impact on the local environment, such as landscape, flora and fauna, as well as on the community's business activities. In many cases, concerns are expressed about mining waste and its impact on local water resources. While mining operations can have a positive impact, it can come at the expense of local communities and their resources (Guzik et al., 2021).

In order to deal with the limitations of the impact of mining operations, it is important for mining companies to establish responsible planning of mineral extraction. In many cases, it involves planning for social, environmental and political issues as mining integration integrates with local communities and their relationship to the landscapes, environments and values. In order to succeed in a fair distribution of resources, mining operations must actively seek to

minimise negative impacts on the impact of local communities on people and the environment (Guzik et al., 2021).

2.1.3. Conflicts over land use and reindeer herding

The section highlights how the extraction of natural resources and land use affects local communities, specifically the Sami in Sweden. Reindeer husbandry is central to both Sami culture and economy, but at the same time it is threatened by competing land use.

Österlin and Raitio (2020) problematize the extraction of natural resources because land use causes major global problems in an ecological context. They also stress that it has social and cultural consequences that mainly affect local and indigenous communities. In Sweden, the Sámi population shows a clear example where indigenous communities and indigenous peoples whose traditional and cultural rights are strongly affected by industrial activities. Mulk (2009) writes that there is a long history of conflicts between the Sámi culture and Nordic states, specifically due to the previous colonization and assimilation policies that have been pursued. In Sweden, cultural heritage has been restricted for over 400 years due to the Swedish state's dominant and discriminatory attitude, which has led to a decline in the Sami indigenous population. Today, there is still a clear conflict between the Sami culture and older Swedish nationalist perspectives (Mulk, 2009).

Brännlund and Axelsson (2011) clarify that the Sami have been recognized as a minority group in Scandinavia for a long time and that they have farmed the same areas for thousands of years. The reindeer herding of the Sámi is important for the economic, social and cultural functions of their communities. Österlin and Raitio (2020) explain that reindeer husbandry is the Sámi's main source of livelihood. On the other hand, research shows that reindeer husbandry has suffered major negative consequences due to reduced reindeer husbandry caused by competing land use with other activities, such as forestry, mining, hydroelectric power plants and wind turbines. This results in the loss of pastures and tree lichens and creates disturbing environments for the reindeer. A necessary prerequisite for Sámi reindeer herding is large, undisturbed grazing landscapes and calving areas, but also stable climatic conditions (Österlin & Raitio, 2020).

Research by Lawrence and Larsen (2016) shows that extraction activities for natural resources have increased on the traditional lands of the Sami in Sweden. The authors believe that this is due to several different driving forces that also include energy needs, commodity prices and

population desires. The Swedish state has traditionally played an important role in controlling the welfare of the population and development, but at the same time the regulation of resource activities on Sami lands has been weak, if not non-existent. The authors also believe that the broader political context gives little official recognition regarding the Sámi land rights in Sweden. Mining laws are also weak, despite the fact that industrial development has consequences for the Sámi's traditional land use in the form of fishing, hunting and reindeer herding (Lawrence & Larsen, 2016).

2.2. EU rationale on critical raw materials

An important reason for the increased interest in mining critical raw materials is that the EU aims to increase its self-sufficiency and strengthen the value chain of these minerals. This section highlights the EU's strategies to achieve this goal.

By 2030, the EU should be able to meet 10% of its annual needs through its own production, 15% through recycling and 40% through processing (European Commission, n.d.). In 2023, the EU presented a new proposal for a regulation called the Critical Raw Material Act, which aims for the EU to increase its autonomy regarding critical raw materials. The regulation involves scaling up the production of carbon-neutral technologies for clean energy supply chains and strengthening the value chain at all stages for critical raw materials in Europe. The law will also reduce administrative burdens, ensure a high level of social and environmental protection, and streamline permitting procedures for projects made of critical raw materials in the EU. This will also mean shorter time frames for permits and that EU member states will need to develop programs at national level to be able to explore geological resources (European Commission, u.å.c).

2.3. Relevant Laws

A very important aspect of mining and mining establishment is different laws that limit or enable different stakeholders to establish themselves. The laws also express other priorities and intentions, such as the rights of nature or indigenous peoples. This means that establishments are often very complex processes.

Laws that we consider to be relevant to the study and that concern mining processes are *the Minerals Act, the Act on National Minorities and Minority Languages* and *the Reindeer Husbandry Act*. These are relevant because previous debates show that reindeer husbandry is

affected by mining establishments. The laws can develop understanding of the debates and conflicts of justice surrounding land use as a result of the mining of critical raw materials.

The Minerals Act (SFS 1991:45) concerns the processing and examination of mineral substances such as lead, graphite, lithium and cobalt, among many others, on one's own or someone else's land. In the Act, *processing means* the extraction of minerals and *exploration* means that minerals are examined for to assess and demonstrate its economic value and characteristics. In order to obtain an exploration permit and a mining concession (mining permit), it is required that the Chief Mining Inspector must review the granting (Minerals Act SFS 1991:45). According to the Minerals Act (SFS 1991:45), encroachment or damage caused by exploration work must be compensated by the party that has a concession or exploration permit. Each calendar year, the compensation shall correspond to two per thousand of the value of the minerals mined within the concession area. This calculation shall be made based on the amount, content and price of minerals extracted during the year. Of this compensation, a quarter will go to the state and three quarters to the property owners in the area. If there are more properties in the area, the compensation must be determined according to each property's part in the area (SFS 1991:45).

According to the Act (SFS 2009:724) on National Minorities and Minority Languages, the Sami are recognized as a national minority group. This law gives the Sámi linguistic rights, cultural support, rights to participate in matters concerning their culture, language and traditions, and protection against discrimination on the basis of ethnic origin. The Reindeer Husbandry Act (SFS 1971:437) gives every Sami the right to reindeer herding. The Reindeer Husbandry Act (1993:36) gives the Sami permission to use water and land to maintain themselves and their reindeer, provided that the Sami are members of a Sami village. The law is based on ancient tradition, which gives a legal right to cultivate land since it has been done since ancient times. In Norrbotten County, Sami people are allowed to engage in reindeer herding all year round. The right to reindeer herding is protected just as the right to property is according to the constitution and as long as reindeer herding is practiced, it cannot therefore be taken away from the owners without being liable for compensation (SFS 1971:437).

3. Method

To investigate different actors' perspectives on how mining can affect a nearby local community, we have chosen to analyze a planned mining establishment in the village of Vittangi in northern Sweden, belonging to Kiruna municipality. The planned mine is being explored by the Australian mining company Talga. We have chosen to analyze how different actors reason from a fairness perspective in connection with Talga's upcoming mining establishment and how it may affect the local community of Vittangi. The reason for choosing this project is that it highlights a growing debate and conflict of interest that has arisen at both local and national level as a result of the climate transition.

3.1. Empirical case

The ongoing climate transition will require more and more land exploitation and extraction of critical raw materials both in Sweden and globally. Sweden is one of the countries that is at the forefront of sustainable methods and the country also has good access to resources when it comes to critical raw materials. Sweden is thus an attractive country when it comes to mining critical raw materials. However, previous research shows that mining establishments create conflicts as it has an impact on local communities and the environment, and thus it is important to create an understanding of the consequences that mining entails. An increased understanding of the justice perspective and the potential conflicts that exist or risk developing between different actors across different levels of society motivates us to this study. The actors in our study are a case of people's perspectives on mining. The study shows several different perspectives and gives an indication of what the debates surrounding the mining processes can lead to. It thus fills a knowledge gap that can be significant for increased understanding of how to create a more just climate transition that leaves no one behind.

3.1.1. Talga mining company

Talga is a mining company with the ambition to enable the production of sustainable consumer and battery products (Talga, n.d.a.). The company was founded in 2009 and has operations in Australia, England, Japan, Germany and Sweden, with headquarters in Perth, Australia (Talga, n.d.). The products have a low carbon footprint and are used in the manufacture of electric vehicles, consumer electronics and energy storage systems. The material is refined and extracted in Sweden from graphite (Talga, n.d.c.).

According to Talga, graphite mining in Nunansvaara Södra is an important resource for Sweden's and Europe's green transition due to its unique geological properties and high quality. The mine is estimated to be able to extract up to 120,000 tonnes of high-grade graphite that will be collected in Nunansvaara and then processed in Talga's factory in Luleå. Around 60 people will work at the mine. Inorder to minimize the company's impact on reindeer husbandry, the mining project's open-pit mining will only take place during the summer months (Talga, n.d.e.).

The company intends to use water and residual waste technologies to minimize its environmental impact, such as an integrated water treatment system and water monitoring to ensure that mining operations do not affect groundwater levels and water quality. The monitoring systems will also monitor dust and noise levels. To reduce the impact on biodiversity, Talga writes that mining operations are designed to avoid any impact on the areas that have high biodiversity and that these areas must be protected during current mining operations and after mining operations. They also claim that they apply and identify biodiversity compensation to create a net increase in biodiversity in the area by 15% (Talga, n.d.).

Talga is a partner in the CLIMB project (Changing Land use Impact on Biodiversity) together with LKAB, Vattenfall, Skellefteå Kraft and Skanska, among others. The aim of the project is to develop common methodologies to be able to create transparent ways of evaluating biodiversity and to be able to reliably communicate and quantify positive impacts when land is restored or exploited. Talga believes that sustainability is the vision and core of their business strategy. The company writes that their products are not only changing the world, but *"we also produce them in ways that are both environmentally and socially sustainable"* (Talga, n.d.).

On 5 April 2023, the mine was granted an environmental permit and a permit within the framework of Natura 2000 by the Land and Environment Court. The planned mine has met resistance from several parties and its application for a permit has been appealed several times (Land and Environment Court judgment 2023- 04-05 in case no. M 1573-20; Swedish Society for Nature Conservation, 2023; Talga, 2023).

3.1.2. Vittangi and the debate about the establishment of the mine

Vittangi is a village that belongs to Kiruna municipality and is located 76 km from Kiruna city (Kiruna Municipality, 2023), and at the year 2016 the village had 791 inhabitants (Nationalencyklopedin [NE], 2024).

Vittangi ligger intill Vittangiälven som mynnar ut i Torneälven (Kiruna Lapland, u.å.).

The area has been dominated by forestry and agriculture, but the mining operation LKAB in Svappavaara has contributed to a labour market for residents (Kiruna Municipality, 2023). Talga's graphite mine is planned to be located between the Vittangi and Torne rivers and has its catchment area right next to Vittangi village. One of the Sámi communities affected by the planned mining is Talma Sámi village (Swedish Society for Nature Conservation, 2023), which is a mountain Sámi village in Kiruna municipality. The Sámi village covers an area of 4251 km2 and has about twenty reindeer herders. In the winter months, the reindeer grazing areas are in Kiruna municipality, while its summer pastures are in Norway (Sámi Parliament, 2018).

Talga's planned mine in Nunasvaara Södra outside Vittangi has sparked debates that touch on several aspects, including issues regarding environmental impact, fair distribution and safety (Swedish Radio, 2023a; 2023b; 2023c; 2023e). The discussions concern both the pros and cons that are perceived to exist among the local population, including Sami whose reindeer husbandry is threatened to be affected by the activities. Some of the perspectives are based on perceptions of resource allocation, economic benefit, land development and cultural aspects. The debates are permeated by a clear concern about the mining project's impact on the surroundings and the risk of environmental destruction, while the mining company believes that the established mine will provide both jobs and economic gain for the local community. One concern is that the water next to Vittangi may be negatively affected by mining operations, but Talga, for his part, explains that there are technical solutions that prevent the water from being affected (Swedish Radio, 2023a; 2023b; 2023c; 2023e; SVT Nyheter, 2023). The Swedish Society for Nature Conservation (2023) also points out that reindeer husbandry is affected by the planned graphite mine because an area disappears, and that the location of the operation may force the reindeer to move due to disturbance and obstacles.

3.2. Boundaries

We have chosen to limit the scope of the study to Vittangi in Kiruna municipality as we had previous knowledge that the mining establishment was in the permit process. Due to our interest in the climate transition, we wanted to investigate how different perspectives on this mining establishment could be shown to the societal actors in this area. If the study had not been limited to Vittangi and instead mining in general, the scope of the study would have been too large for the time frame in which the work was to be written. The study is also limited to only a number of societal actors due to time frame and scope. An important aspect of the study

with this particular case is that the planned mining also affects the indigenous population. This thus provides an additional perspective, partly because of reindeer herding in northern Sweden.

3.2.1. Limitations

A limitation of this study is the exclusions that have been made. According to Bryman (2011), it is important to know why certain choices are excluded in the study. We have chosen to exclude certain types of target groups in order to complete the study within its time frame. We have ruled out examining aspects such as age, gender and other minority groups, as it would have been too large a scope for the study's time frame. These are relevant in the question of perspectives on mining of critical raw materials, but the design of the study cannot answer how these aspects affect different perspectives of justice. We have also chosen not to investigate other mining operations in and outside Sweden. This can be considered a limitation of the study as not all societal actors' perspectives are presented. However, the purpose of the study is not to demonstrate the perspectives of all actors, but to examine the selected actors.

Another limitation is the selection of respondents. The majority of them have a previous public statement about mining establishments and thus a clear position in the opinions regarding mining in Sweden. This can lead to a bias for the results of the study and reduced validity, but at the same time this can affect the result positively as the perspectives on fairness regarding mining become clear. As a suggestion for further research, the perspectives of more societal actors could be explored.

3.3. Qualitative method

Since the purpose of the study is to examine different actors' perspectives, we have chosen to carry out a qualitative research method with semi-structured interviews and thematic analysis. According to Bryman (2011), qualitative research focuses on meaning-making rather than statistics and numbers like quantitative research has. The choices made in qualitative research are important because these studies aim to conduct nuanced investigations to get close to specific target groups (Johannessen, Tufte & Christoffersen, 2020). Accordingly, our study has been conducted with a qualitative analysis of empirical data from respondents. The study aims to gain a nuanced understanding of the selected target groups' perspectives regarding mining in Sweden.

We have worked according to an abductive approach since conceptual theories have been used as a support for analyzing the interview material. Abductive approach is explained by Eriksson

and Wiedersheim-Paul (2014) to be a mixture between inductive and deductive approach. This research approach is used as a starting point for integrating theory and own observations and thereby forming explanations for the phenomenon (Eriksson & Wiedersheim-Paul, 2014). Within the framework of our applied abductive approach, we have based our work on previous statements and debates regarding the establishment of a mine in Vittangi in Norrbotten County. We have then formulated an interview guide based on the literature on environmental justice in order to explore these observations further and connect them with our selected respondents and their perspectives. Based on this connection, we have explored the phenomenon further and come up with explanations and discussions about the phenomenon.

Bryman (2011) has presented an overview of what the different steps in qualitative research can look like (see *Figure* 1). The structure of our study has followed this general description and thus constitutes the framework for a qualitative research method.

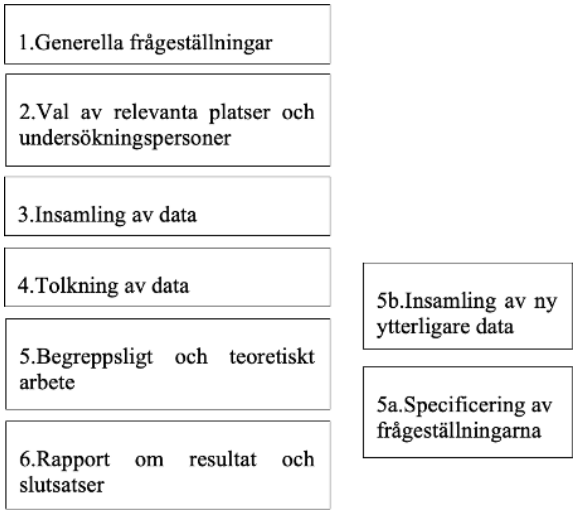

Figure 1: The six basic steps in qualitative research (Bryman, 2011, p. 460)

Kryman's (2011) general description of qualitative research and method has been followed by reworking the content of the study after new information has become available. When the analysis was carried out, we specified the questions and purpose and collected new data that could be relevant to our discussion and conclusion.

3.3.1. Semi-structured interviews

We chose to conduct semi-structured interviews to gain a deeper understanding of actors' perspectives on mining. We have chosen this method because the purpose is to provide insights

into the individual's perceptions, experiences, knowledge, needs, behaviors and driving forces that in turn provide an understanding of how they view specific conflicts of justice. It is a common method in qualitative research to investigate a certain type of problem and *how* people perceive the problem (Justesen & Mik-Meyer, 2011; Johannessen, Tufte & Christoffersen, 2020). In our study, the interviews were conducted through video calls to be able to take part of the respondents' knowledge and experiences and how they perceive phenomena around mining.

We have designed the study in accordance with semi-structured interview method, which means a combination of structured and unstructured interview method. This meant that we used a predefined structure and interview guide that included prepared themes and questions. At the same time, we gave the interviewees room for flexibility to deviate from the guide, which enabled an exploration and follow-up of the respondents' answers in more depth (Justesen & Mik-Meyer, 2011). Prior to the interviews, an interview guide was made where questions were formulated that were considered interesting and relevant to the purpose of the study. Once the main questions were formulated, themes were created to structure the guide, which we identified in terms of background knowledge, process, climate transition, justice and sustainable development.

The structure of our interview guide was created based on predetermined questions and preparations for any follow-up questions, which served as support if the respondent deviated from the central topic or main question. During the ongoing interviews, follow-up questions were also asked in some cases that were not prepared because the respondents sometimes talked about new interesting topics. This also followed Justesen and Mik-Meyer's (2011) definition of the content of an interview guide, where they emphasize that there should be room for deviations from the interview guide in order to investigate interesting topics.

Justesen and Mik-Meyer (2011) believe that a semi-structured interview and its interview guide can be adapted to the respondents individually but based on the same main questions or themes. In our study, this was done by adapting certain questions and follow-up questions based on geographical location, previous experiences or role in society. This did not change the main purpose of the questions, but was done to be able to respond to the respondents in a better way. Some follow-up questions were more tailored to specific respondents as we felt that they possessed other knowledge or experience that could be helpful in answering the purpose and

questions. For example, some questions were adapted to the Sami, the company and the municipal worker. This is because their different experiences and knowledge would contribute to a deeper understanding of different conflicts of justice and perspectives, such as reindeer herding, mining company governance and political processes in Kiruna municipality. Justesen and Mik-Meyer (2011) argue that the purpose of the semi-structured interview is to create new knowledge and work exploratively based on the themes that are predetermined. Our methods followed the purpose of a semi-structured interview as the work was exploratory and explored new insights.

According to Justesen and Mik-Meyer (2011), the questions in a semi-structured interview are usually designed in the form of what and how questions. This has been done in the study's interview guide to elicit more developed answers from the respondents than for yes and no questions and to create a better understanding of the respondents' perspectives.

3.3.2. Validity and reliability

According to Grønmo and Winqvist (2006), the concept of validity means that the content of a study is validly linked to the questions and problem formulations presented. Our study can thus be considered to have a high validity as the results and discussion give feedback to the study's purpose and questions and answer the questions that have been asked. With this method, we can ensure that we measure what we intended to measure. The interview material was also carefully transcribed so as not to bias the respondents' answers, which also strengthens the validity (Kvale and Brinkman, 2009). To further strengthen the validity, we have analyzed the material in an objective way, which minimizes the risk of misinterpretations and inaccuracies in the respondents' reasoning. This has been done by thematizing the content separately and then going through the thematization together.

According to Grønmo and Winqvist (2006), reliability means that collected data should have high credibility and be repeatable to provide identical data at all times. Although our study has a few respondents who were interviewed, it does not affect the results or conclusions negatively as the purpose of the study is not to generalize all data. Our ambition has been to ensure reliability through careful data collection and the use of reliable sources.

One of the respondents (the Talga representative) did not speak Swedish, which meant that the interview was conducted in English. Due to our knowledge of the English language and the translation programs available on the computer (Google translate), it has not caused any

problems in understanding what was said during the interview. We have also translated the quotes from this respondent into Swedish to get a better fluency when reading our study, but the transcription is still in English.

3.3.3. Thematic analysis

We have used a thematic analysis in this study to organize and structure our collected data from the interviews. The purpose of a thematic analysis is to create and shape central themes and sub-themes while data analysis is taking place and then compile these in a clear way in a matrix (Bryman, 2018). We have carried out a thematic analysis by initially creating central organizational concepts to facilitate the analysis of the interviews. Braun and Clarke (2022) explain that central organizing concepts unite themes through their idea or meaning and are often used in thematic analysis. We first chose to categorize the central organizing concepts based on ecological, social and economic sustainability, and used these concepts as headings to be able to structure future sub-themes. We reviewed the respondents' responses and categorized their reasoning under sub-themes with easy-to-understand concepts to facilitate the analysis of different perspectives on justice. The sub-themes we first came up with have been corrected afterwards to make it easier to understand the themes in the result.

Braun and Clarke (2022) write that sub-themes belong to one theme and they both share organizational concepts with each other. We read through one transcript at a time to identify sub-themes that fit in with the organizing concepts. Sub-themes were created by starting from the recurring topics or ideas that we identified by the respondents. These sub-themes were also formed based on what we considered to be similarities and differences in the respondents' answers. Bryman (2018) also writes that a thematic analysis can be based on, among other things, similarities and differences, where the survey is based on the respondents' different ways of discussing phenomena. In order to achieve the purpose and questions of the study, we have also presented the differences and similarities that the respondents talk about regarding justice.

After the thematization of the first respondent's transcription, the thematization showed a number of different columns with different perspectives on mining, which served as the start of the sub-themes. While more respondents' transcriptions were thematized, a structure was created for sub-themes when they talked about similar perspectives or factors around mining. After the first sub-themes, this material was also further thematized and created more specific

sub-themes that facilitated the structure. Many of the sub-themes that were created could also be linked to literature that we used earlier in this study, such as environmental justice, debates about mining in Sweden and the world, and perspectives on the impact on nature and society.

To facilitate the thematization, we also created a thematic map, which Braun and Clarke (2022) describe as working to capture visual representations of potential themes and the relationships between all themes and sub-themes. Our completed thematic map shows how the different themes and sub-themes relate to each other (see *Figure 2*). We started by writing up the categorized sub-themes that we identified in the thematic analysis (words within circles). We then read through the arguments that the respondents put forward and connected their arguments to each other through key concepts. The key concepts were related to sub-themes and other key concepts by making arrows between them as many respondents talked about both similarities and differences. The thematization also included our empirically found material.

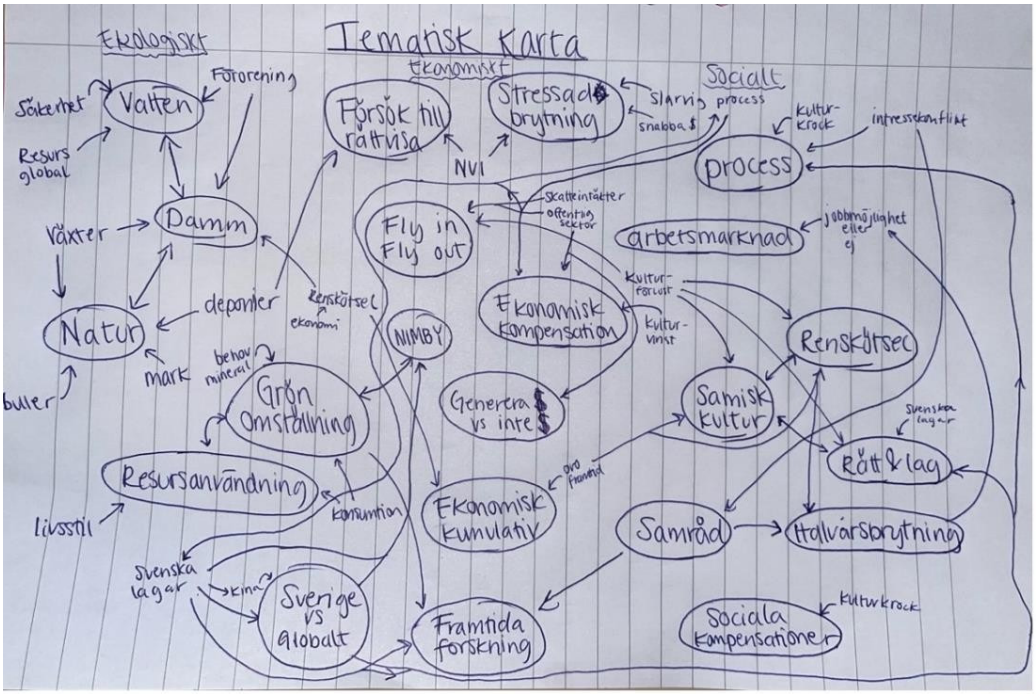

Figure 2: Our thematic map

The themes identified through the thematic analysis of the material are *Global and Local Justice, Impact on the Local Environment, Resource Use, Process and Communication* and *Culture and Reindeer Husbandry,* as well as sub-themes such as *fly in fly out, compensation, climate transition, nature, future, consultation, goal conflicts, conservation, legislation and half-year* breaking.

3.4. Selection of respondents

The study aims to investigate societal actors' perspectives and opinions regarding mining in Vittangi and thus a *strategic selection* of respondents has been made since it is used in most qualitative studies. Bryman (2011) writes that a strategic selection means that participants in the study are chosen strategically based on the relevant area. This means that the purpose of the study governs the units of analysis, such as relevant individuals and places, so that the research questions can be answered (Bryman, 2011). The analytical units in this study have been appointed to create an understanding of specific social phenomena related to mining.

Researchers who use a strategic selection to find respondents start by identifying an appropriate target group that is assumed to be relevant to the outcome. After the selected target group, suitable respondents are appointed (Johannessen, Tufte & Christoffersen, 2020). For this reason, different actors within society were chosen based on varying personal experiences and views on justice. To find suitable respondents, we have conducted research of relevant actors through newspapers, radio programs, social media and websites, as we have contacted respondents via email or phone and made requests for interviews.

Therefore, we felt that it was appropriate to use a strategic selection. This is also strengthened by Johannessen, Tufte and Christoffersen (2020) who believe that random or random selection of respondents is not suitable for qualitative interviews because qualitative studies have a clear purpose. The emphasis should first and foremost be on the relevance and quality of the respondent choices made rather than the number of informants. The respondents were chosen based on the assessment of relevance and its connection to mining in Vittangi. We believe that the respondents have provided a sufficient amount of data and met our requirements to be able to provide a nuanced and in-depth picture. Qualitative interviews are often limited to a certain number of informants. To clarify our case with the mining establishment in Vittangi, the sample size of the informants is large enough to add sufficient quality (Johannessen, Tufte &

Christoffersen, 2020).

We have interviewed five people. The selected actors are a Sami belonging to the Talma Sami community, a worker at the mining company Talga, a resident of Vittangi, a researcher in natural resource management and a municipal representative who works at Kiruna municipality with experience in mining processes. These actors have been selected because of their connection to mining in Vittangi, as everyone is affected by it in one way or another or has a close connection to mining processes. The strategic selection makes it possible to reflect the respondents' variation in order to clearly detect differences between important aspects and perspectives (Bryman, 2011), in this case the view of mining as a consequence of the climate transition. The strategic selection of respondents has been helpful in highlighting some of the challenges and opportunities that citizens in society are affected by in this climate transition, including from social, ecological and economic perspectives.

We sought out people who have already spoken publicly and had a clear position in the debate about the planned mining in Vittangi as well as other actors with insight into the effects of mining. We did this to ensure that there are clearly varying interests in different conflicts of justice, which in turn is crucial for reflecting environmental justice from different perspectives. People who have already spoken publicly about mining can show that they already have knowledge or experience in the field, which may indicate that they want to share the knowledge that they possess. It will also be easier for those of us who examine the positions to have access to a clearly ongoing debate. The people who have spoken out publicly may also reflect a clear representative picture of certain opinions or target groups in society.

The Sámi are a local indigenous people who have noticed great oppression of state exploitation of natural resources. By examining the Sámi perspective on mining, it is possible to gain a deeper understanding of cultural and ecological rights as well as goal conflicts. *The mining company* Talga is a key player in the mining process in the demarcated area of Vittangi. This includes Talga's interests and needs as well as how they take into account local and ecological interests. *Residents* of Vittangi are directly affected by mining operations and therefore constitute a perspective and an overall picture of any consequences in a local community. *Researchers* who are experts in the field can provide a comprehensive and deeper understanding of complex issues concerning, for example, how minority groups and the local population are affected by the climate transition. *The role and perspective of the municipality* is important for understanding the dynamics between the mining process and society. In many

cases, the municipality is involved in permit processes and can therefore provide a clearer picture of how mining affects the local environment and community in Vittangi.

Bryman (2011) argues that a strategic selection means that the results are not generalizable to a broader group of people. Although the study only examines the selected respondents' perspectives on mining establishments, the results produced can represent the perspective of a certain target group, which is important for highlighting challenges with the climate transition. For example, there is a long history of the Sami oppression during the establishment of mines, which can lead them to share views on how it can affect the Sami people. Previous research also shows that mining operations can affect the surrounding environment, which means that more people within the target groups can have similar perspectives on issues as our selected respondents have. However, it is worth noting that the respondents' exact and individual answers cannot be applied to every single individual within the target group. Although the purpose of the study is to examine a case, the selected respondents can give examples of how different perspectives on environmental justice are presented based on different target groups.

Table 2 presents our selected interviewees and overall information about them. All interviewees have experience of mining in Sweden and are, have been or will be directly or indirectly affected by the upcoming mining in Vittangi. The interviewees have different attitudes and perspectives on mining and its effects and consequences on society and the environment.

Table 2 Overall information on interviewees.

	Municipal representative (Kiruna Municipality)	**Vittangibo**	**Tallow representative** (Workers at Talga)	**Sami** (Talma Sámi Village)	**Researcher**
Info	10 years of work experience in mining and exploration in Sweden.	Lived in Vittangi since 1983.	Worked at Talga for 6 years. Project work, exploration, Logistics and Resource management.	Belongs to Talma Sami village.	Worked for 10 years with Sami issues and green Conversion.

3.5. Ethical consideration

Kvale and Brinkman (2014) write that interview studies should take ethical issues into account and create awareness by informing the respondents about what their importance and role in the study are. We have had continuous contact with the respondents regarding their participation, both verbally and via email, to ensure that the content of the interview material is presented correctly in the study. All respondents were anonymised because some of them were not comfortable expressing themselves publicly and to ensure that their role or name could not be linked to their answers. We have also taken an ethical consideration by sending the used quotes to the respondents for approval from them before submitting the paper. This is because we wanted to ensure that the respondents were okay with what we used for quotes and how we used them. We also made it clear that the recorded interview material would only be listened to by us to ensure the anonymity of the respondents. An important aspect to keep in mind is that there may be underlying perspectives and reasons for the respondents' reasoning that are not apparent in their answers in the interviews.

4. Theory

The study is based on the theoretical framework *Environmental Justice*. For many years, different types of justice studies have been based on and defined by John Rawls' theories "A Theory of Justice" (Schlosberg, 2007). John Rawls' (1971) theories center around the idea that justice means establishing the most appropriate principles for distributing resources within a society. Some theorists believe that environmental issues of justice have not kept up with theoretical developments for a long time. Thus, *environmental justice is proposed* as a theoretical framework for the analysis of environmental movements and environmental problems (Schlosberg, 2007).

4.1. Environmental justice

To highlight injustices linked to environmental problems, Walker (2012) proposes the theoretical concept of *environmental justice.* Environmental justice has several different definitions and can be applied in various contexts. One definition deals with the right that all people should have equal access to the environment and the earth's resources (Friends of the Earth Scotland, 1999; Walker, 2012). Two other definitions of environmental justice highlight "*[...] how some of us consume important environmental resources at the expense of others [...]"* and *"[...] how the power to bring about change and influence environmental decision-making is unevenly distributed"* (Walker, 2012, p.1).

Bullard (2001) defines environmental justice as ensuring that all individuals, regardless of their ethnicity, origin, or socioeconomic status, should be treated fairly and given the opportunity to be involved in decision-making processes. This includes the development and enforcement of environmental laws, regulations, and policies. The definition also means that no person shall be adversely affected by the environmental impacts as a consequence of industrial, municipal, or commercial activities and includes federal, state, and local implementations of regulations. Environmental justice also aims to establish protections, laws and regulations covering the environment, health, housing, employment and civil rights that can affect people's living conditions (Bullard, 2001). We categorized these definitions and used them in the analysis to highlight which categories the respondents' statements fit into (see *Figure 3*).

Definitions of environmental justice	(1) All people should have equal access to the environment and the earth's resources	(2) Fair treatment and involvement of all people, regardless of ethnicity, origin or socioeconomic assets	(3) No person shall be adversely affected by the environmental impact as a consequence of industrial activities (the mine)	(4) Consumes important environmental resources at the expense of others	(5) How the power to bring about change and influence environmental decision-making is unevenly distributed

Figure 3: Compilation of our used environmental justice definitions

We have chosen these definitions of environmental justice because we felt that they were relevant to the purpose and issues of the study, as these definitions address several aspects of justice and sustainability. We believe that the definitions demonstrate important aspects for promoting sustainability and justice in society. We also believe that they are comprehensive and can be related to different justice perspectives and justice conflicts that the respondents highlight. In this study, it is of relevance to create an understanding of how access to the environment and its resources are distributed differently among different societal actors (1). It is also important to understand the consequences of fair treatment and involvement of actors in environment-related decisions (2) and to understand the effects mining (industrial activities) can generate on people as a result of the environmental impacts of the activities (3). The definitions help us understand how justice perspectives can be related to resource extraction and consumption of critical raw materials that take place at the expense of others (4) and how power is distributed to be able to influence environment-related decisions regarding the mining establishment process (5). These definitions have been used as a framework to analyze and understand different perspectives of environmental justice and how different conflicts of justice are perceived.

4.1.1. Links between the environment and social differences

Walker (2012) explains that the concept of environmental justice demonstrates strong connections between the environment and social differences in society, but that it is also complex. There are distinct differences between people and social groups that are strongly related to different environmental living conditions and injustices. Injustice in this context highlights an unevenness between different things and groups in society, such as health, consumption, pollution and income. For some groups in society, for example, the environment can be related to a healthy life and well-being, while it can pose major risks and threats to other groups as a result of resource constraints. The concept therefore encompasses how people and

the world should be treated in relation to the environment (Walker, 2012).

4.1.2. Environmental justice as a theoretical tool of analysis

Using environmental justice as a theoretical starting point is considered to be beneficial in the investigation of people's thoughts and actions in relation to the environment. It can be used as an approach to study people's reasoning, thinking and acting in relation to environmental problems, where justice is of great importance to the human perspective. Environmental justice has given rise to a political platform, where previously unnoticed patterns of inequality now instead highlight the importance of people's health and quality of life (Walker, 2012).

Environmental justice can be used as an analytical tool to understand injustices linked to the environment (Bullard, 2001; Walker, 2012). Bullard (2001) argues that the theoretical framework for environmental justice is based on designing tools and strategies that counteract unfair decisions and conditions. It emphasizes ethical and political questions such as "why, how much, when" and "who gets what". Walker (2012) also points out that the varying definitions of environmental justice provide the opportunity to identify and analyze patterns that underline the underlying causes of environmental injustice. By applying the framework to environmental inequalities in society, it is possible to create an understanding of different patterns that arise as a result of unjust social structures. These can be, for example, economic gains paid for by people or systematic social structures with a negative impact on the environment (Walker, 2012).

4.1.3. Critical perspective

According to Walker (2012), it is beneficial, from a critical perspective of environmental justice, to use two concepts of meaning: *framing* and *claim making*. Framing is about how we interpret the world around us to highlight specific ideas about environmental justice. In this study, framing has been used to analyze and interpret social justice perspectives in relation to environmental issues, i.e. fair distribution of resources and environmental pressures. It has created an understanding of identified environmental problems, in this case the mining of critical raw materials, and the result of human impact on the environment. It has made it possible to identify both social, ecological and economic structures that people in society consider to create unequal access to the environment and its resources. Walker (2012) describes that claim making involves explaining claims that map the prerequisites of a particular situation, such as inequality within the environment or the (un)fairness of these claims. It means

creating statements to explain the world around us in relation to the environment. By analysing the identified statements, it has enabled the creation of an understanding of certain concepts of justice and support our interpretations. We have done this in our study by identifying different justice perspectives and themes (in the results) that highlight clear differences in individuals' perceptions of the environmental problem. These analytical frameworks can provide perspectives that allow for identifying and categorizing situations that highlight environmental justice in a more nuanced way (Walker, 2012).

4.2. NIMBY

We have also chosen to use the term "not in my backyard" (NIMBY) to explain different respondents' arguments and perspectives on fairness in relation to mining. Hubbard (2009) defines the concept of NIMBY as an argument for individuals who want development to happen, but at the same time not affect themselves and their way of life. Hu and Han (2023) explain that NIMBY is often used in contexts regarding social transformation and the construction of businesses. These activities often provide public benefits and utilities, such as nuclear power plants and waste treatment plants, and may face local resistance due to the negative externalities that follow. The effects that follow can be pollution, loss of property value and destruction of natural values, and can create conflicts of interest. NIMBY reasoning by local community actors can, for example, include projects that have negative effects on the local area but which, according to others, are deemed to be beneficial for society as a whole (Hu & Han, 2023).

4.3. Ecological modernization

Due to the impact of mining establishments on society, ecological modernization can create an understanding to enable and investigate a balance between them. The aim is to create a framework that can promote both sustainable solutions, societal structures and economic interests. Mining establishments can be considered part of ecological modernisation if sustainable and environmentally friendly practices are integrated.

According to Hajer (1996), the discourse on ecological modernization is a strategy for technological innovation and economic growth to integrate environmental protection. Within this discourse, technological development must solve environmental problems without renouncing its standard of living. The transformation of production methods and economic systems aims to promote sustainability and minimize its environmental impact while allowing

economics and technology to achieve success. From the view that economic growth and environmental protection are seen as contradictory, the view shifts to that of complementarity and mutual reinforcement. Ecological modernisation means that it should be possible to:

solve environmental problems without making extensive changes to existing economic systems and social structures.

A central idea highlighted by Hajer (1996) is that the barriers to effective environmental protection are interacting with collective action. This means that it requires both participation and cooperation from all parties involved. All actors, such as countries, companies and individuals, in ecological modernization must cooperate and take responsibility for the environment in order to achieve economic growth combined with environmental protection.

We have used ecological modernization in the discussion to compare and highlight respondents' motivations regarding alternative technical methods to mining.

5. Result

In the results of the study, the most central aspects from the interviews are covered and the respondents' perspectives are analyzed in contrast to each other, of which different differences, similarities and conflicts of justice are presented. We have thematized the respondents' perspectives on justice under the themes *Global and local justice, Impact on the environment, Resource use, Process and communication* and *Culture and reindeer herding.*

5.1. Global and local justice

All respondents agree that mining is needed in the climate transition towards a more sustainable future. However, perspectives differ depending on how the extraction of critical raw materials should best be done and where. The municipal representative believes that the mining company has made a good deposit in Vittangi that is relevant to enable a climate transition in Sweden. The Talga representative believes that mining is only a small but important part of the global transition for a sustainable future. From a global perspective, the respondent believes that the resource chain is "dirty", both from the point of view of polluting nature and negatively affecting human health, therefore it is better to carry out mining in a country like Sweden with better environmental legislation. But there are also more local arguments for a mining establishment, according to the Talga representative, who believes that society benefits in several ways from the mining establishment. The respondent believes that Talga will hire local entrepreneurs, which is positive for the local labor market because it generates money for both the municipality and the state. It is also positive from a national perspective, as this can make Sweden a role model in a just climate transition process and at the same time benefit the economy within the country.

> *"[...] I think it's really an opportunity to show how things can be done right."* (Tallow representative)

The respondent believes that the local community can benefit in more ways than just through new jobs in the mining industry. By mining operations generating more jobs, Vittangi will also develop as a community and contribute to a climate transition, the respondent explains:

> *"It's not just the jobs from the mines that will be opened. It is all other industries that follow suit, and are linked to it, all the research associated with it. It's a good thing for society."* (Tallow representative)

The municipal representative has similar reasoning as the Talga representative and believes that local entrepreneurs who work in Vittangi can strengthen the village's economy because the municipality receives more tax revenue. The municipal representative also believes that mining would enable a climate transition in Sweden in relation to electricity supply. On the other hand, the respondent believes that the establishment of a mine entails risks for tax revenues in Sweden in terms of the labour market. One of the risks associated with the mining establishment in Vittangi is that there will be a "fly in fly out" effect. The respondent explains that:

> *"If there is a fly in fly out, that is, people come from other parts of Sweden or from abroad and work and use the services that are available in the area, but do not contribute any tax revenue. Then it's more of a loss."* (Municipal representative)

Another risk that the Sami highlight is that the same funding will no longer be able to go to ensuring a good quality of schools, health and social care. As a result of previous respondents' perspectives highlighting any negative economic effects of the mining establishment, this also highlights a negative social effect. Samen believes that people would rather choose to work for the mining companies, where they earn a lot of money, than work in schools, health and social care, where the working conditions are also more tiring. This therefore entails several social negative consequences on the local community, among both children and adults.

The Talga representative explains that the company is very keen to compensate and develop the community of Vittangi based on the negative effects that the mine can have on the surroundings. The respondent believes that the company is willing to provide compensation in the form of restaurants and hotels to support the local community:

> *"[...] if there are ways we can support that kind of thing by opening in Vittangi, we would like to do that."* (Tallow representative)

Vittangibon, on the other hand, believes that they do not receive anything for the establishment of mining operations. The respondent expresses the feeling that the company gets in and digs holes in the ground, does not pay taxes and then leaves. The respondent believes that there will be no justice at all, neither for the people nor for the economy in Sweden. Samen says that they have not heard anything at all about compensation and wonders if there is even a proposal for it.

Another risk perspective that the municipal representative highlights is that there are not enough homes in Kiruna municipality if there is a fly in fly out, which is also the case with

Vittangibon problematizes. The respondents believe that there is already a clear housing shortage in Kiruna municipality today and that a mine in Vittangi will not make things better. The municipal representative explains based on previous experiences with LKAB that companies buy up villas that are actually intended for families. The respondent believes that miners who settle in these villas for a short period of time, create an imbalance in society because the maintenance work is not done to the same extent as the locals do with their villa areas; There is no snow shoveling, lawns are not mowed.

As a result of fly in fly out, Vittangibon expresses a concern about cultural loss, which the Sami also believe. The Sami believe that there is a risk that fly in fly out can lead to culture clashes if the people do not have any deep connections to the place. The respondent also expresses concern that the same loss of cultural identity that has occurred in Kiruna will also occur in Vittangi.

While the respondents have made it clear that there are local goal conflicts and risks, there is also a global justice perspective. Among other things, the Talga representative believes that the critical raw material industry and its supply chain globally are dirty. The respondent explains that a large part of the raw material extraction today takes place in countries with poor environmental legislation. This type of raw material extraction often has more extensive pollution to both water and air, as well as poor social standards for the local community. One interpretation of this is that the respondent sees it as fairer to carry out mining in Sweden where it takes place under better conditions, than to do it in countries with poorer supervision of the projects. This is also agreed by the municipal representative, who argues that the environmental requirements in Sweden are significantly better than in China and Africa. The respondent, on the other hand, questions Sweden's role in the climate transition and says that:

> *"[...] Globally, it is better for the environment that we mine in Sweden, but we cannot supply the whole world."* (Municipal representative)

The Talga representative also talks about how mining in countries with poor supervision, the critical raw materials have most likely been extracted by a child. The respondent problematizes:

> "*Unfortunately, all the things that we have, the computers we're talking on now. It's really sad, but the reality is that the metals in them were probably mined by a child."* (Tallow representative)

The arguments that it would be fairer to mine in Sweden versus other countries are something

that the Sami are strongly critical of. The respondent thinks that the arguments that are often put forward are only about to generate money and that Sweden's approach to becoming fossil-free through mining is not the right way to go. From a global point of view, the Sámi reason that the first choice for mining critical raw materials should not take place in Sweden, but should be made in other countries such as China. This is based on the context that a mine in Vittangi is not a prioritized necessity today, as the Sami believe that Sweden already contributes critical raw materials and other minerals to the global market. The only possibility for the respondent to be able to accept a mine in Vittangi is if there are no opportunities to open a mine in China. The Sami point out that the indigenous people (the Sami) must have a greater priority than a graphite mine in Nunansvaara. This can be interpreted, based on the context that the municipal representative and the Talag representative consider to be globally fair, as the Sami believe that the local rights of the indigenous people (the Sami) must be highlighted more than it does today. The Sami believe that it is not fair that the indigenous people should continue to live under constant oppression, as an effect of bad and quick political decisions. On the other hand, the Sami believe that Sweden should to some extent supply the world with minerals, but that the country already does so with LKAB's mining operations and that a new establishment of a mine is not needed, the respondent explains:

> "*I am strongly critical and strongly opposed to new mining establishments. We are doing our part with LKAB period."* (*Same)*

The municipal representative and the Sami discuss Sweden's role in the climate transition and believe that everyone must do their part, that Sweden cannot supply the whole world with critical raw materials and that instead other solutions are needed to succeed in the transition, such as resource use.

5.2. Impact on the environment

All respondents except the municipal representative mention that mining in one way or another has a negative impact on nature, but to different extents. One of the influencing factors that both Vittangibon and the Talga representative is that the business requires that part of nature is removed. The Talga representative argues that it is a sacrifice that must be made in order to ensure a safe and more environmentally friendly supply chain for critical raw materials, while Vittangibon believes that it will have a major negative impact on the environment in Vittangi. Vittangibon expresses that the negative impact on nature will mean that the soil will be scraped

clean of trees and greenery and that nearby wetlands will accumulate everything that the business pollutes. Vittangibon's perspective indicates that the consequences on nature cause society's standard to deteriorate in the form of, among other things, polluted drinking water and loss of nearby cultural environment.

The Talga representative admits that the establishment of a mine will mean that part of the nature in the area will disappear. The respondent, on the other hand, believes that it is a necessary sacrifice for Sweden's industries to be able to reduce their carbon dioxide emissions by using sustainable energy sources that require critical raw materials in manufacturing. At the same time, Vittangibon believes that a mining establishment in Vittangi is not fair because it threatens the future living standards of the locals.

For example, the Vittangi resident expresses a strong concern about the water resource and that the rivers surrounding Vittangi may be negatively affected. The respondent believes that the inhabitants of Vittangi can now go and drink water directly from the river and that the mine jeopardizes the possibility of clean drinking water in the village. Through previous experiences of mining establishments in the local area, the respondent says that mining operations have a significant impact on nature and specifically the water, even if the mining companies themselves say that they do not have a negative impact. The respondent also expresses that the person does not trust Talga when they informed that they will not affect the water resources negatively, but Vittangibon believes that Talga cannot know that yet because the mine is not established yet.

> *"[...] The water we drink, we take from the Torne River. And since the mine is located in the middle of the rivers and up on a mountain, all the water flows down into the river. [...] For now, we can go, take a scoop of water and pour it directly from the river."* (Vittangibo)

The researcher also believes that there are several cases where mining industries that have gone bankrupt have left behind waste that has created extensive pollution on water. On the other hand, the Talga representative believes that the company's operations in Vittangi will not pollute the water. The respondent explains that many individuals have a skewed image of the mining industry and a lack of knowledge of its impact on the environment. Furthermore, the respondent believes that this lack of trust is due to *"[...] poor communication on the part of the mining industry"* (Talga representative).

Another aspect that both Vittangibon and the Sami express is a concern about the dam that the mine can generate, which risks affecting the vegetation around it. Both respondents describe through previous experiences of mining operations, that dust often settles on the ground and furniture. The Sami are particularly concerned about the impact of the planned mining operations on reindeer husbandry.

> *"It's spot on, it will dust and it will also have an impact. Then even more bait disappears [...] so I'm really scared [...]. It is lost pastures and the lost number of reindeer [...]"* (Same)

At the same time, the municipal representative believes that there are possible methods that make it possible to minimize the negative effects of mining operations on nature. The respondent describes that the landfills, consisting of waste from mining operations, can be shaped into mountains to mimic the natural environment. In the long term, in about 50-100 years, the municipal representative believes that reindeer herding could perhaps be carried out at these landfills. At the same time, the Sami believe that: "*it is not possible to replace a natural pasture if you open a new mine"* (Sámi). The Talga representative, on the other hand, believes that the mining company has designed a project that has a very small impact on the environment. At the same time, Vittangibon says that the respondent himself, together with other residents and the Swedish Society for Nature Conservation, made inventories in the area because they believed that the ones made by the company were incorrect.

5.3. Use of resources

Samen and Vittangibon believe that it is the use of resources itself that is the most central part of Sweden's climate transition. Vittangibon says that it is better to invest resources in the transition of, for example, public transport in larger cities, which can be interpreted as meaning that the mining establishment in Vittangi will not have a decisive role in the global or national climate transition. Instead of looking for alternative technical solutions (such as electric cars), Vittangibon believes that changing one's way of life is the way to go for a climate transition, as human resource use is the basis for climate change. The respondent also believes that critical raw materials are resources that should be used carefully because they are important for future generations. The respondent explains that:

> *"[...] We have to change our whole way of life. And it's those who have the most resources who waste the most too, so it's us in the Western world who are damn good at burning most [...] the mineral will be needed anyway and will be needed better in the future."*

(Vittangibo)

This is also something that the Sami share perspective on because the respondent describes that everyone in society must adapt and reduce the use of resources. The respondent believes that it is not necessary to invest in a mine in Vittangi for a climate transition, which is shown in the following quote:

> *"Maybe we should start consuming less then, so we don't have to open more mines."*
> (Same)

The remaining respondents believe that all individuals in society must start taking responsibility and reduce personal resource use, and that mining of critical raw materials is only one part of the transition. The Vittangibon and the Sami believe that mining is necessary but should not be the main focus of the climate transition, while the municipal representative and the Talga representative believe that mining in Sweden is required.

The researcher finds understanding for these types of arguments, but contrasts the perspectives. The respondent highlights that mines are needed, but that it also has negative consequences for the Sami people. The processes prior to mining establishments are often quick and are done carelessly, despite Swedish legislation. The researcher believes that these processes should involve the Sami people from the start to minimize their oppression. Samen explains that if they do not get involved, they can suffer consequences that prevent their right to reindeer herding, fishing, nature and being able to run their business as they have done for generations. This may indicate a self-interest in Sámi culture and can be interpreted as the respondent valuing local justice over global justice.

The Talga representative also highlights that their mining operations will have an impact on affected Sami villages, local residents and nature. On the other hand, the respondent says that the Sami are perceived to be against everything that affects their land because reindeer herding is then affected by disturbances. The Talga representative believes that the vision of a sustainable climate transition must be achieved through mining processes such as in Vittangi. On the other hand, one interpretation of the respondent's argument may be that Talga, as a company, has an economic self-interest even if they believe that they are doing so for a global development. This is also pointed out by the respondents who believe that it is one of the main reasons why the mining company is trying to speed up the process. The researcher problematizes that business processes are often done carelessly in Sweden because they are driven by vested interests that disregard Sami rights:

> *"[...] There are major economic interests behind it, which are not about benefiting local communities or Sami communities or Sami organizations."* (The researcher)

Vittangibon expresses a feeling that Talga *"[...] just come here and, and rob for you, then they leave",* which may also indicate the understanding that the mining company has economic self-interests that are prioritized over other societal interests.

5.4. Process and communication

All respondents describe that Talga's mining project has taken a long time. The Talga representative believes that this is partly due to the fact that Sweden has good and clear laws compared to other countries, but also because Talga has faced resistance from civil society that has caused the process to drag on. This is also highlighted by the researcher, who believes that it is difficult to find consensus between activities and minority populations in projects in Sweden. The respondent believes that there is a dysfunctional communication between them, which means that minority populations and local communities are forced to use the court and appeal mining processes. The researcher also explains that Vittangi is an example of a typical case where both Sami communities and local communities have had to get involved in order to have their voices and wishes heard in the process.

The Talga representative believes that they have tried to communicate with the local community ever since the company first came to Sweden and started exploring. The respondent says that the company has been in Vittangi for 3-4 hours in batches and has taken on board opinions, feedback and had question and answer sessions and tried to be as transparent as possible. The Talga representative says that they have been in contact with the Sami ever since they came to Sweden and believes that it is:

> *"[...] A very important thing to do, to keep an open dialogue and people's concerns are very understandable when it comes to pollution of the river, pollution of the air and things like that, which is very normal."* (Tallow representative)

Although the Talga representative expresses that they have done their utmost to mediate about the project, Vittangibon and the Sami feel that the consultations that have taken place with Talga have not worked at all. Vittangibon explains that the mining company's attempts to inform residents have not worked as the information is one-sided. The respondent further says that the information given is in English with union terms, which the respondent finds difficult to understand. The Sami say that the experience of having been involved in the consultations

does not give anything because the feeling is that the Sami do not have the opportunity to influence the process. Samen says that:

> *"[...] We are not allowed to be involved in deciding but it is more so that we should be informed and then what we say it doesn't matter, so it is almost like my feeling is that you have started to give up. They don't want to come to these consultations because it doesn't give anything to the Sami communities. We have no way of influencing [...]"* (Same)

This may indicate that societal interests are presented in the communication between the actors, but that the mining company does not take on board what is said. One interpretation from the perspective of the Sámi is that Talga looks beyond the rights of the Sámi because the company's self-interest is greater than that of the local community. A possible explanation for the shortcomings in communication may be different understandings of the consultation processes, such as the fact that the actors do not share opinions about what the consultations should lead to. There may also be different understandings of the culture of society and the Sámi. The researcher says that these types of goal conflicts are a major challenge in Sweden because industry and Sami visions are far apart. Most often, it is based on different perceptions of the basic problem. At the same time, the municipal representative says, based on previous experience of LKAB's mining operations' processes, that the Sami generally get to participate in a lot of consultations and meetings because all the land in Kiruna municipality affects the Sami people. Due to the fact that the Sámi land is affected and that they participate in the consultations, the municipal representative says that the Sámi are often paid for administrative time by LKAB and the respondent likens this to any future processes in Vittangi.

5.5. Culture and reindeer herding

One of the biggest goal conflicts that the respondents have highlighted is the impact on the Sami culture and reindeer herding. The Sami express a concern that the mining establishment in Vittangi will destroy the reindeer grazing lands in the area, and highlights the consequences that the respondent's daughter (who is Sami and reindeer herder) is facing:

> *"[...] We say that 10% of the pastures disappear with a mining establishment [...] so maybe it is her 10% of her cleaned that does not get grazing. It will not be enough if there is reduced grazing, there are fewer reindeer that can survive, so it affects us directly that we will reduce in reindeer numbers."* (Same)

Although it shows a concern for the reindeer, one possible interpretation is that the concern aspect is based on a Sami cultural self-interest rather than the rights of nature or the reindeer themselves. This interpretation could also be shown when the Sami talk about reindeer herding being the Sami people's sustainable business. It is not the reindeer or nature itself that play the greatest role in the respondent's reasoning, but more how it affects the Sámi's cultural entrepreneurship. Thus, both the Talga representative and the Sami have an interest in their companies, but with the difference that Talga is interpreted as having more economic interests and the Sami people's interests in culture and conservation. The Sámi argue how land use may affect the Sámi culture as a result of the impact on their entrepreneurship. The livelihood of the financially viable company itself is part of the Sami culture as a group. The reindeer and the nature affected by land use are part of the Sámi's entrepreneurship, but the respondent's reasoning is not interpreted to mean that nature and the reindeer have an intrinsic value in themselves, but rather how it can affect the Sámi culture as a result. On the other hand, the Sami believe that the reindeer and nature itself are a large part of the culture and thus have a great importance for the Sami culture, which affects how they live as a group of Sami in interaction with nature and reindeer.

As the Sami and the researcher highlight, there is a concern that future generations in the Sami culture will not be able to carry out their reindeer herding as they have done for thousands of years. The researcher is interpreted to highlight a more collective perspective as the respondent talks about the entire Sami culture and not just about reindeer herding as a sustainable economic enterprise.

> *"A major consequence that was often raised is that young Sami are hesitant about [...] to go into reindeer herding because you don't know if it works. Then you get really big problems because then it becomes continuity, it is compromised, traditional way of life, which is kind of undermined."* (The researcher)

The Sámi's statements can be interpreted as argumentative from an individualistic perspective, since the respondent mainly mentions things such as the Sámi's family, reindeer and access to fishing waters. On the other hand, the effects on the family, reindeer and fishing waters have consequences that are significant for the entire Sami culture and the Sami as a minority group as culture is an important part of their lifestyle. The arguments for future generations' opportunities for culture can be interpreted as the Sami implying that it is unfair for the new Sami generation not to be able to live out the culture in the same way as older generations have

done. At the same time, the municipal representative questions the difference between the Swedish rights and the Sami rights. The respondent believes that the Sami actually have double rights because they are both Swedes and Sami and argues about the reasonableness that the Sami, as a small part of the population, should have greater influence than the rest of the Swedish citizens:

> "*Is it reasonable that so few people would be able to sort of stop a green transition that they themselves are also affected by?"* (Municipal representative)

The respondent also emphasizes that the climate transition is perhaps more harmful to the Sami people than the encroachment on their lands is. The municipal representative is interpreted to mean that the global Warming affects all people, not least reindeer husbandry, and a green transition is therefore also important for everyone. At the same time, the respondent believes that the green transition requires land use and that the representatives of the reindeer herding perceive it as extremely negative. The municipal representative therefore questions whether the interests of reindeer husbandry should be allowed to slow down or even hinder the green transition in northern Sweden, even though the issue can be interpreted as controversial and that few people have the courage to discuss this.

The researcher problematizes that the Sami rights do not include any actual protection in Swedish legislation and points out that legislation, such as the Minerals Act, must be revised in order for the protection to be integrated. This argument also strengthens the Sámi's statement about their experiences:

> *"I think indigenous peoples need to be given a higher status. We must be able to say no. Through Swedish legislation, we must be able to say no."* (Same)

The Talga representative believes that they will give financial compensation to the landowner because they buy up the land where the mine will be located. At the same time, the respondent explains that it is rarely the Sami who own the land, but that they have the right to use the land according to law. To reduce the impact on reindeer husbandry, however, Talga has agreed on the compensation to carry out half-year mining and only have active mining during the summer months:

> *"I think it's a big reduction in impacts by just drilling and blasting and mining for six months a year. I think we're reducing the impact of the project significantly, but I think others might have a different opinion about it."* (Tallow representative)

The Sami do not believe that the half-year mining will generate any reduced effects on either nature or reindeer husbandry. The respondent believes that it does not matter since some of the pastures disappear and that the remaining disturbances, such as car traffic, only make up a small part of the effects of the mining establishment. From previous experiences, the Sami talk about being offered compensation for grazing compensation in the form of lichens, but that it is not possible to replace the lost pastures. The respondent also believes that it is the dust from the active mining operations that will have the greatest impact on the reindeer grazing. On the other hand, the municipal representative believes that the half-year break can be a good solution for both sides to maintain a fair distribution of interest resources. This can be interpreted as the respondent reasoning that it will be fair for both the Sami and the company, as the Sami thus have access to reindeer grazing for their reindeer while Talga gets to carry out the mining.

6. Discussion – Conflicts of Justice

The empirical results from our study show that the respondents' perceptions of the fairness perspective linked to mining are different. The perspectives indicate that a transition must take place, but the respondents' answers show a complex debate over economic, social and environmental factors that are weighed against each other. The responses show clear conflicts of justice between the actors.

6.1. A Higher Purpose

"A Higher Purpose" summarizes various reasoning about climate transition and global justice. Discussions are held about the advantages of mining in Sweden compared to other countries and highlight the importance for resource security and global conflicts.

The Talga representative argues that the establishment of a mine in Vittangi is an important but small part of the climate transition, which can be interpreted as a global justice. This can be linked to the definition of environmental justice that *all people should have equal access to the environment and the earth's resources*. Critical raw materials are part of both Sweden's and the world's climate transition, and therefore an extraction of the material is needed that everyone can take part in. However, it is possible to discuss the consequences for local justice from the perspective of the Sami. The respondent believes that it is not fair for the Sami and reindeer herding who are negatively affected by a potential mining establishment, which is similar to Österlin and Raitio's (2020) reasoning that reindeer herding has negative consequences of competing land use. The consequences will be that if the mine is established, it will result in the loss of a part of nature that the Sami have the legal right to use for reindeer herding. This reasoning may indicate the opposite of *the fact that all people have the same access to the environment* as the mining establishment *consumes the resources at the expense of the Sami*.

The Tallow representative argues that it is more advantageous globally to mine graphite in Sweden than in countries such as China, where it often occurs under unfair working conditions. The respondent also highlights that the Swedish laws create better conditions for mining operations not to have the same impact on the environment. Rabe et al. (2017) and Hofmann et al. (2018) argue that having an import dependency from China also poses political, economic, social and environmental risks. Thus, the Talga representative's reasoning can be interpreted as meaning that it is fairer to have mining operations in Sweden to strengthen the resource security

of critical raw materials that the EU needs, as well as to avoid global conflicts. It can also be interpreted as a necessary sacrifice that Sweden and its actors must make to promote global justice and thus overlook local interests. From a global perspective, the arguments can be interpreted based on the definitions of justice that *all people should have equal access to the environment and the earth's resources,* and *that no people should be negatively affected by environmental consequences such as the consequences of an industrial activity*.

6.2. Not in my backyard

NIMBY is discussed from the perspective of the Sami and Vittangibon on a possible mining establishment and its role in the climate transition. These respondents reasoned most clearly about NIMBY because the mining establishment will affect the nature in their surroundings. Both are interpreted as having a sense of injustice because they argue from an individualistic perspective and about the mining company's foreign origins.

Vittangibon and the Sami show perspective that a mining establishment can be important for a global climate transition. However, it can be interpreted as that neither Vittangibon nor the Sami believe that it is fair for the local community that a foreign mining company is established in Vittangi. The respondents present perspectives that indicate injustice as they *are negatively affected by the environmental consequences as consequences* of the mining establishment. In this context, the Sámi's reasoning suggests that the respondent opposes changes that may affect their reindeer herding, which can be interpreted based on arguments of an individualistic nature. The Sámi do not talk about justice in terms of the well-being of the reindeer or nature, and do not discuss the justice of other indigenous peoples, which reinforces the individualistic perspective on justice. On the other hand, there may be an understanding of why the Sami argue from an individualistic perspective, since it is groups of entire cultures that are affected by land use that have similar experiences as the respondent himself. Effects on the entire Sami culture can occur in the loss of pastures, as Österlin and Raitio (2020) highlight the importance of undisturbed and large grazing landscapes for Sami to be able to continue with reindeer herding. This indicates that more than just the respondent can be affected and that it will be the entire Sami reindeer herding that is negatively affected. It would also be possible to reason that undisturbed and large grazing landscapes can also affect local residents as there has not previously been a mine in the area. The locals who move in the areas lose nature due to the establishment of a mine, which Vittangibon also mentions, and thus they can Individualistic reasoning implies a greater significance that may affect more people than just the Sami

themselves.

On the other hand, it is interesting that the Sámi's reasoning does not indicate that the reindeer and nature have a value in themselves, but that they acquire value because the Sámi create a value for them. The reindeer and nature can be interpreted as a tool and a resource for their economy. However, the reasoning that the Sami make leads to collectivist effects because the respondent's personal minority status is rooted in arguments that affect an entire minority group. This case in Vittangi exemplifies a pattern, which research supports, that community activities and competitive land use have negative consequences for the well-being and culture of the Sámi people (Österlin & Raitio, 2020). Considering the long period of oppression against the Sami (Mulk, 2009), it can create an understanding of the Sami arguments. The arguments can be interpreted individualistically, but at the same time they are based on very complex conflicts between the entire Sami culture and the Swedish state.

6.3. Status and ethical dilemmas

The discussion highlights the division of power in environmental decision-making, local goal conflicts and communication challenges between the actors, including the municipal representative's reasoning about the role of the Sami in the mining establishment process. The section explores dynamics and provides an overview of the different perspectives and the consequences this has for the traditional livelihoods and rights of the Sámi.

In relation to the climate transition, both globally and locally, the municipal representative discusses the right of the Sami people to slow down the process. The respondent's reasoning suggests that *the power to bring about change and influence environmental decision-making is unevenly distributed.* It can be considered unfair if the Sámi, who are also affected by climate change, have complete control over decision-making that has a global impact. On the other hand, Österlin and Raitio (2020) argue that land use processes that do not include Sami people can lead to local and national goal conflicts, which generates cumulative effects. The researcher also discusses this and says that the Sami, as a recognized minority, should not be affected by activities because it restricts their minority rights. This, in turn, can be interpreted as the reasoning being based on the definition that there should be a *fair treatment of all people regardless of origin and ethnicity.*

Since the Sámi's main source of livelihood is reindeer husbandry, and the prerequisites for it to be well-functioning are large untouched grazing landscapes (Österlin & Raitio, 2020), a mining operation in the area of Talma Sámi village can reduce their source of income. The Sami perspective that Talga's mining operations will reduce reindeer grazing may thus indicate that they *are negatively affected by the environmental consequences that follow from the operations*. It can also be interpreted as a restriction on the Sami people's right to reindeer herding, which also violates the Reindeer Husbandry Act. At the same time, the Sámi do not own the land, according to the Tälga representative, which leads to the interests of the Sámi and the Tganga representative going against each other. The researcher discusses that the Sami have the rights to land use, but the respondent also argues that the rights do not entail any actual protection. This may indicate that the Talga representative believes that the company has the right to *consume environmental resources at the expense of others,* despite the fact that the business restricts the rights of the Sámi. The Sami believe that the Sami rights and the Sami culture give them the right to be able to say no to the projects and that no more mines should be opened. This creates a conflict of objectives for which party gets the rights to use the land. As the researcher mentions, Sami rights do not mean actual protection, but that Sami have the right to use the land. This is also strengthened by Lawrence and Larsen (2016), who write that the Swedish regulation of activities is constantly competing with the Sami culture and its land use. The authors believe, just like the researcher, that the regulation is very weak on the part of the Swedish state, which creates further conflicts of objectives between the parties.

Vittangibon and the Sami believe that Talga does not take their opinions into account in the mining process. The respondents believe that a mining establishment in Vittangi will lead to long-term effects, both for the environment, people and society at large, but that Talga does not listen to them or take any cumulative effects into account. On the other hand, the Talla representative believes that they have actually tried to communicate with the community and the Sami people from the beginning of the project, but that they do not listen. Similar conflicts are also highlighted by Guzik et al. (2021), who believe that mining companies that do not integrate social factors into the planning process can lead to a worsening impact on the local environment and affected residents.

The communication difficulties between the Talga representative, the Vittangi resident and the Sami can be based on the definition of environmental justice *as the power to bring about change and influence environmental decision-making,* but can be interpreted from individual

perspectives. This may indicate that there are clear conflicts of goals and interests as well as knowledge gaps between the respondents as they all seem to have difficulty understanding the perspectives of other actors. Respondents believe that they are not *treated fairly* by the other party in the conflict, but that they themselves *treat the other party* fairly. This could be interpreted as both parties to the conflict of objectives believing that they themselves should *have access to the environment and the earth's resources*.

6.4. The limit of contribution

The discussions about the limit of contribution highlight the respondents' view of a fair distribution of critical raw materials.

The respondents demonstrate a complex discussion about the fair distribution of critical raw materials. The Talga respondent states that *resources are unevenly distributed across the world*, which justifies that countries like Sweden should take responsibility for creating a *fair distribution of resources*. At the same time, the Sámi believe that Sweden already has a significant role in resource allocation issues regarding critical raw materials and that the country alone cannot balance the supply. The Sami's expression that "*We do our part with LKAB period"* is anchored with NIMBY, as development should take place, but at the same time not affect the respondent himself (Hubbard, 2009). NIMBY is also shown in the reasoning as LKAB is considered to have beneficial effects on society as a whole, but a mine in Vittangi entails negative effects on the respondent's immediate area and is thus not suitable (Hu & Han, 2023). The reasoning can be interpreted as the respondent would rather have a mining establishment in a different geographical location, even though it can have the same negative effects there, if not worse.

This perspective of justice emphasizes a need for shared responsibility to prevent conflicts from arising within countries and communities. As the respondents reason, their conflicts of justice can be interpreted as a difficult to achieve an even distribution of resources.

6.5. Who benefits from what?

The episode discusses the mining company's interests, from the perspective of the researcher, the Talga representative and the municipal representative. The discussion highlights aspects of injustice regarding resources that are exploited without contributing sufficient social benefit. Similar reasoning is linked to the perspectives of the Sami and Vittangibon.

The researcher's argument that the mining company's financial interests control the establishment is consistent with the arguments of the Talga representative and the municipal representative. The Talga representative and the municipal representative believe that the mine benefits the economy, but the municipal representative is not interpreted to support the project in Vittangi right now due to existing financial costs that Kiruna municipality is already affected by. The reasoning may indicate a perspective of injustice when *Important environmental resources are consumed at the expense of others* unless the municipality, its inhabitants and society benefit from it. Fly in fly out acts as a negative consequence and generates reduced income for the municipality and state. If the mining project generated positive effects on society, such as income and labour, the municipal representative's attitude to the project might have been different.

Similar reasoning can be drawn based on the reflections of Vittangibon and the Sami, as their attitude would also possibly have changed if the company were Swedish, and thus taken place under better supervision and understanding of the Swedish natural environment and minority population. The consequences of a mining establishment mentioned by the respondents can be interpreted as agreeing with the previous research in the field that shows negative effects on indigenous people and their culture. Among other things, Mulk (2009) writes that there has been an oppression against the Sami throughout history in Sweden. The Swedish state has demonstrated discriminatory attitudes towards, among other things, the Sami culture according to Mulk (2009), which can further highlight the Sami perspective on justice. The Sami, who have lived in the Sami culture, may have experiences of the Swedish state's discriminatory (unfair) attitudes towards the respondent's culture and thus a broader understanding of the negative attitude towards a foreign company establishing a mining operation nearby can be created. If the Swedish state cannot treat Sami culture fairly, it may be difficult for the indigenous people to see how a foreign company could possess this understanding.

These thoughts could also be applied to the municipal representative and the Vittangibon as a possible mining establishment would mean a loss of the natural and cultural environment. Österlin and Raitio (2020) write about the problems of mining based on ecological, social and cultural consequences, and that indigenous communities can be strongly affected by industrial activities. A foreign industrial activity can thus be interpreted as having poorer insight into, and understanding of, its impact on ecological, social and cultural aspects in society. Thus, the Talga representative's argument, that the Swedish economy benefits, can be interpreted to

overlook other aspects that people who live in Swedish society value and are exposed to due to the consequences of a mine in Vittangi.

6.6. Alternative technology as the only solution

Alternative technologies as the only solutions are discussed based on the respondents' views on other methods and division of responsibilities to achieve a more just climate transition. The individual's responsibility for the environment and consumption as well as current mining processes is questioned.

The attitude of Vittangibon and the Sami towards alternative methods of mining and the use of faulty technology for a transition can provoke reflections on who is ultimately responsible for promoting sustainability and a climate transition. The respondents' arguments show that there is a fundamental inertia and resistance to change in people's everyday lives when it comes to, for example, lifestyle habits and consumption patterns. Instead of only investing in mining, the respondents highlight solutions such as taking the bus or consuming less. At the same time, the respondents are keen that all individuals must start to take responsibility for reducing their own environmental impact, and tend to continue living as usual but only make small behavioral changes.

While Vittangibon and the Sami point out that a reshaping of production and consumption patterns in society is required, ecological modernization instead focuses on integrating environmental issues into already existing systems (Hajer, 1996). Therefore, the respondents' arguments differ from ecological modernization. The respondents discuss alternative technologies and highlight the need for how individuals and society can change their way of life, while economic modernization aims not to make extensive changes to existing structures in society. On the other hand, the respondents' reasoning is in line with ecological modernization as they believe that all actors in society should work together to be able to achieve a sustainable and just climate transition.

It is also possible to question current mining operations processes as development is advancing rapidly. Instead of trying to adapt to certain underlying structures in society, such as the Sami culture or the cultural environment of the Vittangi residents, it is felt that quick solutions and economy are prioritized. The quick solutions mean that the processes are perceived as not well thought out by some respondents and that it does not contribute positively to society. It can therefore be related to the definition that *no people should be negatively affected by industrial*

activities.

Based on the respondents' reasoning and the meaning of ecological modernization, it is possible to discuss how these are connected. As ecological modernisation focuses on the integration of environmental issues into existing systems and seeks to preserve economic growth,

The respondents' reasoning on the need for a reassessment and reshaping of human production and consumption patterns in the climate transition. The respondents question the idea of continuing to extract new products instead of changing habits, even though society's use of resources is what has given rise to today's climate change. An interesting idea with alternative solutions versus ecological modernization is that everyone must change their standard of living to achieve a just climate transition. On the other hand, no one is willing to make changes themselves, but there will be alternative solutions to the problems.

6.7. Concluding discussion

The discussion shows that there are clear differences between the respondents' perspectives on the mining of critical raw materials. Despite the fact that everyone acknowledges the need for mining as part of the climate transition, there are clear conflicts of justice in how the process should be carried out and which solutions are most relevant. Respondents highlight potential challenges and opportunities on both a global and local level.

7. Summary and conclusion

The purpose of this study was to shed light on societal actors' perspectives on the conflicts of justice in mining, as well as to create an insight and provide a nuanced critical perspective on how it can affect the actors' lives. The study therefore intends to investigate what these actors experience that mining has for consequences on the environment and society from the perspective of justice. Based on a theory of environmental justice, we have through an interview study shed light on some different actors' perspectives on how mining of critical raw materials is perceived to affect them. The results of the study indicate that the actors' perspectives on the mining of critical raw materials differ depending on the associated social group. The respondents' different perspectives on justice are based on local, national and global interests.

- The social actors' justification for whether a mining establishment in Vittangi is positive or negative is based on various resource conflicts, goal conflicts and conflicts of justice.
- The resource conflicts are mainly based on different perspectives about which resource is most important, such as reindeer herding, clean water, the economy and resource security.
- The respondents' reasoning about fairness, challenges and opportunities with a mining establishment is influenced by the knowledge and understanding of other groups in society.
- Depending on how much they themselves are affected by a mining establishment in Vittangi as part of the climate transition, they believe that it is more or less fair.
- The respondents' self-interests govern their perspective of justice and depend in part on various economic, social and environmental factors.
- The stronger the cultural, social and environmental connection the respondents have to the area where the planned mining establishment will be located, the more challenges are highlighted.
- Many perspectives of justice are based on the cumulative effects of land use that arise from a mining establishment.
- Respondents with a more global justice perspective are more accepting and see more opportunities with a mining establishment in Vittangi.

It is clear that different actors have very different perspectives and starting points in their view

of mining. Our understanding of the goal conflicts that can arise in a situation linked to the mining of critical raw materials has been deepened through this study. There are difficult questions and trade-offs that have to be made, and there are no easy answers either. The results and discussion show additional interesting perspectives that the study did not intend to investigate, but that are important to highlight and can be suggestions for further research in the area. Further suggestions for further research are that the perspectives of more societal actors are explored, both within the target groups we have chosen to investigate and outside these target groups such as age, gender and other minority groups. A general conclusion that can be drawn from this is that it will always require a well-thought-out, mutual and fair dialogue, between all stakeholders, in connection with critical raw materials becoming an increasingly important resource in the ongoing climate transition.

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Appendix Interview Guide

Keyword

1. **About the person**
2. **The person's relationship to (or role) break, specifically AND BACKGROUND KNOWLEDGE**
3. **Process (around mining in Vittangi)**
4. **Climate change**
5. **Justice**
6. **Sustainable development (and justice?)**

Introduction

The interview begins with a presentation of ourselves, the purpose and goal of the study. Then we go through GDPR, anonymity and whether the interviewee is okay with being recorded. We are clear that we do not make any demands on the interviewee.

We ask the interviewee to tell us their name, professional role/occupation and how long the person has worked/lived in the area.

Those who want to remain anonymous: ask them if the "title" we will give them is ok for them. --> If the title is not ok, they can come up with their own that they think is ok.

Questions:

About the person

1. **What is your relationship to, and experience of, mining in Sweden in general?**

How are you personally affected or how *can* you be personally affected by future mining? What consequences can it have in your surroundings due to mining?

What main conflicts have you encountered in connection with mining?

The person's relationship to (or role) break, specifically AND BACKGROUND KNOWLEDGE

2. **What has been problematic for you with the mine and mining in Vittangi? Is there anything special about Vittangi compared to other places?**

   Follow-up question: To Talga: What are your motives for mining the mine in Vittangi, would you like to summarize your main thoughts on it?

   To the others: Why do you think they chose Vittangi as a mine to mine in? / What do you think is the miners' motivation for mining mines, specifically in Vittangi?

3. **What do you think about Sweden's goal of becoming fossil-free by 2045 through, among other things, mining?**

   Follow-up question: How do you think Sweden should go about becoming fossil-free?

Process (around mining in Vittangi)

4. **What has the process looked like in terms of the law?**

5. **Have you encountered any conflicts regarding mining? If so, what?**

How could these conflicts be handled? (Adapt to the respondents)

6. **How will you be represented today in the mining process? Are you involved in the process and if so, how?**

Sami, researcher, tallow, resident, municipality.

7. **What are the biggest challenges in communication between actors in society linked to mining?**

Climate change

8. **How do you see mining as part of the climate transition?**

   Follow-up question: Do you see alternative opportunities for transition?

9. **How do you think the EU and Sweden can undergo a just transition to a more "climate-smart" society?**

How do you think a just transition is best done in Vittangi?

Justice

10. **What does justice mean to you?**

In your area (e.g. for the Sami or local residents), how could justice be achieved?

Society at large today has a very resource-intensive lifestyle and there is always someone who is affected somewhere, how do you view that?

Add a follow-up question if the respondent does not answer it well...

(Ex. Isn't it better to mine here where there are better laws and working conditions than to mine mines in India with child labor?)

11. **Is it possible to achieve justice from both sides, both society and the mining industry?**

- And to reduce any conflicts.

Sustainable development (and justice)

12. **What do you think are the social advantages and disadvantages of mining in your community/Sweden?**

Are Sámi rights protected in any way and if so, how? (Are they

protected in Vittangi? How are they protected at national level?)

Have you received any compensation? If so, is it fair compensation? What

would you consider fair compensation?

13. **How do you reason about how the mining affects nature? (e.g. topography, water, natural area, land use, pollution, environment)**

Can you connect to justice?

How should environmental factors in society be taken into account? Both social and environmental risks associated with society at large and the region?

14. **What do you think are the economic advantages and disadvantages of mining in your community/Sweden?**

How do you think it can affect the local population and business community in the area?

15. **Are there any specific measures that can minimize the consequences of mining?**

16. **What are the greatest opportunities and challenges regarding the mining of critical raw materials, in the long and short term?**

17. **How can you balance the role of society in mining? Between economic interests, environmental protection and social issues?**

Conclusion

18. Would you like to add something?

Thank you for participating!
