

## Local stakeholder's perspectives on development of economic activities: The Gällivare case

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### ABSTRACT

Sweden's commitment to environmental conservation, social equity, and cultural preservation is challenged by intensifying resource extraction and land use conflicts. To ensure its continued equitable development, understanding and incorporating local perspectives into the decision-making process is necessary. Hence, this study seeks to understand current stakeholder views on the development of extractive industries i.e., mining and forestry; and traditional livelihood focusing on reindeer husbandry as defined by the human development theory and subjective capabilities. We used Gällivare, Sweden as our case study where all these economic activities are present and land use conflicts are intensifying. Through expert interviews and local stakeholder surveys using Q-methodology, we identified three perspectives: (1) Uncertain Development, (2) Prioritizing Nature and Reindeer, and (3) Industry Growth Equals Community Growth. We also found points of consensus and conflicts among these differing perspectives crucial for improving ongoing discussions and negotiations on land use conflicts. What remains clear is that development remains contested. Some groups express limited capabilities and freedom in pursuing the life they value hence development for some stakeholders is still far from reality as against reported indexes. Finally, we suggest that examining local stakeholder views on development can enhance the current monitoring of human development, especially in the Arctic region.

### 1. Introduction

The pursuit of development is a complex and multifaceted challenge faced by nations around the world, and Sweden is no exception (Yeasmin Rosy, 2015; UNDP, 2024). As a prosperous, highly developed country in Europe, Sweden has long been recognized for its strong social welfare system, progressive environmental policies, and robust economic performance (OECD, 2023). In 2021, Sweden had one of the highest GDPs in the world and was ranked 5th in the Human Development Index (The World Bank, 2024; UNDP, 2024). However, even in this Nordic country, the path towards sustainable and equitable development presents challenges.

One of the recurring development issues in Sweden is the tension between economic prosperity and environmental sustainability (Fauré

et al., 2016; Garbis et al., 2024). Sweden has set highly ambitious climate targets, aiming to achieve net-zero greenhouse gas emissions by 2045 (Ministry of the Environment and Energy, 2017) and 100% renewable electricity production by 2040. The achievement of these decarbonization targets is planned by increasing the use of renewable biological resources and developing bio-based alternatives to fossil-based products (Swedish Energy Agency, 2021; Garbis et al., 2024) thereby relying increasingly on resource-intensive industries. This has raised concerns about the long-term sustainability of the country's development model (OECD, 2023).

Moreover, Sweden's commitment to social equity and cultural conservation has been tested in recent decades, as the country grapples with growing income inequalities, regional disparities, and a much-needed integration of an increasingly diverse population (OECD, 2019;

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Glomsrød et al., 2021). In addition, Sweden continues to face significant challenges related to the Sámi Indigenous People's land use rights and cultural preservation as resource exploitation intensifies, and conflict resolution over traditional land rights, exploitation, and conversion becomes more pressing (Sámi Parliament, 2020; Tarras-Wahlberg and Southalan, 2022). These challenges underscore the complex interplay between economic development, social cohesion, and the preservation of cultural identity, coupled with environmental protection needs, especially for the fragile Arctic (Živojinović et al., 2024).

These challenges and trends are unfolding in Gällivare, a municipality in northern Sweden, where rising resource demands have intensified industry activities affecting locals and Indigenous communities. Mining companies such as LKAB and Boliden are expanding their operations leading to neighborhood demolitions and resident relocations (LKAB, 2022). While planned projects like HYBRIT fossil-free steel system, and H2 Green Steel's hydrogen-based steel plant aim to reduce CO<sub>2</sub> emissions, it will inevitably increase energy demand (LKAB, 2022; Northvolt, 2022), prompting increased renewable energy sources like onshore wind farms (Cambou, 2020; Swedish Wind Energy Association, 2021). These developments risk further disrupting reindeer husbandry—a traditional livelihood for the Sámi Indigenous Peoples—through habitat loss and fragmenting grazing lands (Myntti et al., 2022; Nygaard et al., 2022). Additionally, expanding forestry operations increasingly overlap with reindeer grazing areas, with practices such as harvesting and soil scarification contributing to the decline of lichen-rich habitats—an essential winter food source for reindeer. Furthermore, forest lands are primarily state- or privately owned, granting ownership and development rights to landholders, while Reindeer Herding Communities (RHCs) only hold usufructuary rights for reindeer husbandry, which further exacerbates land-use conflicts in the area (Eggers et al., 2024).

Ongoing development in Gällivare and across Sweden has created a sense of dichotomy, where economic progress is often portrayed as being at odds with environmental sustainability goals and cultural preservation. Tarras-Wahlberg and Southalan (2022) argued that the relationships between industries, communities, and culture are far more complex and suggest a more nuanced understanding of local realities. While there are numerous studies that examined local stakeholder perceptions of different economic activities in Sweden, research on local perspectives in Gällivare remains limited. For example in the mining sector, Beland Lindahl et al. (2018; 2023) explored perceptions of conflicts over mine establishments, and local attitudes towards mineral exploration. Poelzer and Yu (2021) analyzed the relationship between local attitudes and trust towards mining activities. Byström (2022) investigated different perceptions of mining and tourism industries in the Swedish North; and Löfgren (2023) explored how Swedish mines promote their 'green' activities and stakeholders' responses. In forestry, Beland Lindahl et al. (2013) explored the role of place perception on forest management and their frames (e.g., forestry for jobs, biodiversity, etc.). Haugen (2016) analyzed perspectives of forest owners and the public on forest values. Keskitalo and Lundmark (2010) focused on perceptions of environmental protection in forestry, while Lidestav et al. (2013) explored how forest commons benefit local shareholders and the community. Concerning reindeer husbandry, a few notable studies include Horstkotte et al. (2017; 2022), who investigated the realities of reindeer herding from different perspectives and disciplines, including the effects of mining and forestry. Cambou et al. (2021) examined the impacts of wind energy on reindeer husbandry and Komu (2020) analyzed reindeer herders' refusal to resist to maneuver conflict.

Despite these studies, few have specifically explored local perspectives on the development of these activities in Gällivare. Accastello et al. (2019) examined local views on future scenarios of the industries, their impacts and societal acceptance, while Beland Lindahl et al. (2022; 2023) analyzed local attitudes toward mineral exploration and its influence on perceptions of mining operations. Compared to its neighboring municipalities, Gällivare has received relatively little research

attention regarding local development perspectives, despite its significance in ongoing industrial developments (Elomina and Živojinović, 2024). To our knowledge, no study has yet comprehensively examined how residents perceive the municipality's development in relation to its diverse economic sectors.

Understanding diverse viewpoints is crucial to produce more comprehensive regional and national analysis, as these insights offer valuable contributions to discussions on development, and land use in the Arctic region and even globally. Exploring local perspectives helps inform more inclusive and balanced decision-making processes in the future. As Hofer et al. (2024) claimed, determining local people's perspectives is crucial for equitable development as this process ensures that development initiatives are aligned with the needs, values, and expectations of a community, thereby fostering a sense of ownership and cooperation among residents. Engagement of local stakeholders reduces conflict, ensures development is tailored to the actual needs of a community, and improves the accuracy of decisions and the overall success of development projects (Hofer et al., 2024; Martinez-Avila and Olander, 2024). Incorporating diverse stakeholder perspectives is also essential for formulating effective strategies and policies, particularly amid the green transition and heightened global competition for resources (Jacobs and Kaufmann, 2021; Voegeli and Finger, 2021; Živojinović et al., 2024).

Within this context, we aim to fill the existing research gap by understanding current stakeholder views on current development trends, with particular focus on land use activities such as mining, forestry, and reindeer husbandry. By providing a more holistic understanding of the region's development challenges and opportunities, our study seeks to contribute to the current discussion of development and land use conflict. Thus, our research is guided by two research questions: (1) What are the perspectives of local stakeholders on the development of studied economic activities? and (2) what are the points of agreement and disagreement among the local stakeholders? By examining these questions, we seek to provide a nuanced understanding of the complex dynamics at play in Gällivare's development. This research is particularly timely as the region faces rapid transformation, and decisions made now will have long-lasting impacts on both local communities and the Arctic environment.

The rest of the article is structured as follows: first, we present the conceptual background which outlines human development and its approaches. This is followed by a discussion of Gällivare case study, and an explanation of the Q-methodology used to examine perspectives on development. We then present and analyze our findings, concluding with key insights and recommendations.

## 2. Conceptual background – defining development

The need for exploring nuanced views of local development arises from the ambiguity of the concept of development, which is highly contested due to its multidimensionality, diverse interpretations, and varying priorities among stakeholders (Corbridge, 2007). Development encompasses a broad spectrum of factors, including economic growth, social progress, environmental sustainability, and cultural prosperity. Different actors prioritize these aspects differently based on their beliefs, values, and interests (Connelly, 2007; Corbridge, 2007; Sapkota, 2018). For instance, some equate development with economic growth, measured by a country's Gross Domestic Product (Lawn, 2007), while others advocate for alternative metrics such as the Happiness Index (Helliwell et al., 2024). Contrastingly, degrowth can also be a form of development and involves intentionally reducing consumption to realign the economy with ecological limits, while aiming to decrease inequality and enhance human well-being (Hickel, 2021). Perceptions of development can also vary significantly across regions and cultures. The Western notion of development often aligns with consumerism, which may not resonate with Indigenous communities' values and aspirations (Nygren, 1999; Hernandez, 2013). Furthermore, there is an ongoing

debate about how environmental concerns, marginalized communities, and social dimensions should be integrated into development discussions, particularly considering existing power dynamics (Escobar, 1995; Sen, 1999; Sachs, 2006). Various well-studied concepts frame the discourse on development (e.g., modernization theory, post-development theory, sustainable development, etc.), each with its own criticism, e.g., western bias, oversimplification, neglect of local agency, limited actionable solutions, and differing definitions, to name a few (Yeasmin Rosy, 2015; Sapkota, 2018). However, in this paper, development is defined based on human development theory (Sen, 1999, 2003), because it understands development not only as measured by economic growth, but also by the expansion of people's capabilities to live the lives they value. Development encompasses social inclusion, political engagement, cultural and heritage conservation, physical health, education, and ecological well-being, (Sen, 2003; Robeyns, 2017).

To operationalize the human development theory, Sen (2003) introduced the Capabilities Approach (CA) which is a normative framework centered on individual wellbeing. It is concerned with four key concepts: resources (natural, social, economic); conversion factors (i.e., individual circumstances, social and environmental), capabilities/freedom (a set or combination of opportunities available to an individual that enables them to achieve various valued goals); and functionings (the actual state of what people can do and be) (Sen, 2003; Robeyns, 2005, 2017). However, we found two main limitations of Sen's human development theory and its capability approach.

First, scholars have criticized the approach for being conceptually vague and deliberately under-elaborated for practical application, leading to the development of multiple frameworks see, e.g., Anand et al., 2005; Robeyns, 2005; Nussbaum, 2011; Alkire, 2015; Robeyns, 2017. Despite these contributions, human development remains inherently complex and challenging to assess, with no single framework achieving universal acceptance for comprehensive evaluation. Consequently, most current studies rely on objective measurements which often fail to capture the complex, multidimensional nature of human development that includes cultural, and social elements (Robeyns, 2017; Skevington and Böhnke, 2018; Mäki-Opas et al., 2022; Bartolomei et al., 2024). Therefore, we decided to adopt a subjective capabilities approach building upon the work of scholars who have grounded their understanding of development in subjective wellbeing (Anand et al., 2005; Hasan, 2019; Mäki-Opas et al., 2022). Subjective Well-Being is a broad term encompassing the various assessments individuals make about their lives, including personal experiences, physical and mental well-being, and the conditions in which they live (Diener, 2005; Skevington and Böhnke, 2018). Examining subjective capabilities is particularly valuable as it centers the perspectives of those who experience development interventions firsthand, acknowledging that meaningful progress must ultimately be evaluated through its impact on people's lived experiences and their ability to pursue what they have reason to value.

Second, current studies on individual wellbeing are often summarized in overall assessments at national and regional levels (Hasan, 2019; Mäki-Opas et al., 2022). This is particularly evident in our case study of Gällivare where we found no specific local studies but identified broader assessments. For instance, Sweden has been included in the Arctic Human Development Report and Arctic Social Indicators (ASI), which assessed human development by determining material well-being, health, and education which are also the basic indicators for the global Human Development Index (Larsen et al., 2010; UNDP, 2024). On their second iteration, ASI-II expanded to include cultural integrity, closeness to nature, and fate control as development measures, with findings presented as regional case studies (Larsen et al., 2014). OECD's (2019) report on linking Indigenous Sámi Peoples with regional development touched on some aspects of wellbeing but mostly focused on policy recommendations at the national level. While these reports offer valuable insights into the Arctic and Sweden's human

development, there is a lack of study conducted at a local level, which fails to capture and present local realities, particularly the conditions of the Indigenous communities (Larsen et al., 2014).

To address these limitations, we adopted a methodological approach that combines qualitative inquiry into perceptions with quantitative interpretation, ensuring an in-depth understanding rather than relying on index-based assessments. Our focus is on capturing the subjective views of local and Indigenous Peoples regarding development in Gällivare. This study builds upon the findings of the ArcticHubs project (see, Elomina et al., 2024; Živojinović et al., 2024) and aims to contribute to the current discussion of development in less studied areas, providing a more nuanced understanding of human development that acknowledges local contexts and Indigenous Peoples perspectives.

### 3. Methodology

#### 3.1. Study area: Gällivare

Situated in the Arctic circle, Gällivare municipality is located in the County of Norrbotten, Sweden, in a region commonly known as Lapland or the traditional homeland of Indigenous Sámi Peoples (Accastello et al., 2019; Elomina and Živojinović, 2024). The municipality covers a total land area of 16,819 km<sup>2</sup> and is home to 17,420 inhabitants (of which 10,000 lives in the urban centre), resulting in a population density of approximately 1.1 km<sup>2</sup> per person (Gällivare Kommun, 2023). While the sparse population density may suggest that the municipality has ample land available for industry expansion, it is utilized by a variety of stakeholders, such as mining companies: LKAB and Boliden AB; forestry companies/associations: Sveaskog AB, SCA, Norra Skog, National Property Board of Sweden, Gällivare Forest Commons, and a large number of small-scale private forest owners; wind development and infrastructure projects; four national parks in/parallel to the municipality: Stora Sjöfallet, Sarek, Muddus, and Padjelanta; and four Reindeer Herding Communities (RHC): Girjas, Báste čearru, Unna tjerusj mountain RHCs and Gällivare forest RHC (Lidestav et al., 2022; Nygaard et al., 2022; Wagenius, 2022; Gällivare Kommun, 2023). See Fig. 1 for the overlapping land uses in Gällivare and RHC map in Fig. 2.

#### 3.2. Development challenges in Gällivare

Gällivare's economy has long been dominated by resource extraction industries, which have shaped the local landscape and communities in profound ways (Živojinović et al., 2024). The Malmberget iron mine operated by LKAB has been crucial to the town's development since the 1700s, originally occupying traditional reindeer herding lands (LKAB, 2022). Boliden Minerals AB operates the Aitik mine, Europe's largest open-pit copper mine and planned expansions seek to extend Aitik's operational life beyond 2029 affecting operations of the Gällivare forest RHC (Wagenius, 2022; Boliden, 2023). These mining companies together with forestry have fuelled economic growth and job creation, providing valuable income and opportunity for many residents. However, these industries have also disrupted traditional livelihoods, strained local infrastructure, and contributed to environmental degradation (Glomsrød et al., 2021; Elomina and Živojinović, 2024; Garbis et al., 2024). Gällivare presents a unique case because of the multiple converging development plans, and unlike major cities or developing regions, Gällivare has a relatively small population, remote areas, and Indigenous communities that rely on traditional livelihood. Additionally, the municipality is undergoing social transformation, or merging with an old town called Malmberget due to mining expansion. Various quarters and buildings are being demolished and moved to Gällivare. New community and recreational buildings are also being established by the mining company as recompense. The project was signed in 2012 and will continue until 2032. This also entails the development of Gällivare into a world-class Arctic town with modern facilities and environmental zones (LKAB, 2022, 2025).



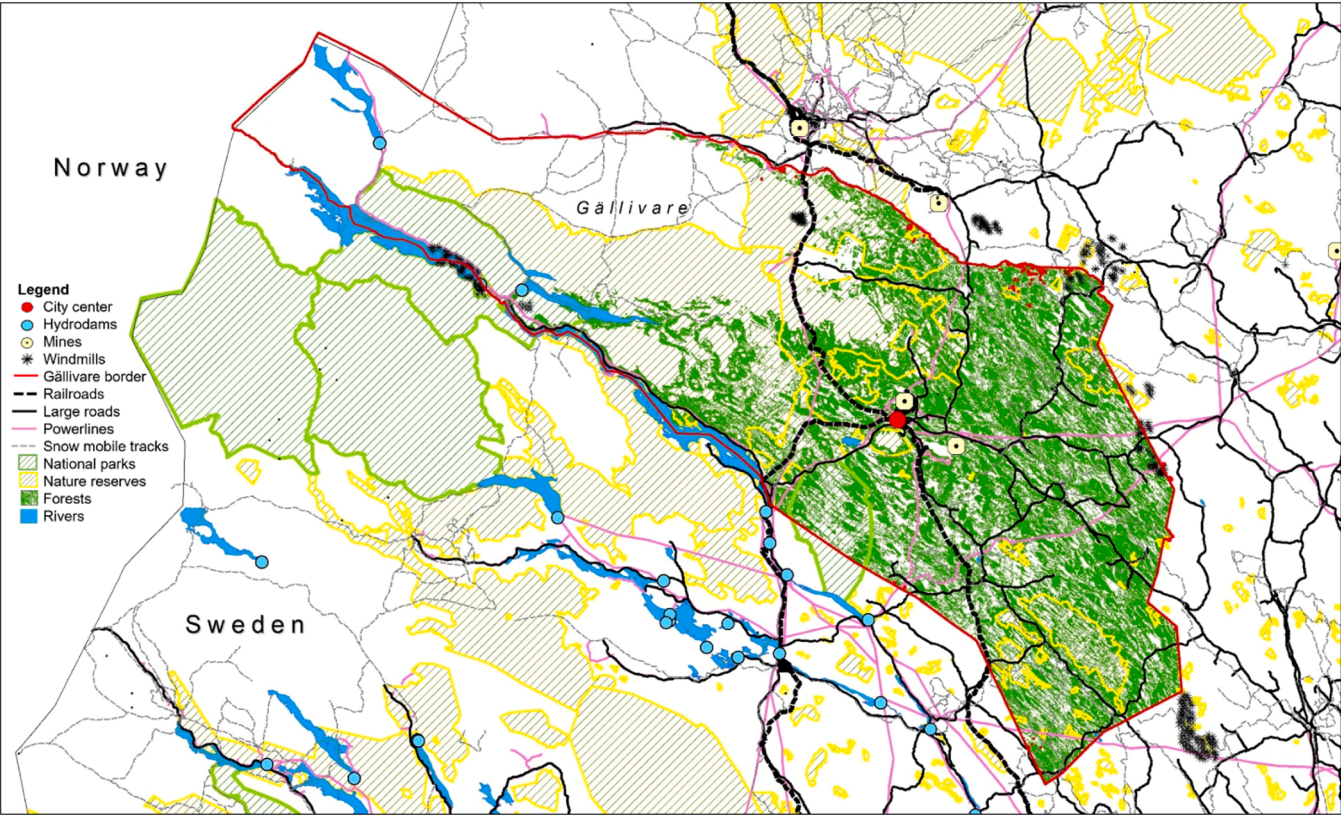


Fig. 1. Overlapping land use in Gällivare.

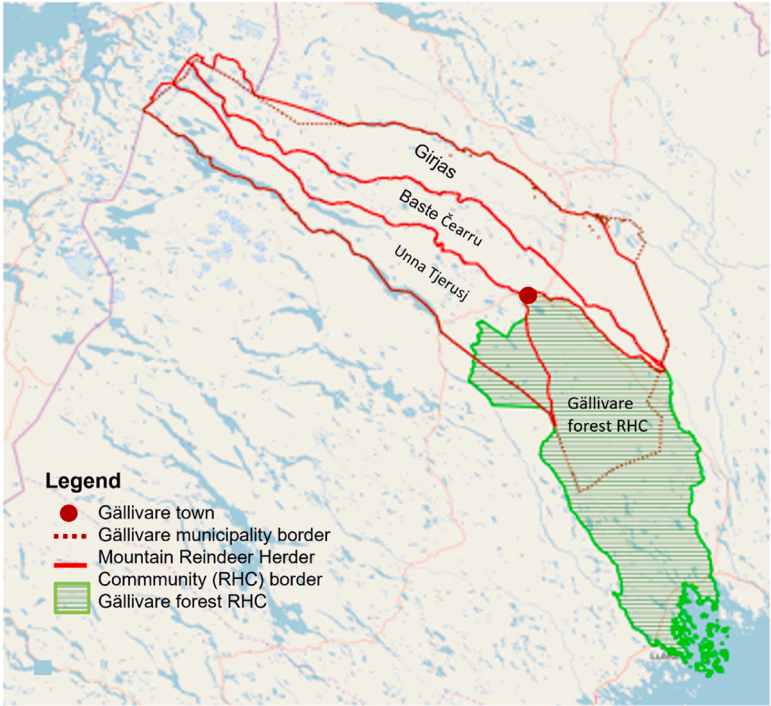


Fig. 2. Map of reindeer herder communities in Gällivare Sweden adapted from [Lidestav et al. \(2022\)](#).

### 3.3. Data collection and analysis: Q-methodology

Q-methodology studies a person's subjectivity, encompassing their viewpoint, opinions, beliefs, values, tastes, and perspectives (Stephenson, 1935). It is effective at capturing a range of perspectives and identifying shared or differing views (Watts and Stenner, 2005; Grimsrud et al., 2020). Q-method also seeks to understand why people think the way they do (Gustavsson and Morrissey, 2019) giving equal weight to all participants regardless of status or expertise, ensuring that marginalized views are treated equally to mainstream opinions (White, 2022). Given the inclusion of Indigenous Peoples' perspectives, ethical approval and informed consent were obtained from all participants, as approved by the Swedish Ethical Review Authority with Dnr 2023-01172-01.

The summary of the Q-methodology steps applied in this study is available in Fig. 3. Each step is detailed in the proceeding chapters.

#### 3.3.1. Statement development and sampling

The statements used in this study were developed based on current public discourses regarding development perspectives in Gällivare. We combined a review of scientific literature and four qualitative semi-structured interviews with key stakeholders, such as the mining and forestry sectors, the city council, and the reindeer husbandry community. The literature review, conducted in October 2022 using Scopus and Web of Science, identified 22 relevant studies on forestry, mining, reindeer husbandry, and development perspectives in Gällivare.

The interviews, conducted in Swedish in March 2022 and later translated into English, followed a semi-structured format that focused on the benefits and drawbacks of the industries, conflicts, their importance to the local community, and their societal and cultural impacts, see Appendix II for the interview guideline. Interview transcripts and articles were analysed in Atlas.ti 8.4.26 (Scientific Software Development GmbH, 2017). A total of 434 quotations or potential statements were first identified. These quotations were then combined or grouped based on repetition reducing them to 263 quotations and further into 108 quotations when summarized based on themes. The quotations are then categorized into negative, positive, and neutral to development sentiments. An equal number of quotations relative to each sentiment was identified and formulated into 36 statements. Co-authors and project partners with ties to local stakeholders, including representatives of a reindeer herding community, helped refine the statements, ensuring they were sensitive to Indigenous communities and used everyday language. The final statements were translated into Swedish for participant ease.

#### 3.3.2. Participant selection

A purposive sample of individuals who potentially have differing perspectives or opinions about the development of Gällivare were invited to participate in the study, including those who could provide the best insights, but also opposing ones, and could influence decision-making (Brown, 1993). Hence, invited participants were carefully selected rather than randomized. A total of 22 respondents participated, including experts, authorities, Indigenous Peoples, and local citizens. The list of participants is available in Appendix I.

#### 3.3.3. Q-sorting

Q-sorting is the task of ranking and sorting the statements from completely disagree (-4) to completely agree (+4). The sorting process followed an inverted triangle grid (Q-grid) see Fig. 4, where participants placed a fixed number of statements in each scale following a quasi-normal distribution (Weldegiorgis et al., 2022). Q-sorTouch tool (Pruneddu, 2021) - an online platform that mimics physical card sorting by enabling a drag-and-drop interface, was used to run the study. Participants were given four options to conduct Q-sorting: independent online sorting, guided online sorting via Zoom and Microsoft Teams meetings, in-person sorting, and a focus group setup. The 22 selected

participants were asked to conduct Q-sorting based on their viewpoints on Gällivare's development.

Additionally, post-sort interviews were conducted, wherein participants were asked for their reasoning for sorting and ranking the statements as they did, providing context for their Q-sort that was later used in result interpretation.

#### 3.3.4. Data analysis

The collected Q-sorts were analysed using KADE software (Banasick, 2019). All Swedish responses were translated back into English for further analysis, with translation accuracy verified by Swedish co-authors. The analysis began with a correlation analysis to determine the relationships between the Q-sorts, followed by factor analysis using Principal Component Analysis (PCA) to identify the number of viewpoints in the data (Watts and Stenner, 2005). PCA revealed eight unrotated factors, but after considering reliability (eigenvalue > 1 rule<sup>1</sup>), we reduced the factors to five. However, factors four and five did not make an important analytical difference even after factor rotation.<sup>2</sup> Hence, we retained three factors. All significant observations (with Significant Factor Loading  $\geq 0.430$ )<sup>3</sup> were flagged and included in the interpretation. It is essential to note that the statistical analysis in Q-method is a tool to help make sense of the data, but it is not the sole indicator of relevance. Q-method emphasizes its qualitative aspects and interpretation is not limited to statistically significant statements (Brown, 2008; Ramlo, 2016).

#### 3.3.5. Data interpretation and evaluation

The statistical analysis resulted in 3 different factors and each factor was interpreted to provide a summative account. These accounts explain the viewpoint being expressed by each factor or group. The accounts are developed from (1) distinguishing and consensus statements; (2) statements that are ranked at +4 and -4; and (3) statements ranked higher and lower in each group as compared to other groups; and (4) participants' responses to post-sort questions and the information they provided during Q-sorting meetings.

In addition, we also had a series of consultations to validate the results. We first consulted with expert project partners in the ArcticHubs project, then we presented the results to fellow researchers and a local research group who have experience and works closely with local stakeholders in Gällivare. During the evaluation, we asked if there were perspectives that were not captured by our analysis, and feedback either in written or oral form was used to refine the interpretation, including improving group description, contexts, and naming.

#### 3.3.6. Limitations

Q-methodology offers detailed descriptions of various, distinct viewpoints regarding a subject, rather than providing statistical generalizations about the proportion of people in Gällivare. Unlike R-statistics, Q-methodology typically involves fewer respondents, which remains acceptable since Q-statements are the primary variables and participants are the observations. According to Watts and Stenner (2005), Q-studies do not aim for large sample sizes because the number of participants should not exceed the number of statements. While this study carefully selected relevant Q-statements and participants, it does not represent all development perspectives in Gällivare.

Gällivare is home to four minority languages but due to limited

<sup>1</sup> Only factors with eigenvalue greater than 1 are considered adequate for further analysis due to their high reliability (Watts and Stenner, 2012).

<sup>2</sup> Factor rotation is applied to make the structure of the groupings clearer and we applied varimax and judgmental rotation, to have a mix of mathematically precise solution and data-grounded, theoretical inclination in rotating the factors (Brown, 1993).

<sup>3</sup> Significant Factor Loading at > 2.58 x standard error at 99% confidence interval and relevant at  $p > 0.01$  and  $p > 0.05$  (Brown, 1993).

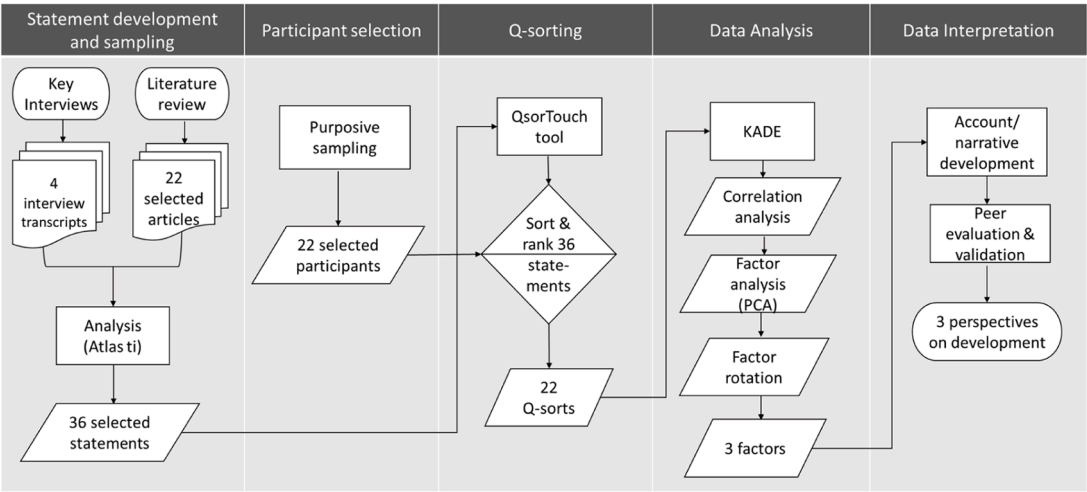


Fig. 3. Summary of Q-methodology steps applied to derive different perspectives on Gällivare’s development.

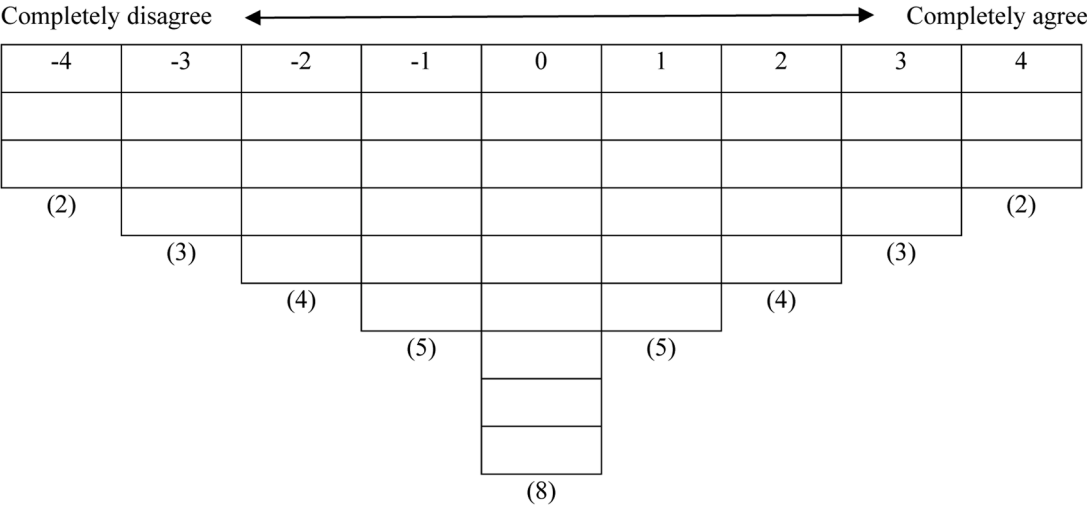


Fig. 4. Inverted grid or Q-grid used in this study. Numbers inside the parenthesis (2) are the number of statements that can be assigned in each box.

resources, Q-sorting materials were translated solely into Swedish, as local experts confirmed that everyone in the region understands the language. Lastly, translating interview transcripts and Q-surveys into English posed challenges, as some concepts or words may not translate precisely, potentially affecting interpretation. To reduce researcher bias, the results were repeatedly consulted with local experts which entailed multiple revisions of group names, descriptions, and explanations.

4. Results

We found three groups that explain 63 % variance of the sample: Group 1 explains 18 %, Group 2 explains 23 % and Group 3 explains 22 % variance of the sample, see Table 1 for the group matrix with defining sorts. The statements and the scores per perspective are available in Table 2, while the distinguishing statements per group are available in Table 3. The three groups are named based on the perspective they portray: Group 1 - uncertain development; Group 2 – prioritizing nature and reindeer; and Group 3 - industry growth equals community growth. The statements and their respective scores are referred to in brackets (S1, +4). The summary of participants’ post-sort interview responses in support of the statements is indicated as (P1, P2...).

4.1. Group 1: uncertain development perspective

This perspective reveals mixed views on Gällivare’s development. Participants who belong to this group completely agree that Gällivare thrives only because of the mines (S1, +4), and the current social transformation – the merging of Malmberget and Gällivare, will provide a better and modern living environment (S12, +4). However, they also completely disagree that forest (S8, -4) and mining companies (S9, -4) do not invest in local infrastructure, with participants noting that current investments mainly benefit the companies’ operations rather than the community (P4, P5). Participants acknowledge the city’s unfortunate dependence on mining, as it has been central to Gällivare’s growth for centuries (P18, P17).

Group 1 participants believe that mining leads to development (S27, -3), and supports its expansion to ensure local livelihoods (S2, +3), viewing industrial development as part of Gällivare’s growth (S4, +3). They acknowledged that the green transition has increased resource demands in Gällivare (S19, +2) but acknowledged that Gällivare alone cannot meet global demands (S13, +1; S24, -1). Participants agree that more alternative jobs should be available rather than just relying on the mines (S23, +1), and support immigration to boost the workforce (S7, +2). Participants mostly agree that current regulations are too strict (S3, -3) limiting mine expansion.



**Table 1**

Group matrix with defining sorts flagged.

Participant No. (P)	Group 1	Group 2	Group 3
1 <sup>a</sup>	0.5793	0.4987	0.3141
2 <sup>a</sup>	0.0855	0.5142	-0.7082
3	0.1435	0.114	<b>0.7896*</b>
4	<b>0.6964*</b>	0.1017	0.199
5	<b>0.7658*</b>	0.3109	0.2145
6	0.1564	0.197	<b>0.6717*</b>
7	0.3382	-0.1473	<b>0.5925*</b>
8 <sup>a</sup>	0.4353	-0.0697	0.6032
9 <sup>a</sup>	0.0699	0.4213	-0.7211
10	-0.0767	<b>0.7866*</b>	-0.1951
11	-0.0537	<b>0.7799*</b>	-0.2101
12	-0.0807	<b>0.8329*</b>	-0.1447
13	0.094	<b>0.6975*</b>	-0.2704
14	-0.2126	<b>0.7012*</b>	0.216
15	0.0934	<b>0.8312*</b>	-0.0037
16 <sup>a</sup>	0.4812	0.1504	0.6543
17	<b>0.6921*</b>	-0.1743	0.1293
18	<b>0.8355*</b>	-0.0815	0.1309
19	0.3513	-0.1327	<b>0.6527*</b>
20 <sup>a</sup>	0.5162	-0.3208	0.6225
21 <sup>a</sup>	0.5319	-0.3141	0.6045
22	0.3037	<b>0.563*</b>	0.1943
% Explained variance	18 %	23 %	22 %

\* Flagged sorts ( $\geq 0.430$  Significant Factor Loading) represent defining sorts for the factor e.g., P3 is loaded on Group 3, P4 in Group 1 and so on).

<sup>a</sup> Confounded sorts - loaded significantly on two or more factors.

Participants agree that almost all revenues and taxes from the industries are remitted outside the municipality (S22, +3) leaving locals with fewer benefits compared to those in the capital region and urban areas. A participant noted that despite Gällivare's economic contributions, it receives minimal government support (P17). Participants also agree that the Swedish government prioritizes mining interests over local needs (S26, +2).

Regarding Sámi and RHC rights, advocates reject the notion that there is a weak interest in promoting Sámi culture (S32, -3) and believe decision-making processes are inclusive and beneficial to Indigenous Peoples (S5, +2; S17, -1). However, they agree that the Sámi are not fully involved in tourism development (S6, -2). They agree that forestry activities have negative effects on reindeer grazing (S29, -2) but disagree with stopping forest operations (S28, -2) viewing it as a profitable business (S16, -2). More so, participants agree that industries can co-exist with the Indigenous Peoples' activities e.g., reindeer husbandry (S30, -1).

Participants of this group are neutral on changing consumption patterns and lifestyles (S34, 0) and undecided on haltering current industry operations (S35, 0; S20, 0; S25, 0; S31, 0; S36, 0), generally accepting status quo.

#### 4.2. Group 2: prioritizing reindeer and nature

Participants who belong to this group emphasize the preservation of nature and reindeer. Participants completely agree that based on the needs of the reindeer, Reindeer herders seek to preserve and improve the integrity of the pasturelands (S15, +4). Participants oppose new mining explorations (S25, +2) and the establishment of new mines on traditional lands (S36, +3), believing that more mining would further damage grazing lands (P10, P13) and that mining and forestry cannot co-exist with traditional livelihoods, especially reindeer husbandry (S30, +2), due to the landscape changes brought about by the industries (P10, P11, P12). Instead, they advocate for alternative job sectors to ensure long-term sustainability (S2 -2; S23, +2). However, participants recognize the role of mining in Gällivare's development (S27, -2), but they completely reject the narrative that the municipality thrives solely because of the mines (S1, -4), viewing this as justification for continued mining operations (P22).

**Table 2**

Gällivare statements and respective scores.

Statements (S)	Group 1	Group 2	Group 3
1. Gällivare thrives only because of the mines.	<b>4</b>	<b>-4</b>	0
2. Mining companies should expand and operate as long as possible in Gällivare so that locals have a secure livelihood.	3	-2	3
3. Existing procedures for obtaining permits for mine development in Gällivare are too relaxed.	-3	1	0
4. The development of industries (mining/ forestry/ reindeer husbandry) is part of the development of Gällivare.	3	0	<b>4</b>
5. Reindeer husbandry have a strong influence on decision making regarding landuse in Gällivare.	2	-3	<b>4</b>
6. Sámi Peoples are included in developing "Sámi experiences" in marketing campaigns and in commodifying/capitalizing their culture.	-2	-1	2
7. The municipality should encourage immigration to Gällivare to have more available workforce for the industries to develop.	2	-1	2
8. Forest companies invests on Gällivares roads and infrastructure (e.g. new cultural buildings, services, etc.) for the municipalities development.	<b>-4</b>	-3	0
9. Mining companies invests on Gällivares roads and infrastructure (e.g. new cultural buildings, services, etc.) for the municipalities development.	<b>-4</b>	0	3
10. Modern technology can provide solutions to solve landuse conflict of the industries.	0	-1	1
11. Competition between industries are good as it enables more honest exchange of needs and interests among stakeholders.	1	-1	1
12. The new Gällivare town (merging with Malmberget) will provide better and modern living environment.	<b>4</b>	0	0
13. Nature resources are limited and Gällivare cannot compensate for the overconsumption in all Europe and the entire western world or globally.	1	<b>4</b>	3
14. Gällivare experiences an increase in out-migration due to the areas remoteness and limited working opportunities.	-1	0	-1
15. Based on the needs of the reindeer, Reindeer herders seek to preserve and improve the integrity of the reindeer pasturelands.	1	<b>4</b>	2
16. Forestry is not a profitable business in Gällivare.	-2	0	-2
17. Sámi stakeholders are often not consulted or invited to participate until after development projects have been initiated.	-1	1	-1
18. There is rarely a unified voice speaking on behalf of Sámi Peoples.	1	0	1
19. The growth of green transition industries has increased the demands for northern resources, including Gällivare	2	3	2
20. Environmental protection demands hamper forestry development (profit and investments) in Gällivare.	0	-3	0
21. In Gällivare, preservation of nature is more important than economic development.	0	-1	0
22. Almost all revenues and taxes from mining and hydropower companies in Gällivare are remitted migrate outside the municipality.	3	0	0
23. In Gällivare, there should be more alternative job sectors instead of just relying on the mines.	1	2	1
24. There is not enough raw material (e.g. timber, pulpwood) to supply the existing forest industry in Gällivare.	-1	1	-2
25. Mining explorations in Gällivare must be stopped as they are highly unsustainable projects.	0	2	-2
26. The Swedish government prioritizes the mining companies interests.	2	3	0
27. Mining does not lead to development.	-3	-2	-3

(continued on next page)

**Table 2** (continued)

Statements (S)	Group 1	Group 2	Group 3
28. Forestry operations as carried on today (e.g. clear cutting, fertilization, soil scarification) should be forbidden in Gällivare.	-2	1	<b>-4</b>
29. Reindeer husbandry benefit from forestry work conducted on their herding lands.	-2	<b>-4</b>	-1
30. Mining and forestry cannot co-exist side-by-side with the Sámi (e.g., reindeer husbandry).	-1	2	-3
31. Sámi culture should not develop and be kept as traditional as possible.	0	-2	-1
32. In Gällivare there is a weak interest in promoting minority cultures like the Sámi culture.	-3	1	-2
33. The restructuring of Gällivare or moving a part of the village in order to allow the enlargement of the mining site is only beneficial to the industry.	-1	0	-1
34. Consumption patterns and lifestyles ought to change rather than being easily accepted by decision makers to justify development.	0	2	1
35. To develop tourism further there should be no industrial development in Gällivare to maintain the image of the last wilderness of Europe.	0	-2	-3
36. There should be no more mines in Sápmi.	0	3	-4

Factor score (+4 to -4) is the average score given to a statement by everyone who sorted it within that factor. Bold values are the most agree (4) and the most disagree (-4) statements.

**Table 3**

Gällivare distinguishing statements per group.

Levels of agreement	Distinguishing statements for each perspective (number of statements with normalized and z-factor scores in brackets)		
	-4 to -2	-1 to +1	+2 to +4
1. Uncertain development	28(-2; -0.97); 3 (-3; -1.09) 9(-4; -1.27)*	13(1;0.21)*; 35 (0;0.07)* 25(0;-0.36); 36 (0;-0.43)* 30(-1;-0.64)	14(4;1.8)*; 12 (4;1.59)* 22(3;1.54)*
2. Prioritizing reindeer and nature	2(-2;-0.77)*; 20(-3;-1.33)* 5(-3;-1.39)*; 1 (-4;-1.69)* 29(-4;-2.11)*	3(1;0.57)*; 28 (1;0.5)* 32(1;0.47)*; 24 (1;0.43)* 17(1;0.42)*; 4 (0;0.1)* 16(0;0.06)*; 9 (0;0)* 7(-1;-0.23)*; 11 (-1;-0.74)*	15(4;1.92)*; 36(3;1.69)* 25(2;1.06)* 30(2;1)*
3. Industry growth equals community growth	25(-2;-1.21); 30(-3;-1.38) 36(-4;-1.69)*; 28(-4;-1.73)	10(1;0.71)*; 8 (0;0.25)* 1(0;-0.13)*; 3 (0;0.25) 26(0;-0.33)*	9(3;1.36)*; 6 (2;1.07)*

(p < 0.05: Asterisk (\*)) Indicates Significance at p < 0.01).

Participants agree that forestry has the most detrimental impact to reindeer husbandry (S29, -4) as forestry alters landscapes and reduces available pasture (P13). Participants disagree that environmental protection hampers forestry development (S20, -3) and that forest companies invest in Gällivare for local development (S8, -3). Instead, they support banning current forestry operations (S28, +1) due to their harmful effects on forest ecosystems and reindeer survival (P11, P10).

On Sámi rights, participants agree that Sámi culture should evolve with the changing times, rather than remaining static (S31, -2). Participants also agree that Gällivare has a weak interest in promoting minority cultures (S32, +1), and that Sámi stakeholders are not included in

decision-making (S17, +1), and have no influence on land-use decisions (S5, -3). Participants agree that the Swedish government prioritizes mining interests (S26, +3) and that their voices are often heard but not acted upon (P12, P11).

This group agrees that the green transition has increased resource demands in Gällivare (S19, +3) yet the impacts are often overlooked by the state, media, and extractive industries (P12). As such they agree that consumption patterns and lifestyles need to change (S34, +2), as natural resources are limited and there are not enough raw materials to supply existing and expanding industries (S24, +1), and Gällivare cannot compensate for the overconsumption in Europe and globally (S13, +4).

Participants are however neutral on whether current development trends truly benefit the population or if industries genuinely have the local peoples' interests at heart (s9, 0; s16, 0; S12,0; S33,0). Additionally, they are undecided about whether the community and industry grow together or separately (S4, 0).

#### 4.3. Group 3: industry growth equals community growth

A business-as-usual perspective, participants of this group agree on continuing the status quo. They completely agree that the development of industries is part of the development of Gällivare (S4, +4) hence, mining companies should expand and operate as long as possible so that locals have a secure livelihood (S2, +3). The idea that there should be no more mines or further developments in Sápmi (S36, -4; S35, -3) is rejected, acknowledging that much of Gällivare is traditional reindeer herding land (P16, P19). Participants emphasized that mining companies are responsible for a large part of the economic development in Gällivare (P6), and agreed that mining invests in Gällivare's roads and infrastructure for local development (S9, +3). Participants also believe that mining exploration can provide new and profitable mines that are good for the municipality, therefore mining explorations should continue (S25, -2) as mining leads to development (S27, -3). They also agree that mining and forestry can co-exist with reindeer husbandry (S30, -3) and the restructuring of Gällivare is beneficial to the locals (S33, -1). Nevertheless, they also agree to alternative job sectors instead of relying solely on the mines (S23, +1).

On forestry, participants oppose banning current forestry practices (S28, -4) as forestry is considered a profitable business (S16, -2). They see no reason to ban well-established forestry practices that are beneficial for climate-adapted forestry (P3).

This group believes that Sámi perspectives are prioritized in decision-making processes (S32, -2; S17, -1) and that reindeer husbandry has significant influence on land-use decisions (S5, +4). They agree that the Sámi are included in developing tourism experiences (S6, +2) and support changes in Sámi culture (S31, -1). Participants noted that reindeer management representatives have a strong say in land-use issues, and the municipality adjusts to meet their needs (P3, P19).

Participants agree that the green transition has increased the demand for resources in Gällivare (S19, +2), but they acknowledge that local resources are limited and cannot meet global needs (S13, +3). They also agree that changing consumption patterns is necessary to slow down development (S34, +1) and believe modern technology can offer solutions (S10, +1). They also view competition for resources as a positive force that fosters exchange between stakeholders (S11, +1) and understand that reindeer herders seek to preserve pasturelands for the reindeer's sake (S15, +2) as they recognize the negative effects of forestry on reindeer herding (29, -1).

This group, unlike others, is convinced that industries are the main driver of Gällivare's development, seeing mostly benefits and minimal downsides from industrial expansion. They remain neutral on the Swedish government's role (S26, 0; S22, 0; S21,0) and environmental protection demands hampering forestry (S20, 0).



#### 4.4. Points of agreement – consensus statements

All of the respondents are in agreement with 7 statements, see Table 4. All respondents agree that a diversified labour market is needed instead of just relying on the mines (S23). Market diversification is found by the participants to be important for economic sustainability. All respondents also agree that the green transition has increased the demand for Arctic/northern resources including Gällivare (S19) and that mining leads to development (S27), viewing it as the key factor behind Gällivare's growth.

Participants slightly disagree with the statement that Gällivare is experiencing an increase in outmigration due to the area's remoteness and limited work opportunities (S14). They noted that the town is currently active in attracting migrants offering job opportunities, recreational activities, and benefits to make the population more stable (P4). Additionally, they slightly disagree with the statement that the restructuring of Gällivare is only beneficial to the industry (S33). Some participants highlighted that the current transformation is beneficial to both the local community and the industries (P6, P4).

All respondents slightly disagree with the statement that Sámi culture should be kept as traditional as possible (S31). Participants noted that Indigenous Peoples should also be able to smoothly adapt to the current socio-environmental changes e.g., digitalization, climate change, etc. while preserving their identity (P10, P13).

All participants are neutral regarding Gällivare's prioritization of nature over economic development (S21). Given that natural resource extraction has driven Gällivare's industries and growth, environmental protection has consistently been a lower priority (P12, P10).

#### 4.5. Points of conflict – disagreements

There are four main statements which all participants disagree, that are indicative of conflict over the development of economic activities in Gällivare, see Table 5. Most of the conflict among these statements emerges from group 1 and 3 which are in agreement and group 2 which is in opposition. However, groups differ strongly about their views on whether Gällivare only thrives because of the mines (S1). Group 1 strongly agrees, while group 3 is neutral to the statement and group 2 completely disagree, noting the municipality's government office as the biggest local employer and not the mining companies, despite their claims (P22).

Groups also strongly differ in their view on whether there should be

**Table 4**  
Consensus statements.

Statements (S)	Group 1	Group 2	Group 3	Z-scores
23. In Gällivare, there should be more alternative job sectors instead of just relying on the mines.	1	2	1	0.025
19. The growth of green transition industries has increased the demands for northern resources, including Gällivare	2	3	2	0.029
27. Mining does not lead to development.	-3	-2	-3	0.036
14. Gällivare experiences an increase in out-migration due to the areas remoteness and limited working opportunities.	-1	0	-1	0.048
33. The restructuring of Gällivare or moving a part of the village in order to allow the enlargement of the mining site is only beneficial to the industry.	-1	0	-1	0.056
31. Sámi culture should not develop and be kept as traditional as possible.	0	-2	-1	0.066
21. In Gällivare, preservation of nature is more important than economic development.	0	-1	0	0.07

no more mines in traditional reindeer herder areas (S36). Group 1 is neutral, Group 2 prioritizes nature, environment, and health of the reindeer, while group 3 prioritizes economic growth via industrial activities such as mining and forestry. Likewise, group 1 and 3 agrees that mining companies invest in Gällivare's infrastructure for local development (S9) while group 2 disagrees and argues that current industrial activities aggravate the disturbance to traditional reindeer herding activities.

Furthermore, all groups have different views on the involvement of reindeer herders in decision making (S5), group 1 and 3 agree that RHCs are well represented, yet group 2 completely disagrees. One participant said: "It is nice of them to ask before they shoot us" (P12) referring to the development decisions of the industries and decision makers on traditional reindeer herding land (P13). Participants claim that decisions are already made before they get involved and even if invited, they're not heard (P10).

Lastly, on whether mines should continue expanding, group 1 and 3 agree that mines should operate as long as possible to have a secure livelihood, while group 2 disagrees, as they claim that increasing mine expansion would mean more environmental degradation and traditional land conversion.

## 5. Discussion

This study aims to understand current local stakeholder perceptions on the development of economic activities in Gällivare, and uncover points of agreement and disagreement. We discuss our findings into three main sections. First, we examine stakeholders' diverging perspectives on development in relation to previous studies. Second, we analyze shared priorities and areas of consensus among stakeholders, highlighting key points of agreement that can serve as a foundation for policy-making and conflict negotiations. Lastly, we delve into local subjective views on development, focusing on capabilities and the perceived constraints that shape stakeholders' ability to pursue the lives they value.

### 5.1. Diverging perspectives on development: industry growth, prioritizing nature, and uncertainty

We identified three perspectives: uncertain development perspective, prioritizing nature and reindeer, and industry growth equals community growth. The second and third groups are distinguished based on their strong sense of what is the most important aspect of development to them: the second group prioritizes the environment, nature, and the wellbeing of the reindeer; while third group prioritizes socioeconomic growth and continuation of the status quo. The first

**Table 5**  
Points of conflict (disagreements).

Statements (S)	Group 1	Group 2	Group 3	Z-scores
1. Gällivare thrives only because of the mines.	4	-4	0	2.045
36. There should be no more mines in Sápmi lands.	0	3	-4	1.937
5. Reindeer husbandry have a strong influence on decision making regarding landuse in Gällivare.	2	-3	4	1.714
9. Mining companies invests on Gällivares roads and infrastructure (e. g. new cultural buildings, services, etc.) for the municipalitys development.	-4	0	3	1.158
2. Mining companies should expand and operate as long as possible in Gällivare so that locals have a secure livelihood.	3	-2	3	1.008

group is considered to be in-between and uncertain on the development of Gällivare.

As revealed in our post-sort interviews, participants of the first group are uncertain about Gällivare's development due to the heavily established narrative that mining is the only source of the municipality's growth, and they do not have a say or a choice on how Gällivare should develop. While participants acknowledge forestry and mining's negative impacts on the environment and culture, they remain steadfast in supporting the expansion of industry activities due to their dependence on the mines, as stated: *"Unfortunately this is the truth in Gällivare and we have to keep the mines so people will have a source of income"* (P18). This is in line with the findings by Byström (2022) and Accastello et al. (2019) stating that a town that has a history of mining has a strong path dependence on the sector, which means that all development decisions are locked-in and follows certain direction favouring the industries. Weldegiorgis et al. (2022) also reported that mining sector development further creates more dependence on the industry. Additionally, according to Kaltenborn et al. (2017) preference for extractive industries could be from the lack of knowledge about the consequences of the complexity of the effects of environmental degradation and how it can affect future livelihood. Views on mining and forestry can also be affected by the current biased information campaign by the industries, especially with regards to using the green transition agenda to improve the industry image, making them part of the solution rather than a problem with regard to climate change (Löfgren, 2023). These aspects are also true for the third group, who unlike the first group, is optimistic about the industries and convinced that expansion and continued operation of mining and forestry activities is part of development in Gällivare. Contrastingly, the second group fits the nature conservation viewpoint, where biodiversity and nature are prioritized, and participants who belong to this group highlight that it is for the needs of the reindeer that nature is prioritized, which is contrary to what other actors claim, that Sámi Peoples reject any kind of development project (P10, P12, P13). Participants of the second group see themselves as dependent on nature for livelihood and subsistence, while participants of the first and third group are dependent on the mining and forestry industries.

The perspectives identified in this study align with the findings of Beland Lindahl et al. (2018). Actors who prioritize environmental conservation (group 2) emphasize the importance of respecting ecological limits and rejecting the notion that new mines are essential for development. Conversely, those in favor of expanding mining operations view mining as the preferred pathway to economic growth (group 1 & 3). Another study we find similar by Beland Lindahl et al. (2023) is focused on mining and exploration and found values, perception of sustainable development, impacts, and relationship with the industry are predictors of attitudes of local stakeholders. A positive attitude towards the mining industry is associated with the socioeconomic benefits, while a negative attitude is associated with the socio-ecological and cultural risks and impacts; the undetermined are in between the two. As RHCs are the most negatively affected by the expansion of the industries due to land conversion, it is understandable why they are opposed to it, while the local community and industry representatives are supportive of industry development due to more benefits than the negative impacts they perceive. Similar studies found the same results i.e., Keskitalo and Lundmark, 2010; Lidestav et al., 2013; Poelzer and Yu, 2021.

Accastello et al. (2019) also conducted Q-methodology in Gällivare, however, the statements are based on their future scenarios for mining, forestry, tourism, and nature conservation envisioned for the municipality in the year 2075. They found three perspectives as well: pro-nature conservation, pro-production (mining and forestry), and pro-mining or relying purely on the mines. In the five years since the study was conducted, local stakeholders' perception has changed a little, for one, we did not find a group of perspectives that are purely pro-mining as all respondents agree that there should be more alternative job sectors in Gällivare. While the discrepancy may be due to the limitations of the method or the stakeholders included in the study, it

still tells us the existence of the strong perspectives to conserve nature and prioritize economic growth in the area that results in land use conflict (Beland Lindahl et al., 2023; Garbis et al., 2024), especially in Gällivare where one of the biggest conflicts is the conversion or exploitation of traditional reindeer herding lands (Cambou et al., 2021; Elomina and Živojinović, 2024).

## 5.2. Shared priorities and common ground: key areas of agreement among stakeholders

With regards to the consensus statements or points of agreement, these reveal the beliefs that are broadly shared across different groups, even those with opposing views. These agreements can be critical for policy-making, as it highlights areas where there is already agreement, making it easier to build coalitions or find starting points for negotiations. These seven statements (see Table 4) could form a common ground for building a common vision of local development that works for all stakeholders and minimizes conflict. One of the key areas of agreement – Gällivare should have more job alternatives (S23) reflects local stakeholders' awareness of the risks associated with dependence on a single resource-dependent industry (Accastello et al., 2019). Participants recognize the boom-and-bust nature of mining and prefer to have economic safeguards to mitigate potential downturns (Haikola and Anshelm, 2020). A diverse job market has been shown to enhance long-term economic stability, as single-resource economies tend to collapse once industries decline. Countries with more diversified economic activities have demonstrated greater resilience during local employment crises and in recovering from natural disasters (Brown and Greenbaum, 2017; Angelopoulos et al., 2023). However, it is important to recognize that mining jobs often offer above-average incomes, attracting labor from other economic sectors and reshaping human capital dynamics. For instance, individuals may switch careers—from nurses to mining operators—leading to workforce shortages in other essential services, including education and healthcare (P5, P12). Additionally, the availability of well-paying mining jobs influences young people's career aspirations, affecting their educational choices and reducing their likelihood of seeking opportunities elsewhere, which in turn impacts regional migration patterns (Frederiksen and Kadenic, 2020).

Participants also agreed that there is increased demand for Northern Sweden's resources driven by the green transition (S19), demonstrating their awareness of both the economic opportunities and challenges this transformation presents. The green transition and associated industrial expansion offer significant benefits: greater employment opportunities, population growth in remote towns struggling with demographic decline, and enhanced community vitality. However, current implementation approaches risk perpetuating injustices for local and Indigenous communities (Cambou, 2020; Garbis et al., 2024). Despite its environmental aims, the green transition often remains rooted in resource exploitation and human capital extraction, with its pace dictated by the accelerating logic of capitalism rather than community needs or ecological sustainability (Stavis et al., 2018; Nuottaniemi, 2024). This tension between economic development and environmental justice highlights the complex trade-offs that local communities must navigate as they engage with green transition initiatives and development.

Regarding the statement that mining does not lead to development (S27), all participants disagreed, recognizing the benefits that mining companies bring to the community. However, this does not imply unanimous support for continued expansion, as perspectives on the scale and pace of growth vary among participants. In the post-sort interview, one participant emphasized the need to shift away from the prevailing growth-driven mindset, stating: *"We must move away from politicians' desire for constant and perpetual growth and instead change our consumption patterns and lifestyles - we need degrowth if we are to have sustainable development and a planet that can be lived on (both for humans and other*

*species) in the future as well” (P2). Furthermore, for Indigenous Peoples, development is fundamentally tied to self-determination rather than purely material well-being. Self-determination entails the right to self-govern and shape their relationships with institutions within the framework of the nation-state (OECD, 2019). Additionally, while the built infrastructure and income opportunities from mining also benefit Indigenous communities, they often prioritize cultural components and strong connection to the land as it is part of their concept of development (Yap and Yu, 2016).*

### 5.3. Local subjective views on development: constraints on capabilities

Our findings reveal the multifaceted and contextually embedded nature of local perspectives on development. By examining subjective capabilities, we gain insight into how development is experienced, interpreted, and evaluated by those most directly affected by it.

Our results show that local stakeholders have their own definition of what it means to be developed, and in this study, we define development using human development theory which views development as an expansion of people’s capabilities to live the lives they value (Sen, 1999). Our findings reveal that several respondents experience significant limitations in their capabilities and freedom. As such, participants of the first group expressed frustration at their economic dependence on mining operations, indicating they would prefer alternative livelihood options if genuinely available. Similarly, the second group articulated how their rights to practice traditional reindeer herding face increasing constraints due to the continuous expansion of industrial activities, including mining, wind energy infrastructure, and extensive forestry operations. Additionally, Indigenous Peoples view their freedom to pursue the life they want is impeded not only by the disregard of their rights but also due to the lack of available unbiased information wherein local stakeholders can make informed decisions and unbiased world views. According to Sen (1999) the ideas of what is just and what is not can be a response to what is presented in the public discussion. As reported by Löfgren (2023), industries are using the media to show that their operations are environmentally and socially sustainable. Using green transition to intensify their operations, implies that they are simply responding to the needs of the people.

Notably, many participants articulated development in terms that extend well beyond economic metrics. While economic opportunities were certainly valued, participants frequently emphasized nature protection, closeness to nature, cultural integrity, and inclusive decision-making. These align with the findings of Lidestav et al. (2022), who highlighted that nature protection and closeness to nature remain essential to the local communities and the Sámi Peoples, who prioritize nature’s recreational and cultural significance over its economic benefits. Additionally, in their ASI-II report, Larsen et al. (2014) noted that closeness to nature and fate control (the capability to guide one’s own destiny) through inclusive decision-making are crucial indicators of human development among Arctic communities. However, this remains a contested issue in Gällivare. The second group expressed that while their voices may be heard, they are not meaningfully acted upon. In contrast, the first and third groups held the opposite view, believing that decision-making processes are inclusive and that Indigenous voices play a dominant role. This perspective is closely tied to the RHCs practice of reindeer herding and its current challenges. As one of the most vital expressions of Sámi Indigenous culture, reindeer herding remains central to discussions on development and land use, especially when rights to reindeer herding are being sidestepped (Raitio et al., 2020; Allard and Brännström, 2021). This limitation represents not just a procedural issue but a substantive limitation on development itself when understood through Sen’s framework.

Our study of exploring development through subjective capabilities reveals that while Sweden ranks highly in conventional development measures including the Arctic Human Development and the Arctic Social Indicators reports (ASI-I and ASI-II), development is far more

complex and multidimensional based on local subjective views. High human development classification suggests the presence of extensive capabilities like strong educational attainment, high life expectancy, and substantial gross national income per capita (UNDP, 2024), which are present as well in Gällivare but local and Indigenous communities see their capabilities and freedom to be limited and different from the regional or national picture that measures of development has painted.

## 6. Conclusion

As this study has shown, at least three perspectives exist on how Gällivare should develop and there is no true and legitimate course. It is also important to emphasize that growth is not unidirectional as development can also mean degrowth or non-growth, depending on the values and priorities of the stakeholders involved. Each perspective carries its own normative implications but a detailed exploration of these implications lies beyond the scope of this study.

A key contribution of this research is the identification of points of agreement or consensus despite differing views on development. Recognizing points of consensus and conflict is crucial for improving ongoing discussions and negotiations. Increasing representation and transparency in decision-making processes, particularly given the intensifying land use conflict not only in Gällivare but across the Arctic (Živojinović et al., 2024). As highlighted by Larsen (2014) social inclusion and cultural preservation remain to be a problem that needs to be thoroughly addressed and true participation of different local stakeholders is essential in tackling these issues.

Furthermore, we would also like to highlight that our findings can also be used to enhance the monitoring of human development in the Arctic. By examining local subjective views on development, we can better determine whether the quality of life is really improved and capabilities are realized. Assessing subjective capabilities provides deeper insight into the contextual factors that shape development outcomes (Diener, 2005). By focusing on what local and Indigenous communities themselves value and prioritize, subjective approaches can enhance agency and empowerment, ultimately informing bottom-up policies and interventions with real, lasting impacts. As such, our results indicate that reducing limitations to capabilities—such as access to alternative employment opportunities, the right to practice reindeer herding on traditional lands, and meaningful inclusion in decision-making—would improve local perceptions of development. While addressing these challenges is complex, we emphasize the need for a genuine participatory approach, where local and Indigenous communities are actively involved in shaping development projects. Strengthening local agencies in this way would enable communities to define development on their own terms, ensuring that progress reflects their lived realities and aspirations.

This study is one of the first explorations of the subjective capabilities approach at a local level in Sweden using Q-methodology. Our results provided an opportunity to examine nuanced perspectives on development through subjective views; however, this approach comes with certain limitations. Perceived capabilities may be over- or underestimated, as they can be influenced by temporary emotions, personal expectations, or external circumstances that shape participants’ responses. While we validated our findings with fellow researchers and experts, future studies should consider triangulation methods to enhance the reliability and depth of interpretation. Additionally, our results are not intended to be representative, as is often the case with qualitative studies. Some scholars suggest complementing subjective assessments with objective development indicators to provide a more comprehensive analysis (Binder, 2014); however, this falls beyond the scope of our study and remains an avenue for future research. Furthermore, when examining subjective capabilities and functionings, distinguishing between the two can be complex, as they often overlap and are difficult to measure separately.

Finally, the findings of this study can also be applied to other regions



facing similar tensions between and among economic growth, environmental sustainability, and cultural conservation. In particular, regions where local and Indigenous communities are under constant pressure from extractive industries.

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## Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT (OpenAI, 2024) to improve language and readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content and interpretations in the publication.

We also have a video that shows our key findings on local communities' perceptions of the current development of economic activities in Gällivare. [https://youtu.be/fJaqGVk5yUM?si=M7JdUcgl\\_QMoLi49](https://youtu.be/fJaqGVk5yUM?si=M7JdUcgl_QMoLi49).

## CRediT authorship contribution statement

**Jerbelle Elomina:** Writing – review & editing, Writing – original draft, Visualization, Investigation, Formal analysis, Data curation, Conceptualization. **Ivana Živojinović:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Conceptualization. **Gun Lidestav:** Writing – review & editing, Validation, Investigation. **Per Sandström:** Writing – review & editing, Validation, Supervision, Investigation. **Stefan Sandström:** Writing – review & editing, Visualization, Validation, Investigation. **Helga Pülzl:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.exis.2025.101664](https://doi.org/10.1016/j.exis.2025.101664).

## Data availability

Available upon request.

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