

Experienced Impacts of Mining in Sodankylä

Follow-up Study

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1 Introduction

This research report examines Sodankylä residents' views and experiences of mining. The residents assess the impacts of mining on the attractiveness, services, environment, and atmosphere of the municipality. In addition, the assessment included supervision carried out by authorities, trust in various actors involved in mining, and local mining projects. The report also covers the respondents' opinions about the essence and future of Sodankylä and about the effects of mining on their line of work.

The research was conducted for the fourth time. It dates back to the REGINA project carried out in 2015–2018 with an aim to promote the ability of sparsely populated municipalities to benefit locally from large natural resource projects such as mines. The project was led by the Nordic research institute Nordregio and it was funded by the Northern Periphery and the Arctic programme. The Municipality of Sodankylä and the University of Lapland were involved in the project. In 2016, the REGINA project carried out a mail survey concerning the experienced effects of mining. The survey was based on random sampling and it was repeated in 2018 and 2021 as a web survey. The first two research reports functioned as preparatory material for a mining programme in Sodankylä, where one of the measures was the implementation of follow-up surveys at regular intervals (the Municipality of Sodankylä 2018).

We use the term 'experienced impacts of mining' because each respondent has been able to tell about their personal experiences and to assess the social impacts of mining from their individual perspectives. The social impacts of mining may be positive or negative and they may concern any sphere of life: employment, comfort of living, living conditions, communality, well-being, and the spatial experience and identity of an individual. Direct and immediate impacts may concern one's own job at the mine, whereas indirect impacts may relate to mining's effects on trade or on the demand for well-being services. (See e.g. Sairinen & Kohl 2004; Vanclay & Esteves 2011; Kunnari ym. 2018; Vanclay ym. 2015; Suopajarvi & Sairinen 2016.)

The first part of this report examines the impacts of mining on the attractiveness, services, and infrastructure of Sodankylä. Thereafter, observed environmental impacts are reported. The second part addresses the municipal residents' attitudes toward mining, their views on supervision by the authorities, their trust in various actors, and their approval of mining projects in the municipality. The research is carried out as a municipal survey, where the respondents are treated as a whole. Apart from this, the observed impacts on the environment and attractiveness have been analysed according to place of residence. Hence, the respondents were divided in three based on their residential areas: the municipal centre, villages near an operational or pending project, and other villages. The research material was collected through a web survey that was available on Sodankylä's homepage in March 2023. Thereafter, the material was analysed, and the project reports were written in Finnish and English in the late spring and early summer of 2023. The research was funded by AA Sakatti

Mining Oy, Boliden Kevitsa Oy, and Rupert Resources Oy operating in the Sodankylä area. The Municipality of Sodankylä took part in the implementation of the research.

2 Material and research method

The study was carried out as an open web survey between 3 March and 31 March 2023. The respondents were also able to order a paper-format questionnaire from the University of Lapland, but no orders were received. A link to the survey was published on Sodankylä's web pages and the survey was announced on the municipal Facebook page, citizens' channel, and citizens' free speech channel.

There were 361 replies, which is notably more than in the previous surveys. The 2016 mail survey produced 200 replies, while the number of replies to the web follow-up surveys of 2018 and 2021 was 160 and 297, respectively. The material collected through open-ended questions consists of 69 pages of text produced by the respondents.

By and large, the survey of 2023 follows the form of the previous surveys. However, the questionnaire form was altered based on the previous ones, for example, by making the matrices more concise, by clarifying the statements, and by changing some of the assessment scales to better serve the study. In addition, matrices concerning general mining-related attitudes, responsibility, and trust in various actors were added to the form.

The analysis focused on the distribution of replies between the reply alternatives, and some parts were cross-referenced with the place of residence in order to find out regional differences in experiences and opinions. Thus, the analysis is a descriptive one. In the report, the results are presented verbally and as charts. The style of the citations from open-ended answers differ from that of the report, and they are not bound by the strict requirements concerning standard text. The citations have not been altered in any way (except for translation) so that the respondent's own voice can be heard as faithfully as possible. For regional analysis, the respondents were divided into three groups according to their residential areas: the municipal centre, villages near a mining project, and other villages. Henceforth, villages near a mining project are referred to as "nearby villages". Owing to the start of the Ikkari project, Jeesiö was added to the nearby villages. The following localities were defined as nearby villages: Moskuvaara, Petkula, Rajala, Sattanen, Kersilö, Kelujärvi, Siurunmaa, Puolakkavaara, and Jeesiö.

Because of the material collection method, the results cannot be statistically generalised in terms of the population, because generalisation would require randomisation of the respondent sample. In an open web survey, the selection of respondents occurs on its own without the influence of the researcher. On the other hand, selection also occurs in surveys based on random sampling, because some of the chosen participants always drop out, which affects the respondent structure of the final material. The section "Basic information on the respondents" discusses where the respondents stand in terms of the age, life situation, and line of work compared to the general population of Sodankylä. Considering the various emphases in these background variables, the results of the report can be regarded as

indicative of Sodankylä residents' views on their municipality and on the impacts of mining on the area.

2.1 Basic information on the respondents

Of those who announced their gender, the shares of female, male, and nonbinary respondents were respectively 51%, 47%, and 1%. Altogether 22 respondents did not announce their gender. Examined by age group and against the entire population of Sodankylä, the material represented young adults and middle-aged persons more than others. Overrepresentation was greatest among people aged 40–49, of whom there were 13.3 percentage points more in the survey than in the general population of Sodankylä. The oldest age groups, on the other hand, are underrepresented. The greatest difference in comparison to the overall population concerns people aged 70–83, of whom there were 14.5 percentage points fewer among the respondents than in the population. Among respondents aged 18–59, the share of women was greater than that of men, whereas among respondents aged 60–83, it was the other way around. (Tilastokeskus, 11re.)

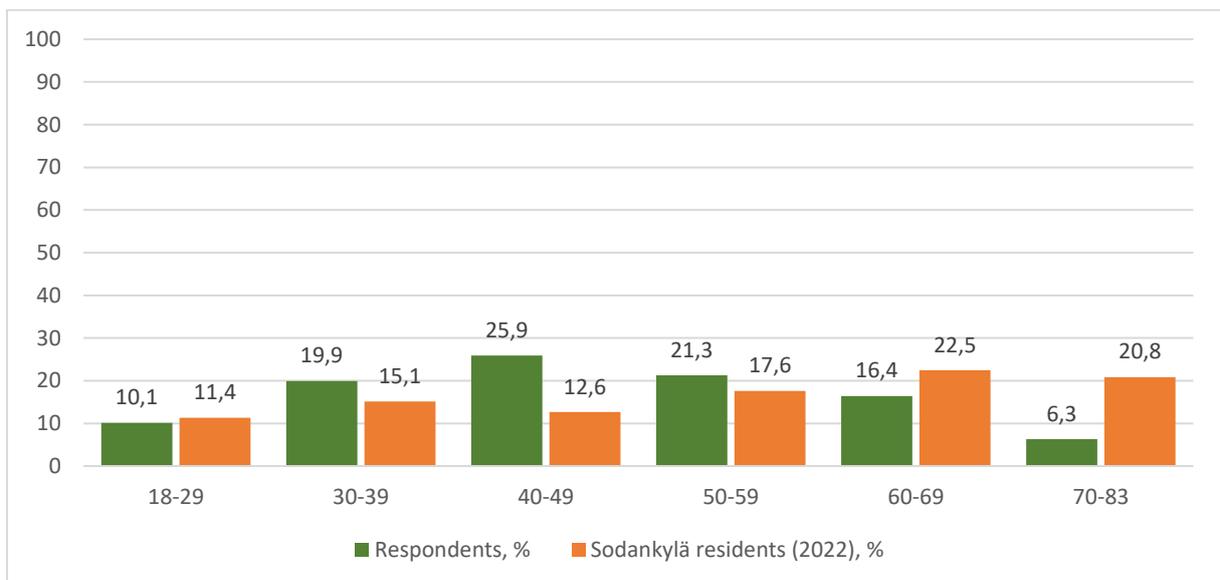


Figure 1 Age distribution of the respondents (n=347) and the residents of Sodankylä (n=6499).

Examined by place of residence, 61% of the respondents lived in the municipal centre. In the material, 14.1% of the respondents lived in villages near a planned or operational mine and 15.2% lived in other villages. The number of respondents living permanently outside Sodankylä was quite small (5.5%), which means that targeting the survey at Sodankylä residents succeeded well.

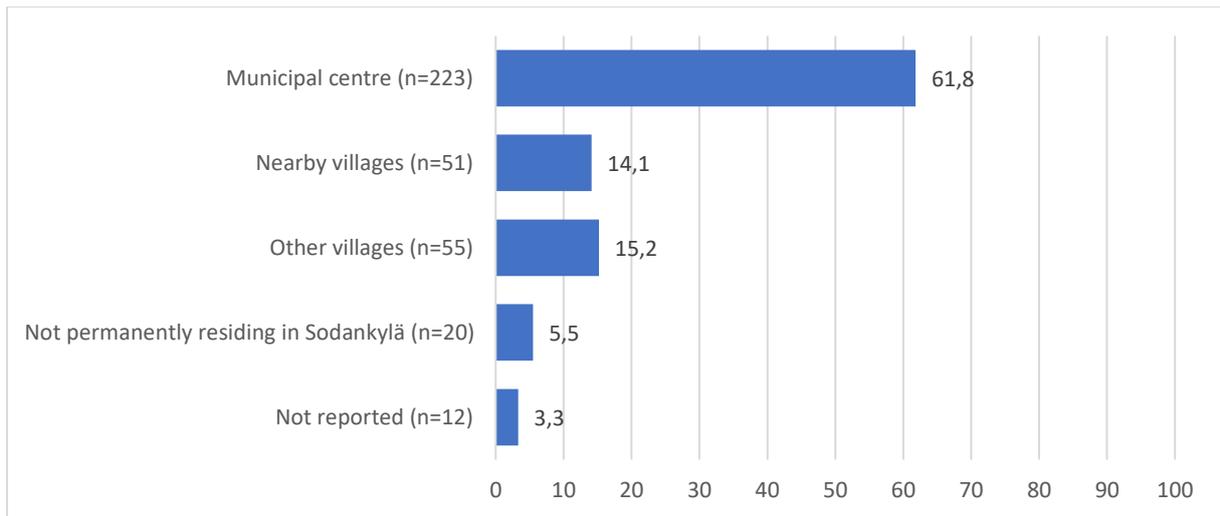


Figure 2 Respondents according to place of residence, %.

Examined against all residents of the same age (aged 18–83) in Sodankylä, the material reveals a considerable overrepresentation of employed people, whose share was 82.2%. The share of retired people, on the other hand, is clearly smaller in the material than in the population. Also, the shares of students and unemployed people aged 18–64 are smaller in the material than in the population of Sodankylä. (Tilastokeskus, 11re and 115b.)

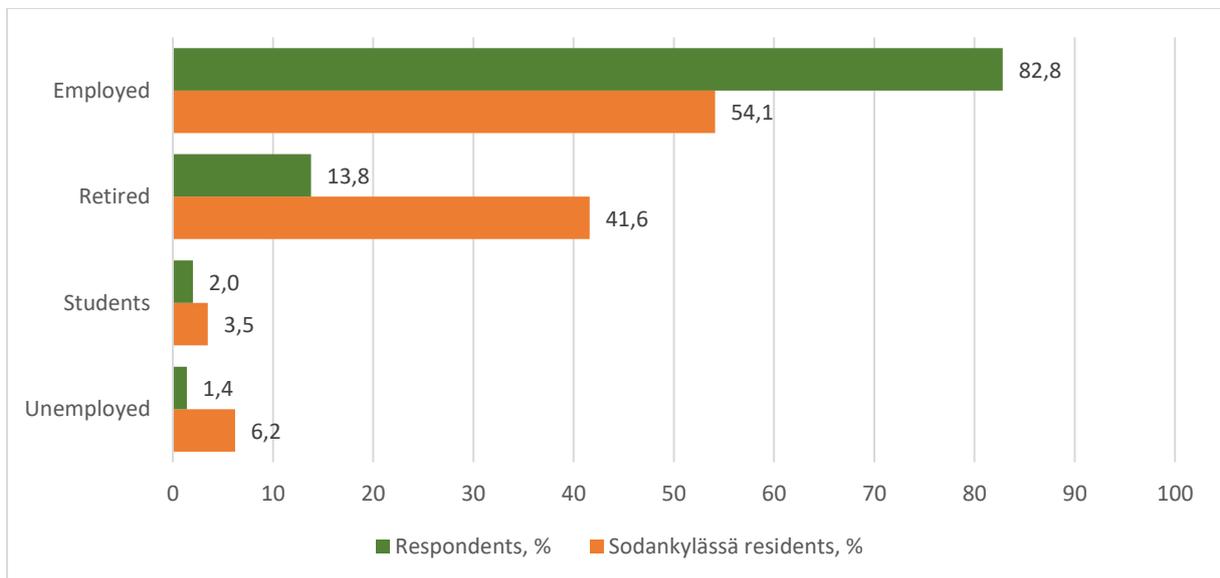


Figure 3 Respondents (aged 18–64 n=290 and 18–83 n=347) and Sodankylä residents (2021, aged 18–64 n=4539 and 18–83 n=6568) according to life situation.

A comparison of people's line of work shows that the share of respondents employed in mining is twice as large as the share of people employed in mining in Sodankylä. In 2021, 13.6% of all people living in Sodankylä were employed in mining, and of the respondents who

announced their line of work in the survey, 27.2% were employed in mining. Compared with the employed population of Sodankylä, people working in public administration, national defence, education, tourism, catering, and IT technology are overrepresented in the material. However, people employed in social and health care, construction, and traffic are clearly underrepresented. Otherwise, the differences are small compared to the distribution of people in different branches of industry in Sodankylä. (Tilastokeskus, 115i.)

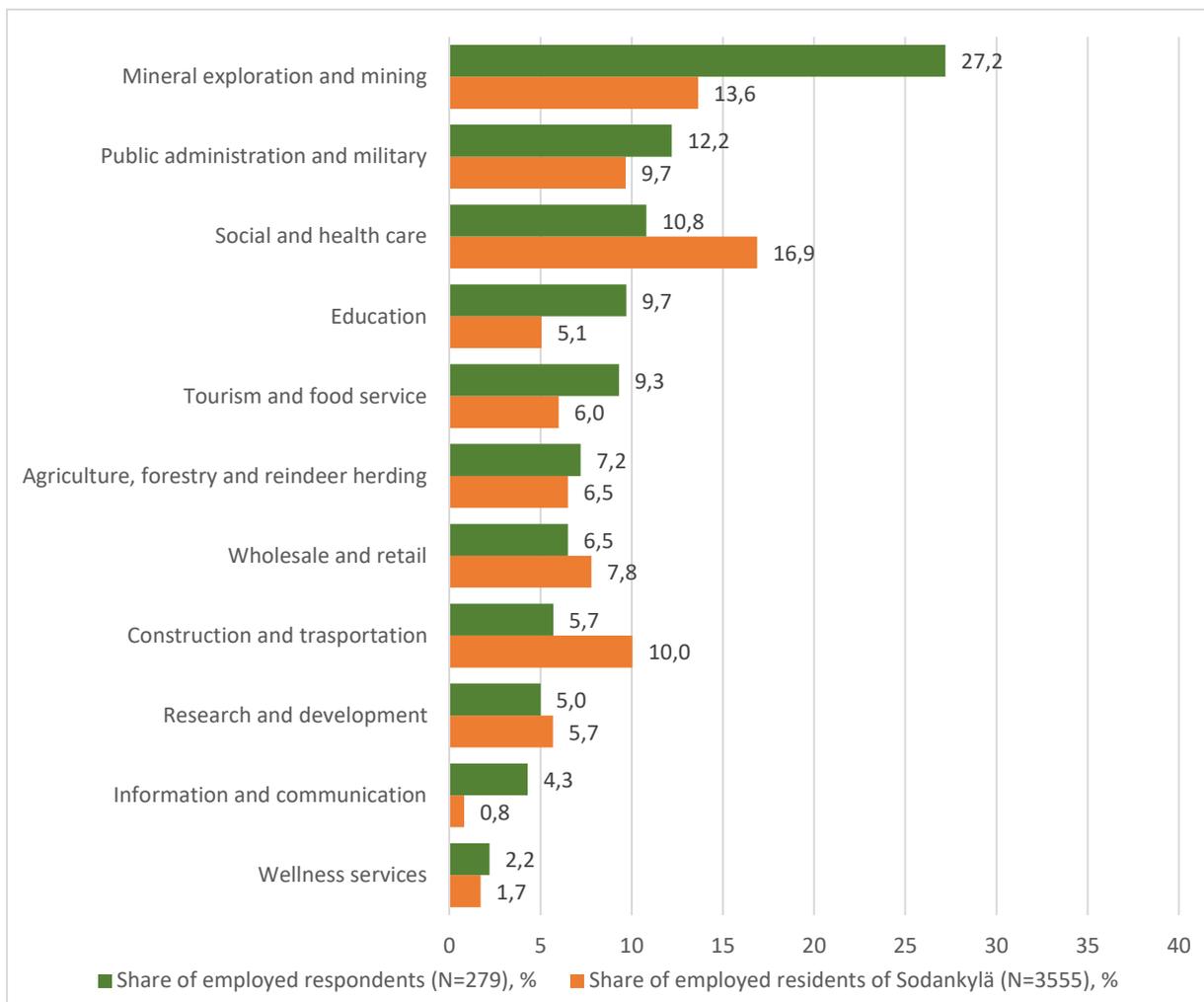


Figure 4 Distribution of employed respondents and employed population in Sodankylä (2021), %.

3 Experienced impacts of mining

The Kevitsa mine started production in 2012, and even before that, the Pahtavaara mine operated in Sodankylä between 1996 and 2004 intermittently under the ownership of various companies. Consequently, Sodankylä residents already have experience-based knowledge of the impacts of mining on their lives, livelihoods, and region. There are presently two pending mines undergoing the environmental impact assessment process in Sodankylä: the Ikkari

mine of Rupert Exploration Finland Oy and the Sakatti mine of Anglo American (Lapin Kansa 22 May 2023.) Sodankylä is also the focus of mineral exploration. Planned or ongoing mining therefore affects the lives of the residents extensively. In the survey, this is shown by the fact that a majority of the respondents were quite capable of assessing the impacts of mining on various sectors of life.

3.1 Attractiveness, services, and infrastructure

As in the previous surveys, the respondents felt that Sodankylä is a comfortable, clean, and safe place to live. Compared with the 2021 results, the respondents were less satisfied with their municipality in all areas except for their possibilities to participate and exert influence.

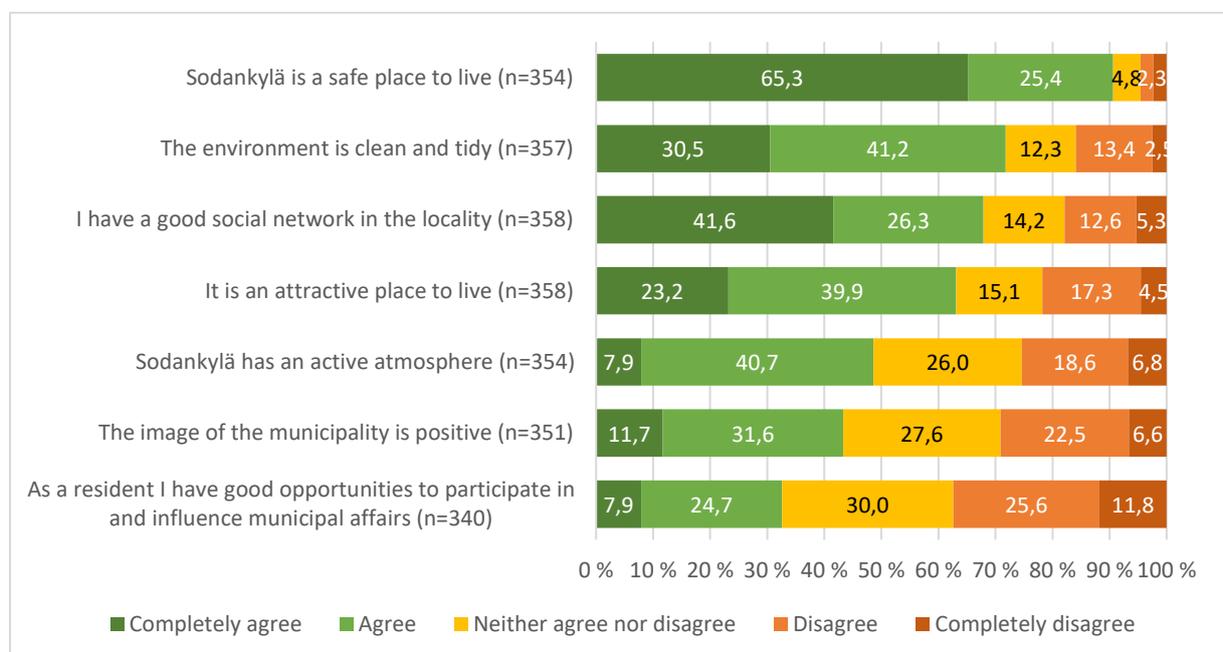


Figure 5 General attractiveness.

A clear majority (90.7%) of the respondents felt that Sodankylä is a safe place to live. Safety was also pointed out in the open-ended answers, where it was often linked with the small size, tranquility, and communality of Sodankylä. As summed up by one of the respondents when describing the home municipality: “Safe, human-sized scale, a genuine desire to do things well, people are change- and weather-proof and reliable.” (328).

Likewise, most of the respondents (71.7%) saw that Sodankylä has a clean environment. However, the share of critical views doubled from the previous survey (2021: 7.5%) while the share of positive views diminished by 4.7 percentage points.

Sodankylä was considered an attractive place to live by 63.1% of the respondents. Although the place was mostly considered attractive, there was a clear drop in the share of positive views (2021: 72.6%). Meanwhile, the share of negative assessments grew by 8.6 percentage points. In the open-ended questions, attractiveness was often linked with nature and diverse possibilities to engage in free-time activities. The centre of Sodankylä, on the other hand, was regarded as less attractive. The respondents saw that the centre was worn out and hoped for cleaner and renewed buildings and more diversified services: “There is definitely a need to develop the services in Sodankylä, more walkways, recreational use of the riverside, playgrounds, and cleaning up the worn-out houses in the centre.” (110).

About two-thirds (67.9%) of the respondents felt that they had good social networks in the area, and 48.6% felt that the atmosphere was lively. In regard to Sodankylä as a place to live and its liveliness, it was often mentioned that more than just grocery stores and sports activities are needed as places for people to meet. Shopping is also a social activity, as is a visit to a café or restaurant in the evening. Evenings in Sodankylä were considered quiet: “Good opportunities for free-time activities, but otherwise a pretty quiescent place were restaurants are dying out. A lot of unused potential, which is a shame!” (349).

Over two-fifths (43.3%) regarded the municipal image as positive and 32.6% saw that their possibilities to participate in and influence municipal affairs were good. The share of respondents who are satisfied with their possibilities to participate and exert influence grew (2021: 25.9%). Interestingly, when people felt that their possibilities to participate and influence were weak, they also felt that the municipal image was bad. The open-ended answers indicate that the connection stems from a decision-making culture that was considered quarrelsome and parochial. “The council quarrels for years on end, and if the proposal is good, but the party wrong. It won’t pass. No cross-border cooperation between parties” (229). Decision makers were also criticised for a lack of vision. It was said that the council lacks “a vision for the future, they only focus on themselves. Sodankylä sure doesn’t present itself as a good municipality for the rest of Finland” (140).

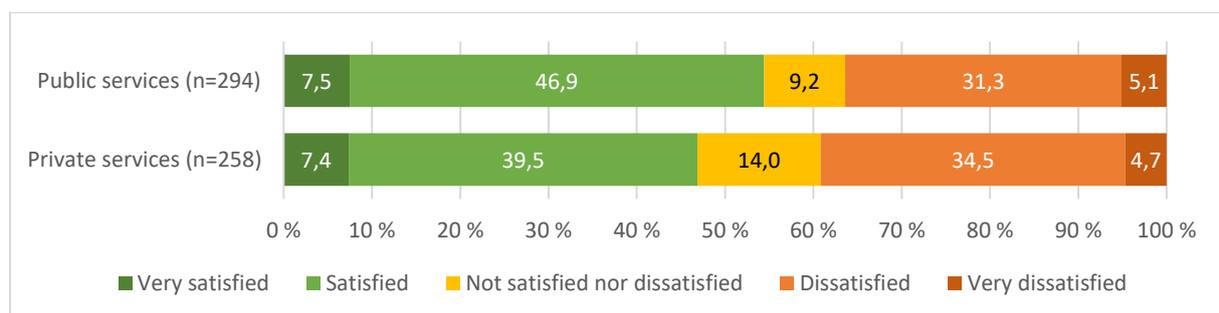


Figure 6 Satisfaction in the supply of services.

Over half (54.4%) of the respondents were satisfied with the public services of the municipality and 46.9% were satisfied with the private service supply. Satisfaction in both

service types dropped from 2021, when 67.1% of the respondents were satisfied with municipal services and 51.2% with private services.

Satisfaction in private services has gone down ever since the first survey. Owing to the changed reply alternatives, the first fully comparable result is that of the 2018 survey, compared to which satisfaction has dropped by 24.0 percentage points, marking a significant change. There is also a declining trend in satisfaction with public services: The share of satisfied respondents has diminished by 16.5 percentage points since 2018. Dissatisfaction in both service types has also clearly grown during the survey history. Compared with 2018, dissatisfaction in public services has more than doubled and dissatisfaction in private services has nearly doubled (2018: public services 14.6% and private services 22.2%).

In terms of private services, a lack of brick-and-mortar stores and a small number of restaurants were the most often stated deficiencies in the open-ended answers. The respondents felt that the municipality lacks “clothes and shoe shops, restaurants, and bank services” (203), forcing residents to “order things online or go shopping in Rovaniemi” (36). On the other hand, people also understood the deteriorating service situation: “The only cause for concern in the village is the falling trend in restaurants/bars, and the supply in brick-and-mortar stores. But if people order things on the web and bars have a hard time getting customers, what can you do?” (97).

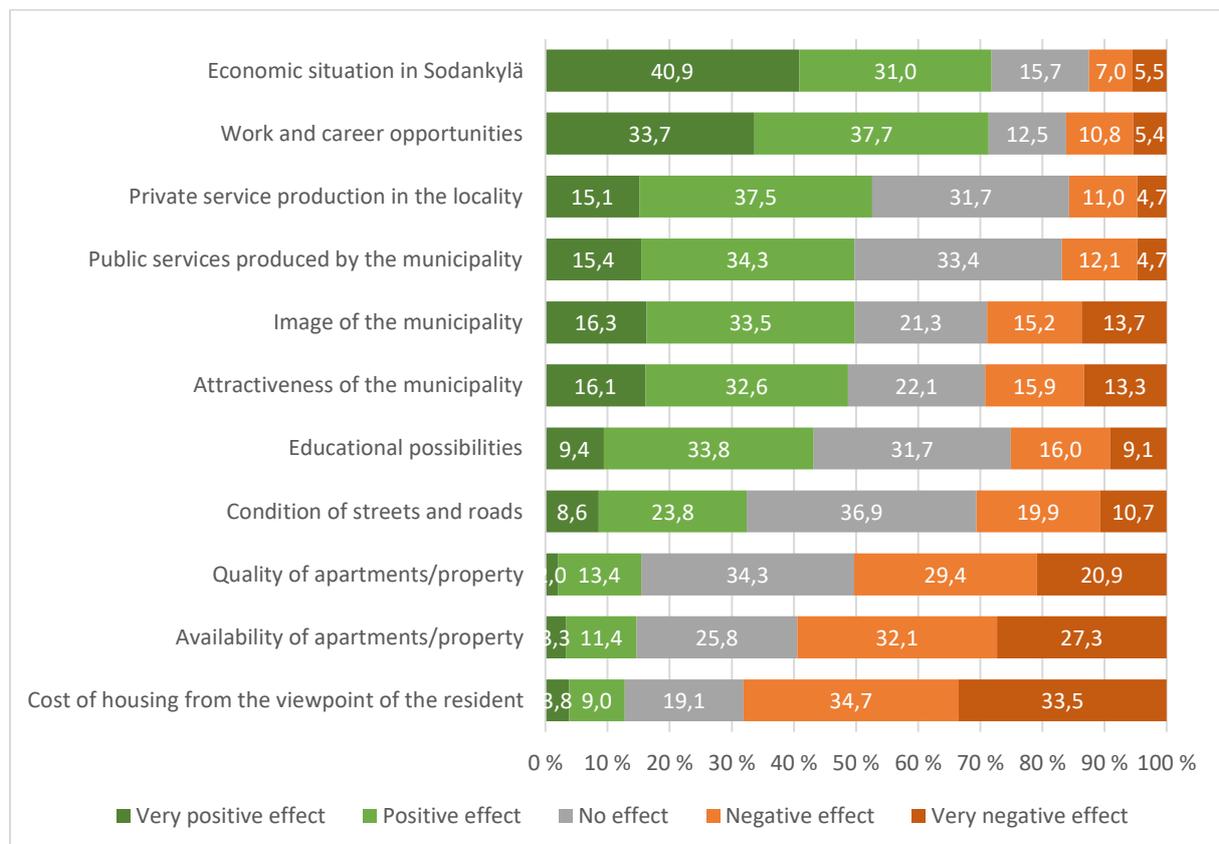


Figure 7 Impacts of mining on services, attractiveness, and infrastructure (n=357–359).

The matrix measuring the impacts of mining on Sodankylä's services, attractiveness, and infrastructure was made more concise by removing items that respondents in the previous surveys thought were hardly affected by mining, such as the cultural supply, or items that are assessed elsewhere in the study, such as traffic safety and the recreational use of nature. The image and attractiveness of the municipality were added to the matrix.

On the whole, the respondents' views on the impacts of mining in Sodankylä were clearly more negative than before. The only improvement in the situation since 2021 concerned the municipal economy and housing costs.

The respondents felt that the most positive impacts of mining concerned the municipality's economic situation and career options in the region. In both cases, a clear majority saw that the impacts were positive (economic situation 71.9% and career options 71.4%). Economic impacts were clearly considered more positive than before (2021: 53.8%). This is likely due to the roughly €28 million corporate income tax paid by Boliden Kevitsa Mining Oy for the year 2021 (Lapin Kansa 9.11.2022). The respondents may also have anticipated the future impacts of the new Act on a Mined Minerals Tax on the economy of the municipality.

In addition, impacts on the private and municipal services, the image of the municipality, and the attractiveness of the region were mainly considered positive. More than half (52.6%) of the respondents saw that private services had improved and 47% felt that public services had improved. As for the municipal image, 49.8% of the respondents felt that the impacts of mining were positive. On the other hand, 28.9% felt that the image had suffered because of mining. Impacts on attractiveness were considered positive by 48.7% and negative by 29.2% of the respondents. Based on the open-ended questions, the assessments of impacts on the attractiveness and image of the municipality are linked to the respondents' values. Those emphasising the value of nature had a more negative view of the impacts. One of the concerns was that owing to the industrial use of nature, "Sodankylä offers no future to families with children who cherish the value of nature and try to get employed in sectors that are not related to mining" (28). However, people also felt that mining had improved Sodankylä's attractiveness as "new residents have arrived and thereby the dynamics have become better" (16).

According to 43.2% of the respondents, educational opportunities had improved thanks to mining. This is clearly less than in the previous survey (2021: 60.0%). Meanwhile, a significantly larger share of respondents considered the impacts negative: 25.1% felt that the educational opportunities had diminished, as opposed to 11.3% in 2021. The open-ended questions indicate that the increased dissatisfaction is caused by a decrease in the supply of upper secondary education. One respondent reminisced that 20 years ago the municipality had "a commercial school, tourism education, catering education, dressmakers, a forestry school, and electrical, metal, car and construction sectors (rewarded as the best in Finland)" (228), while another respondent wrote that Sodankylä "has to take care of and diversify its supply of upper secondary education" (99).

According to 32.4%, the condition of roads and streets had improved, while almost as many thought the opposite (30.6%). Impacts on the road system were considered more positive, but the difference is not great compared to the previous survey.

Impacts on apartments, property, and the cost of housing were mainly considered negative. According to 50.3%, the quality of apartments and property had deteriorated because of mining, which is 20.8 percentage points more than previously. According to 59.4%, the availability of apartments and property had declined. As for both quality and availability, the share of those who considered the impacts positive went down, while the share of dissatisfied responses went up compared to the 2021 survey. A great majority (68.2%) of the respondents saw that mining had had a negative impact on housing costs from the resident's viewpoint. The assessments of the price level, however, were a bit more positive than last time.

3.2 Regional impacts on attractiveness and services

The impacts of mining on services and attractiveness were analysed by region in order to pinpoint regional differences in the experienced advantages and disadvantages. The views were measured differently compared to the previous survey. The respondents were previously asked to state the degree to which they agreed or disagreed with statements related to the mentioned themes, whereas in the renewed questionnaire, they were asked directly to state the quality of the impacts. Consequently, the results are not comparable, and no comparisons are made in this study.

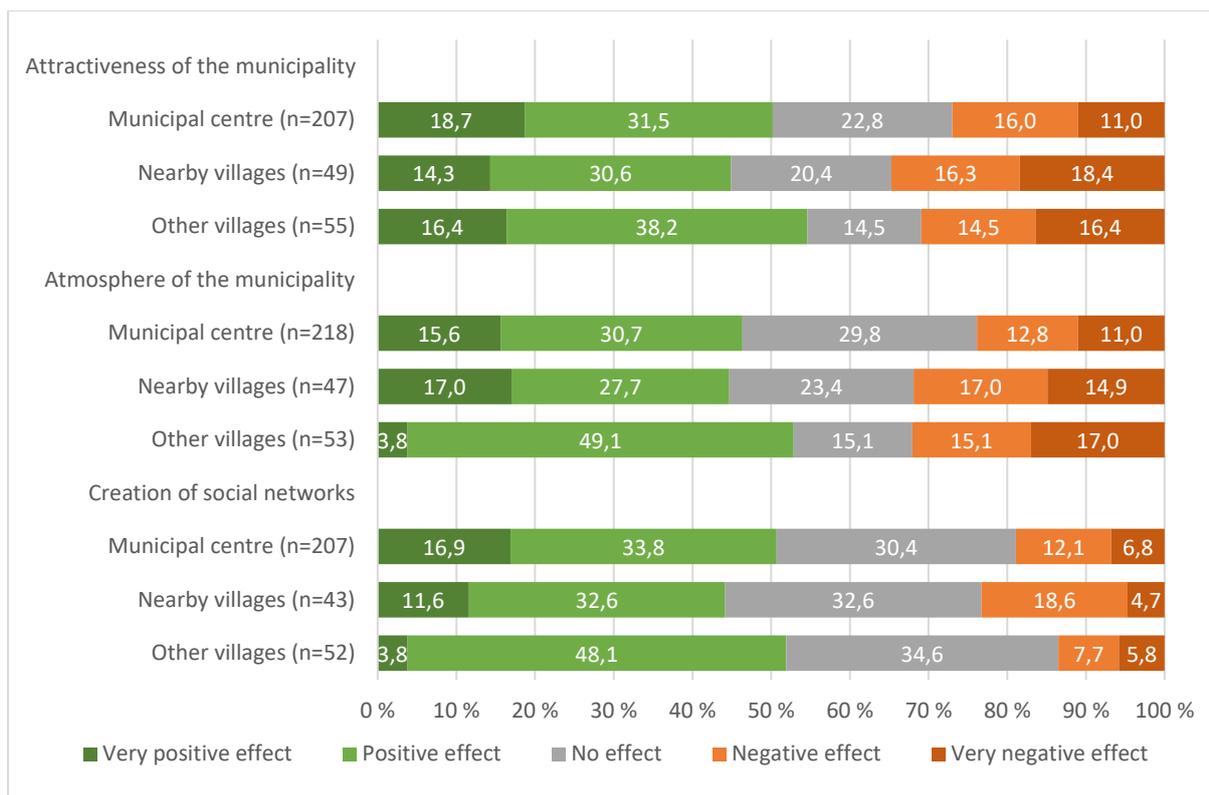


Figure 8 Impacts on attractiveness, atmosphere, and the creation of social networks.

Based on the regional comparison, the impacts of mining were considered the most positive by respondents living in the other villages, of whom 54.6% saw that mining had increased the attractiveness and atmosphere of the municipality and 51.0% saw that it had contributed to the creation of social networks. Respondents living in the villages near mining sites had the most negative views of the impacts: Less than half of them considered the impacts positive and the share of those who considered them negative in every aspect was the greatest among the regions. According to the respondents living in the nearby villages, 44.9% saw that mining had increased Sodankylä's attractiveness, 44.7% saw that it had improved the atmosphere, and 44.2% saw that it had contributed to the creation of social networks. Half of the respondents in the municipal centre saw that the impacts on attractiveness (50.2%) and on the creation of social networks (50.7%) were positive, and 46.3% thought that mining had improved the image of Sodankylä.

3.3 Environmental impacts

The environmental impacts were also analysed regionally by dividing the respondents into those living in the municipal centre, nearby villages, and other villages. Regardless of this division, residents most likely move about in nature covering a wider area and thus also base their assessment on these observations. A region-based examination showed that people living in the nearby villages and other villages reported more often than those living in the

centre that they have observed adverse environmental effects caused by mining. Compared to the 2021 survey on the whole, a greater number of respondents had now observed environmental impacts. The most typical adverse effects were as follows: declined traffic safety; adverse effects on rivers, lakes, the landscape and natural plants and animals; and adverse impacts on the practical and recreational use of nature. The adverse effects with the lowest number of observations were as follows: tremor, smell, lighting of mines, and hazardous chemicals, which were reported by less than half of the respondents regardless of their place of residence.

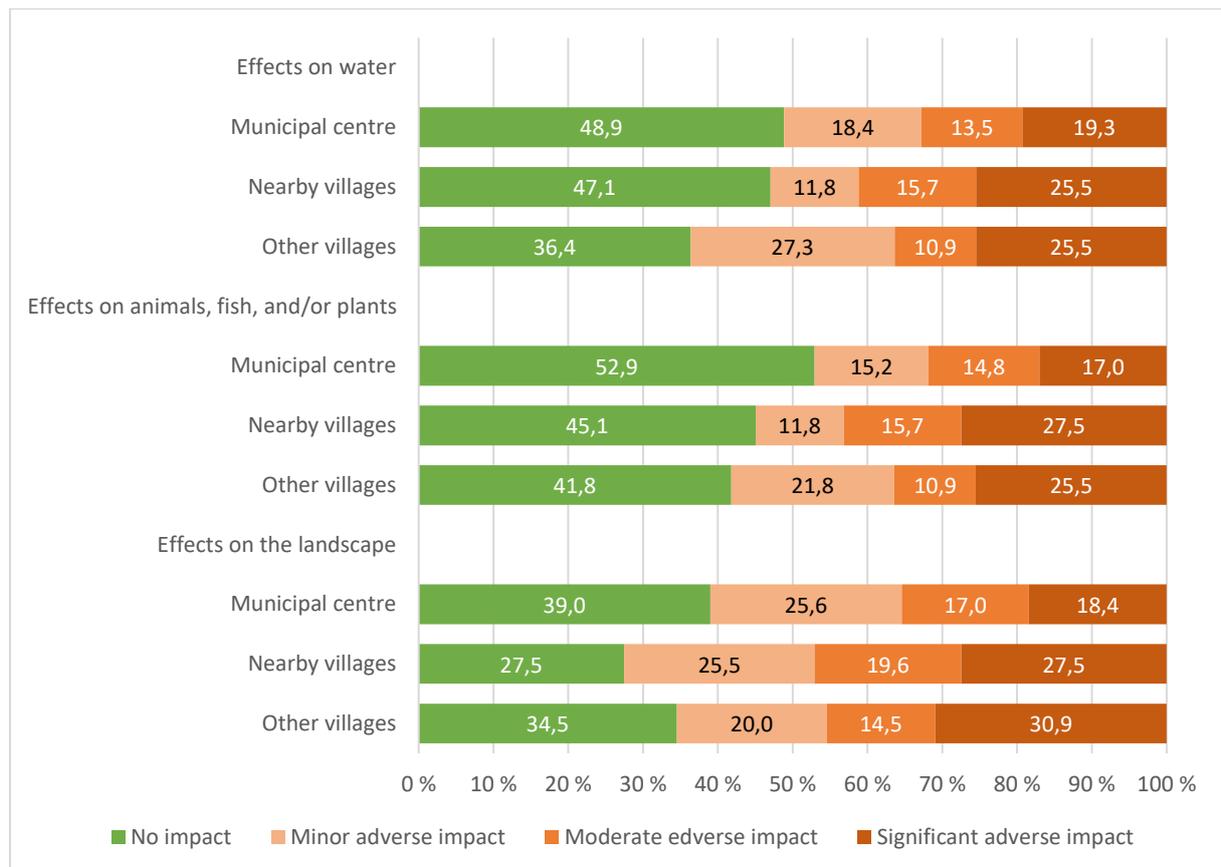


Figure 9 Impacts on the natural environment. Municipal centre n=233, nearby villages n=51, and other villages n=55.

Adverse effects on rivers and lakes were observed by 51.1% of the respondents living in the municipal centre, by 52.9% of those living in the nearby villages, and by 63.6% of those living in the other villages. In terms of the municipal centre and the other villages, adverse effects were observed by a larger number of respondents than before (2021: municipal centre 43.3% and other villages 53.7%), whereas of the respondents living in the nearby villages, a smaller share reported adverse effects (2021: 57.1%).

Roughly half of the respondents living in the municipal centre (47.1%) and in the nearby villages (54.9%) and 58.2% of those living in the other villages felt that animals and plants had

suffered because of mining. The share of people who had observed adverse effects was larger than before regardless of one's place of residence, but people living in the municipal center reported this more often than others (2021: municipal centre 41.9%, nearby villages 53.1%, and other villages 56.1%).

Adverse effects were experienced especially by people living in the nearby villages, of whom 72.5% reported effects on the landscape. Observations of effects on the landscape were reported by 65.5% of the respondents living in the other villages and by 61% of those living in the municipal centre. Compared to the previous survey, however, a smaller share of respondents living in the municipal centre and the other villages felt that mining had caused adverse effects on the landscape, whereas the share of respondents living in the nearby villages who had observed these effects grew (2021: municipal centre 68.6%, nearby villages 69.4%, and other villages 71.4%).

On average, adverse effects on the landscape, the natural environment, and animals were observed by more than half of the respondents of the municipal centre and by roughly three-fifths of those of the villages (municipal centre 53.1%, nearby villages 60.1%, and other villages 62.4%).

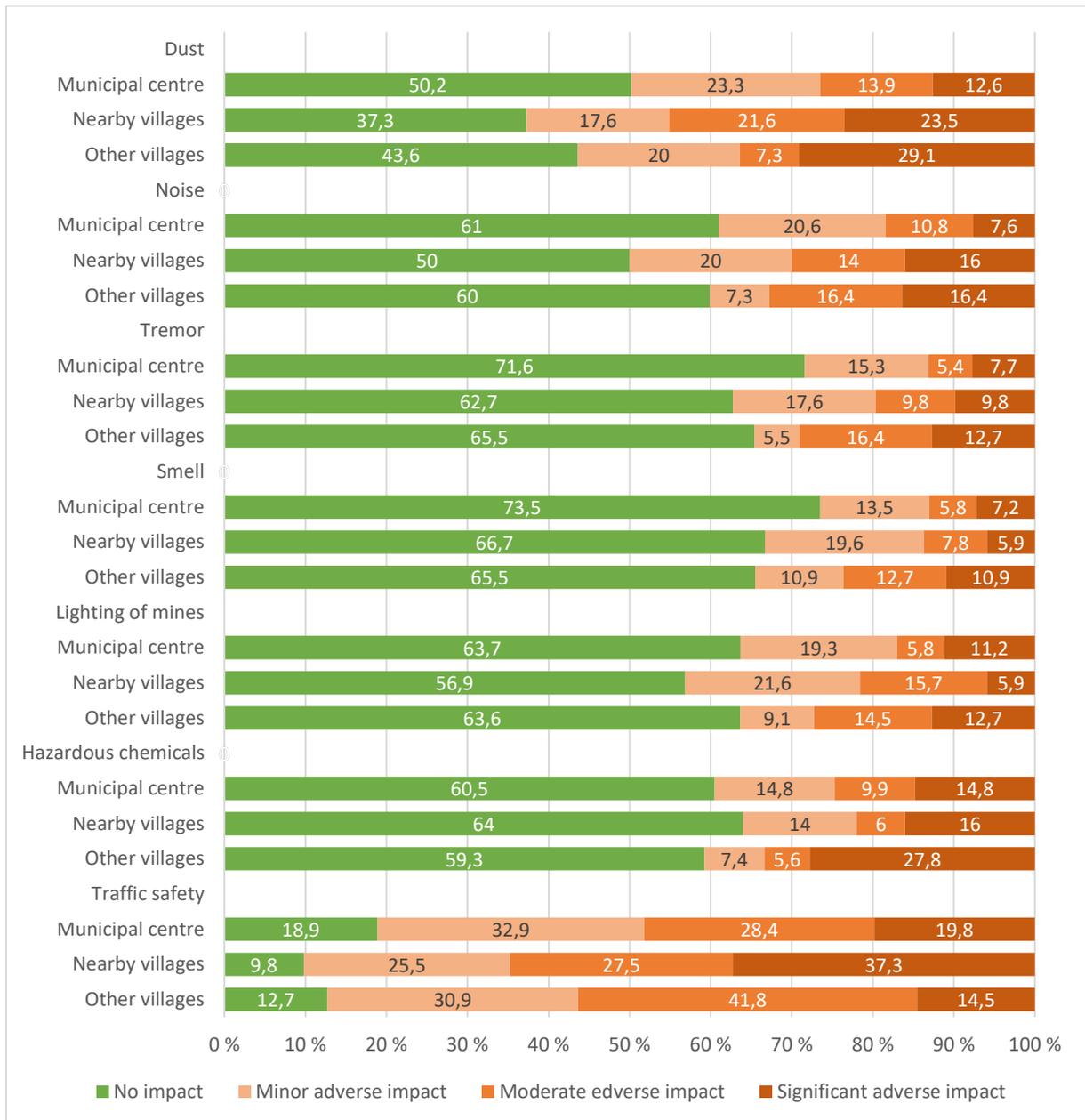


Figure 10 Impacts related to mining activities. Municipal centre n=222–233, nearby villages n=51–51, and other villages n=54–55.

Dust effects were experienced by respondents living in the nearby villages more than others. Of these respondents, 62.7% reported dust emanating from the mine. Dust problems were reported by 56.4% of the respondents living in the other villages and by 49.8% of those living in the municipal centre. Compared to 2021, dust problems were observed by a clearly larger share of the respondents of each residential area (2021: municipal centre 35.8%, nearby villages 48.0%, and other villages 42.5%).

Disturbing noise was experienced by 50.0% of the respondents living in the nearby villages, which is slightly less than previously (2021: 56.0%). Of the respondents of the other villages and the municipal centre, roughly two-fifths reported noise problems (municipal centre

39.0% and other villages 40.0%). Noise problems were experienced among the residents of the other villages a bit less than before, but among the residents of the municipal centre slightly more than before (2021: municipal centre 35.8% and villages 42.5%). In the open-ended questions, noise problems were partly connected to traffic: “From the resident’s point of view, traffic has increased, therewith also noise and emissions” (295).

Tremor had been observed by 34.5% of the respondents of the other villages and by 37.3% of those of the nearby villages. Of the respondents living in the municipal centre, tremor was reported by 28.4%, which is 12.4 percentage points less than previously. The share of those who had experienced tremor also grew among the villagers (2021: nearby villages 34.7% and other villages 31.7%).

Smell problems were observed by a third of the villagers (nearby villages 33.3% and other villages 34.5%) and by 26% of the municipal centre’s residents. Disturbing smell was reported by a clearly larger share of respondents regardless of their place of residence (2021: municipal centre 17.6%, nearby villages 20.0%, and other villages 24.4%). The proportionally largest difference concerned the respondents of the nearby villages, as the share of those who reported adverse effects grew by 13.3 percentage points from 2021.

Lighting of the mines was considered disturbing by 43.1% of the respondents of the nearby villages. Among the residents of the municipal centre and other villages the share was roughly a third (municipal centre 36.3% and other villages 36.4%). Adverse effects caused by lighting were also experienced by a larger share of the respondents regardless of the place of residence (2021: municipal centre 24.1%, nearby villages 36.0%, and other villages 34.1%).

Problems involving hazardous chemicals were experienced by 39.5% of the respondents living in the municipal centre, 40.7% of those living in the nearby villages, and 36.0% of those living in the other villages. The share of those who had experienced adverse effects increased in the municipal centre and nearby villages, and decreased in the other villages. The clearest change occurred among the residents of the municipal centre, of whom a 12.2 percentage points larger share reported problems caused by chemicals.

As in the previous years, also this time the most frequently reported adverse effect related to mining was a decline in traffic safety. As many as nine out of ten (90.2%) of the respondents of the nearby villages had experienced a decline in traffic safety. In other villages, almost an equal share (87.3%) felt that mining had decreased traffic safety. Although the municipal centre was the least critical region in this respect, 81% of the respondents had observed a decline in traffic safety. Regardless of the residential area, the share of those who had observed adverse effects grew (2021: municipal centre 73.3%, nearby villages 87.8%, and other villages 78.6%).

On average, mining-related adverse effects such as noise, dust, and lighting were observed as follows: municipal centre 42,9%, nearby villages 50,4%, and other villages 47.1%. A significantly larger share of the respondents than before reported adverse effects regardless of the residential area (2021: municipal centre 26.1%, nearby villages 37.9%, and other villages 36.9%).

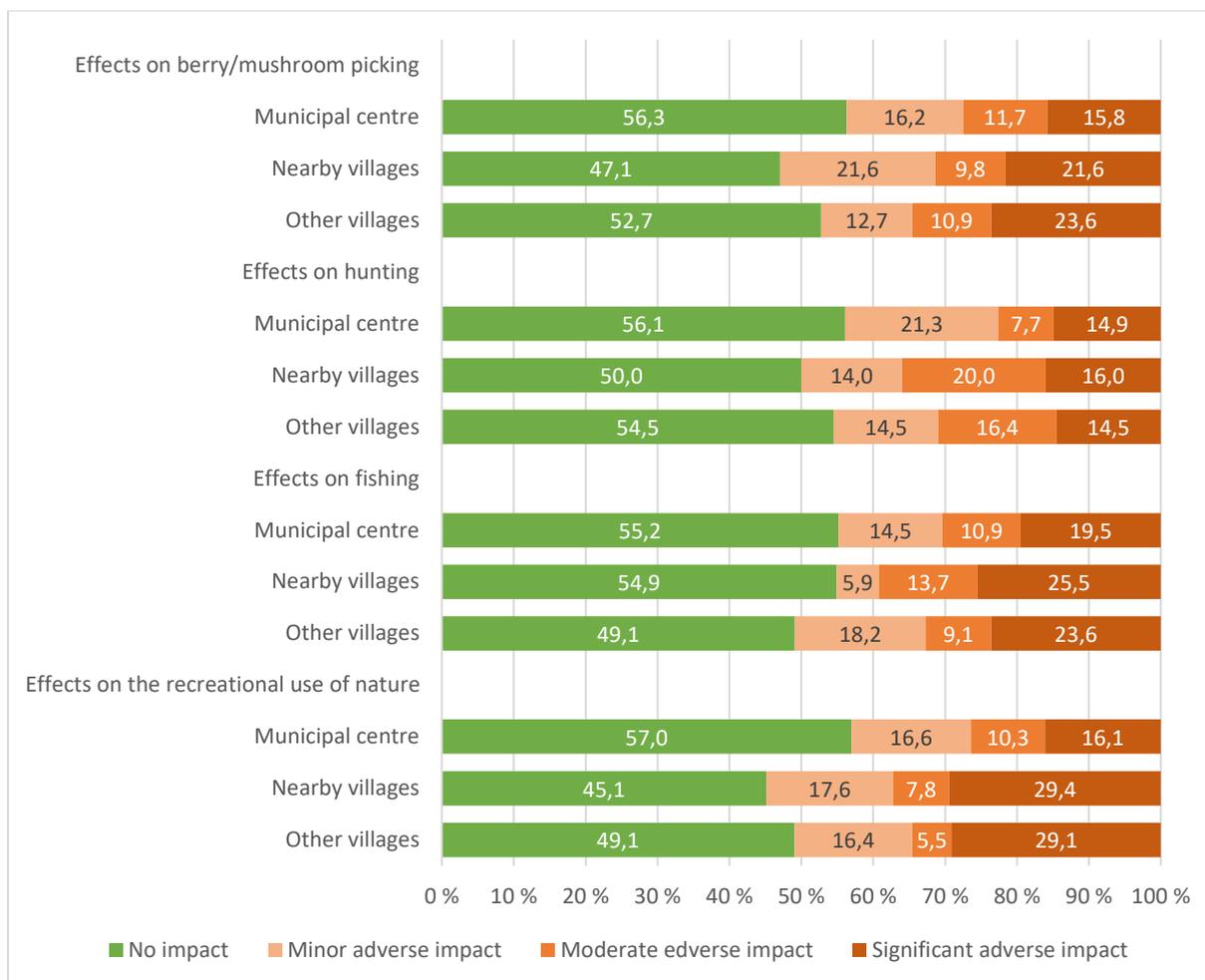


Figure 11 Impacts on the practical and recreational use of nature. Municipal centre n=221–223, nearby villages n=50–51, and other villages n=55.

Adverse effects on berry and mushroom picking were reported by 52.9% of the respondents of the nearby villages and by 47.3% of those of the other villages. Of those living in the municipal centre, 34.7% reported effects on berry and mushroom picking, which is 11.6 percentage points more than in 2021. Also, a larger share of the villagers reported adverse effects, but the difference was not as great as with the municipal centre (2021: nearby villages 46.0% and other villages 41.5%).

Adverse effects on hunting were reported as follows: nearby villages 50.0%, other villages 45.5%, and municipal centre 43.9%. These effects were this time observed by a larger share of respondents living in the municipal centre and the nearby villages and by a smaller share of respondents living in the other villages (2021: municipal centre 36.4%, nearby villages 48.0%, and other villages 46.3%).

Adverse effects on fishing were reported as follows: other villages 50.9%, nearby villages 45.1%, and municipal centre 44.8%. The share of those who had observed adverse effects went down in the other villages and up in the other regions. The greatest change concerned

the municipal centre, where the share of those who reported adverse impacts on fishing was 12.0 percentage points larger than before.

Adverse effects on the recreational use of nature were reported as follows: nearby villages 54.9%, other villages 50.9%, and municipal centre 43.0%. The share of observations of adverse effects went down in the other villages and up in the nearby villages and the municipal centre. Adverse effects on recreation were reported by a smaller share than before by the respondents of the other villages and by a larger share by those of the nearby villages and the municipal centre (2021: municipal centre 38.2%, nearby villages 49.0%, and other villages 58.5%).

On average, the impacts of mining on the practical and recreational use of nature were reported by the regions as follows: municipal centre 43.9%, nearby villages 50.7%, and other villages 48.7%.

4 Acceptability of mining in Sodankylä

This chapter focuses on factors that affect the general acceptability of mining in Sodankylä. The respondents have assessed the overall effects of mining on, for example, the vitality and economy of the municipality and the way in which mining affects the development of other livelihoods. The acceptability and legitimacy of the entire industry are also linked to regulation and control, and therefore the residents were asked to state their views of the institutional frame in which the industry operates. Societal acceptance is also related to citizens' view of the role of mining in combating climate change and producing necessary battery minerals. There is also the question of the European Union's internal division of responsibility in an attempt to reach self-sufficiency in raw materials – whether or not it is justified to open new mines in the northern regions of the European Union to cover the continent's consumption. (Peltonen 2016.)

4.1 Acceptability of mining

Mining was accepted fully by 50.7% and provisionally by 20.0% of the respondents. Many of those with a positive view felt that mining had saved Sodankylä, as summed up by one respondent: "This village was like a terminal patient who was given a cure: the jobs and people brought by the mine." (10). Compared to the previous survey, the share of concurring respondents went down by 6.9 percentage points. Conversely, the share of disagreeing respondents went up by 8.5 points. Among other things, the respondents were concerned about what happens to Sodankylä "when the mine closes down and we have to live with the contaminated environment." (12). Many of the open-ended replies indicated that people contemplate on the relation between jobs and nature: "I have a two-sided opinion about mines – on the one hand, they are needed for guaranteeing employment and, on the other

hand, I'm worried about their environmental impacts." (131). As for the level of acceptance, it is worth noting that the material has a considerable overrepresentation of people employed in mining. Of those who are primarily employed in mining, 90.8% accepted mining in the municipality.

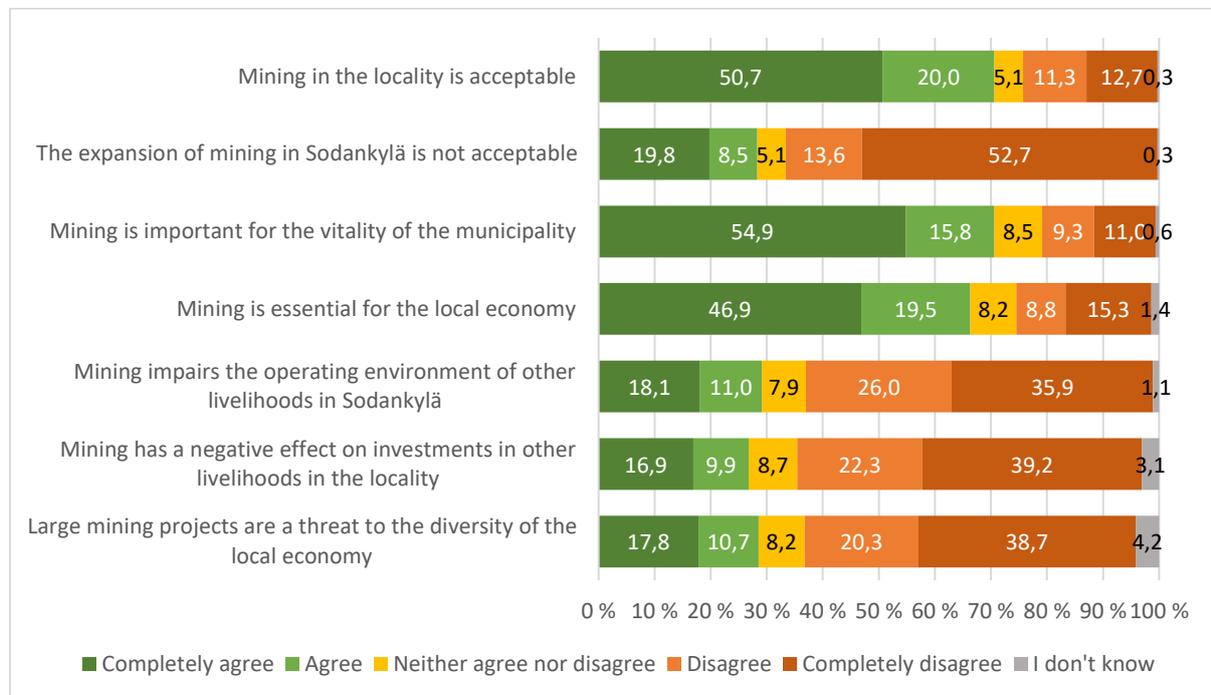


Figure 12 Acceptability in Sodankylä (n=353–355).

In terms of expanding the mining activities in Sodankylä, 66.3% of the respondents were for it and 28.3% against it. The expansion of mining was strongly associated with the idea of a more vital municipality: “Mining has animated Sodankylä. Hopefully, new mines are opened, otherwise the municipality will wither away.” (1). On the other hand, the respondents wished to distribute the positive effects on employment and vitality over time: “There could be one operating mine at a time. Production at Kevitsa will start decreasing in 2024 and it is estimated to end in 2035. Then, at the earliest, a new mine that would bring new jobs.” (79).

A clear majority (70.7%) of the respondents considered mining important in light of the vitality of Sodankylä, which is 8.4 percentage points less than in the previous survey. Meanwhile, the share of respondents who were critical about the effect of mining on vitality grew from 12.7% to 20.3%. Mining was considered essential to the region’s economy by 66.4%, while 24.1% disagreed with the idea.

According to 29.1% of the respondents, mining restricted the operational possibilities of other livelihoods in the municipality, which is an increase of 9.1 percentage points from 2021. A majority (61.9%) of the respondents, however, assessed that other livelihoods are not subject to adverse effects. The respondents assessed impacts on investments in other livelihoods largely in the same manner as they assessed impacts on the operational possibilities of other

livelihoods. According to 26.8%, mining reduced investments in other livelihoods, whereas 61.5% saw that these investments are not affected. A majority of 59.0% likewise did not feel that large mining projects threaten the diversity of Sodankylä's economy.

Most of the respondents saw that mining had no effect on their line of work or livelihood. Also, examined by line of business, the effects did not concentrate on any particular branch. Systematic positive impacts were mostly brought up by people employed in mining and trade, for whom mines had brought "new customers to the shop" (206). Tradespeople also felt that mining is "a lifeline for business" (240).

Those who repeatedly referred to adverse effects were primarily employed in reindeer herding or tourism. As for tourism, Sodankylä's reputation as a mining locality emerged as a central explanation: "The image hinders tourism. People do not come here to look at mines, and clean air and nature are already more valuable than gold." (268). It was stated that tourism also suffers from mining beyond Sodankylä. "Mining threatens and harms nature and adventure tourism and their future all over Lapland. Foreign tourists don't want to spend their holiday around mines. Mining with its pollution is also a serious image strain that will grow bigger in the future." (143). Reindeer herders were worried about how "the constantly fragmenting pastureland will sustain reindeer" (77). Further, the "loss of pastures, their fragmentation, reindeer losses (e.g., traffic), the disappearance of beard moss, and contamination of water" (316) and "dust, noise, and tremor effects" (108) caused concern.

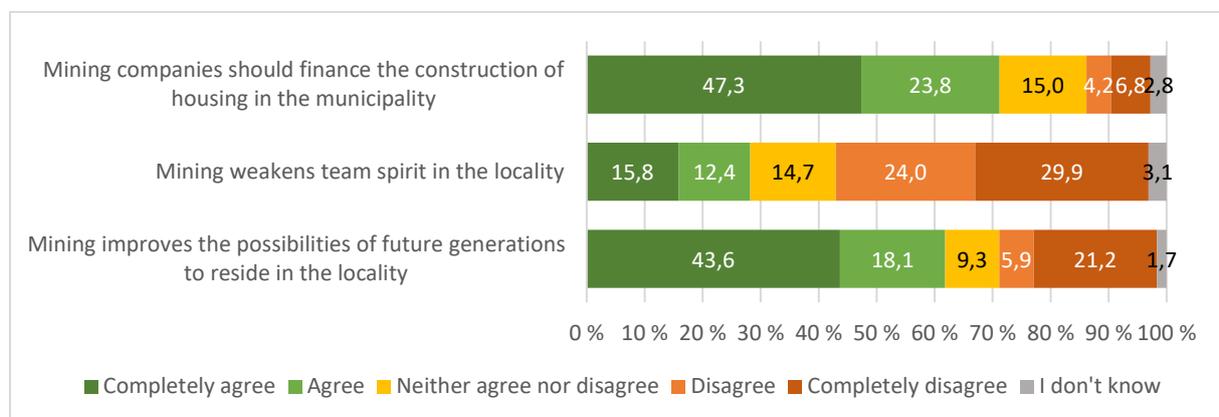


Figure 13 Construction of housing, team spirit and future generations (n=353–354).

A majority of the respondents (71.1%) felt that mining companies should finance the construction of housing in the municipality. The long-lasting shortage of apartments and high rents of Sodankylä were often brought up in the open-ended questions, as were hopes that mining companies would invest in solving the problem: "Mines could perfectly well finance the construction of housing, because the shortage of moderately-priced apartments is huge because of the mining workers." (137). In the open-ended answer concerning the future of Sodankylä, a respondent composed a positive vision reaching 2050 as follows: "Mining

companies have lavishly joined in developing the village especially by taking part in the construction of apartments and in the development of recreational activities” (99).

According to 28.2% of the respondents, the effects of mining on team spirit in Sodankylä were negative, whereas 53.9% saw that mining had not made it worse. However, attitudes toward mining have turned more critical and diverged during the surveys, which is evidenced by a smaller share of respondents choosing the “I don’t know” reply alternative and the middle alternative of the assessment scale. Based on the open-ended answers, the respondents have also noticed the change. One respondent had noticed that “people have lately divided into pro-mine and anti-mine groups, and they also seem to quarrel more” (317) and another called for measures to support communality: “Something should be done about the division of residents into different camps. There are pro-mine people and then those who don’t benefit from mines at all and don’t accept them.” (184).

A majority (61.7%) of the respondents felt that mining improves the possibilities of future generations to reside in the municipality. Mining was regarded as a way “to contribute to the municipality’s population growth or at least to stop the downward trend, and to diversify the municipality in other ways as well” (2). In fact, the positive effects of mines on the future of the region were mostly linked to employment and the population structure. In the open-ended answers the respondents wished that in the future, Sodankylä would be “a municipality with an in-migration surplus and a lot of families with children” (25), but a concern over environmental damage caused by mines was also present: “In the worst-case scenario we would experience what happened to the Talvivaara mine and its surroundings.” (25). The respondents wanted diversity and working collaboration between various fields of business: “I’d like to see a lively and vigorous municipality where various lines of business collaborate fluently with authorities and residents.” (162).

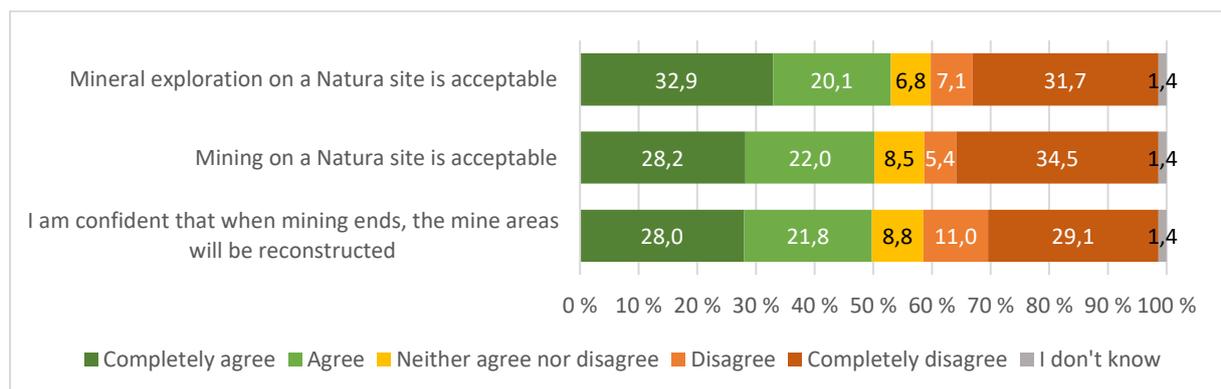


Figure 14 Extractive sector operations on a Natura-site and reconstruction of mine areas (n=353–354).

Mining activities on a Natura preservation site divided opinions. Mineral exploration on a protected site was approved by 53% and opposed by 38.8% of the respondents. As for mining, the figures were roughly the same: 50.2% for and 39.9% against. Compared to 2021, there is a clear change in attitudes toward the use of Natura preservation sites for mining purposes.

The share of respondents who approved mineral exploration on these sites was now 7.8 percentage points smaller than in the previous survey. With mining, the share of those in favour was now 6.2 points smaller. Conversely, the share of those who opposed mineral exploration in protected areas increased by 10.0 percentage points and the share of those who opposed mining increased by 6.9 percentage points. Half of the respondents (49.8%) believed that mining areas are restored after operations, whereas 40.1% doubted it.

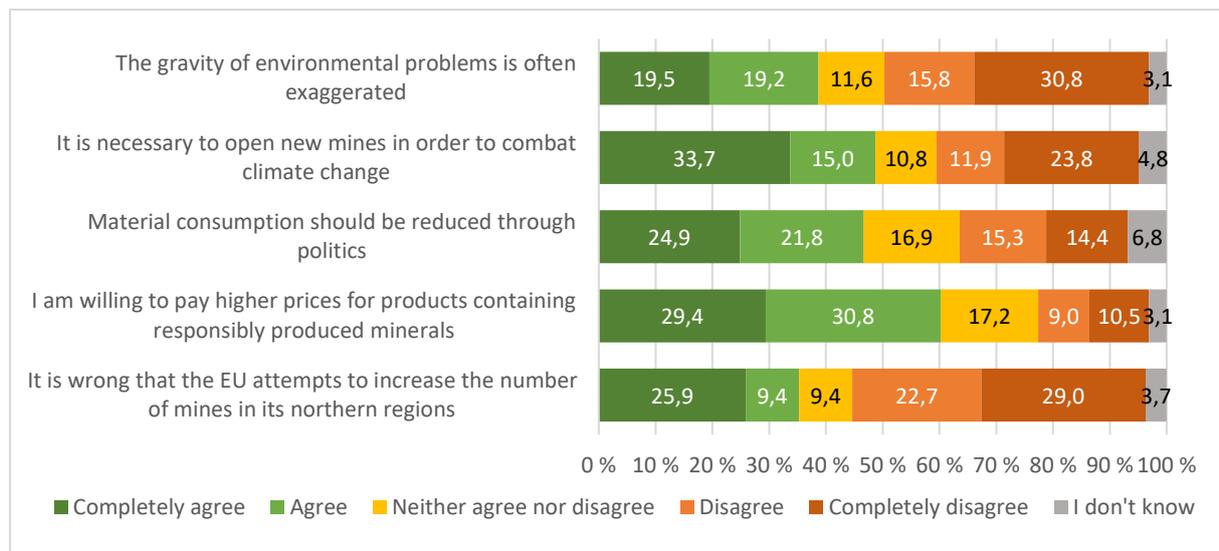


Figure 15 Environmental problems and responsibility (n=352–354).

The themes of environmental problems and responsibility divided opinions to a great extent. According to 38.7% of the respondents, environmental problems were exaggerated, but 46.6% thought that this was not the case. Opening new mines to combat climate change was considered necessary by 48.7% of the respondents. On the other hand, 35.7% felt that new mines are not required in the fight against climate change. The reduction of material consumption through politics was approved by 46.7% and opposed by 29.7% of the respondents. However, 60.2% stated that they are willing to pay higher prices for products containing minerals that have been produced responsibly. The EU's attempt to increase the number of mines in its northern regions was approved by 51.7% and opposed by 35.3% of the respondents. The share of those with a negative stance was 8.4 percentage points larger than previously.

4.2 Control by the authorities and participation in decision making

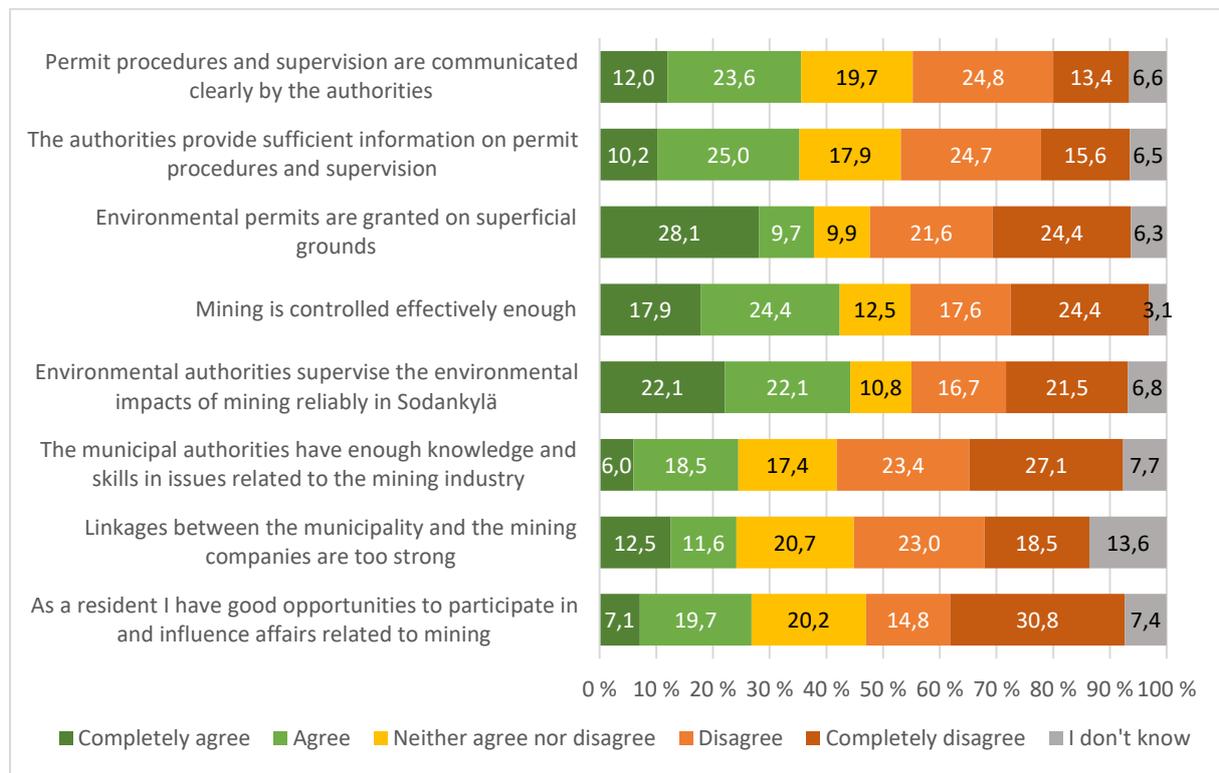


Figure 16 Control by the authorities and decision making (n=351–353).

The authorities' communication regarding permit procedures and control was considered clear by 35.6% of the respondents, which is markedly less than in the 2021 survey (50.5%). Yet 38.2% felt that the communication was unclear. Their share was notably larger than previously, when the communication was considered unclear by 25.1% of the respondents. The authorities' communication was considered adequate by roughly another third (35.2%), while 40.3% thought it was inadequate. The assessments of the adequacy of the communication were also more negative than previously. In 2021, the communication was considered adequate by 43.7% and inadequate by 30.6% of the respondents. Aside from the statements concerning the authorities' communication, control and decision making by the authorities were assessed in approximately the same manner as previously.

The grounds for granting environmental permits were considered superficial by 37.8% of the respondents, while 46.0% saw that the grounds were at least strict enough. The efficiency of control over mining was counted on by 42.3% of the respondents, while 42.0% doubted it. As for the credibility of the authorities' control over the environmental impacts of mining in Sodankylä, 44.2% subscribed to it and 38.2% questioned it. The mining-related knowledge and skills of the municipal authorities were considered adequate by 24.5% and inadequate by 50.5% of the respondents. A fourth (24.1%) of the respondents felt that linkages between the municipality and mining companies were too strong, whereas 41.5% considered them appropriate. An individual's possibilities to participate in and influence mining-related

matters were considered good by 26.8% of the respondents, but 45.6% felt that the possibilities were poor.

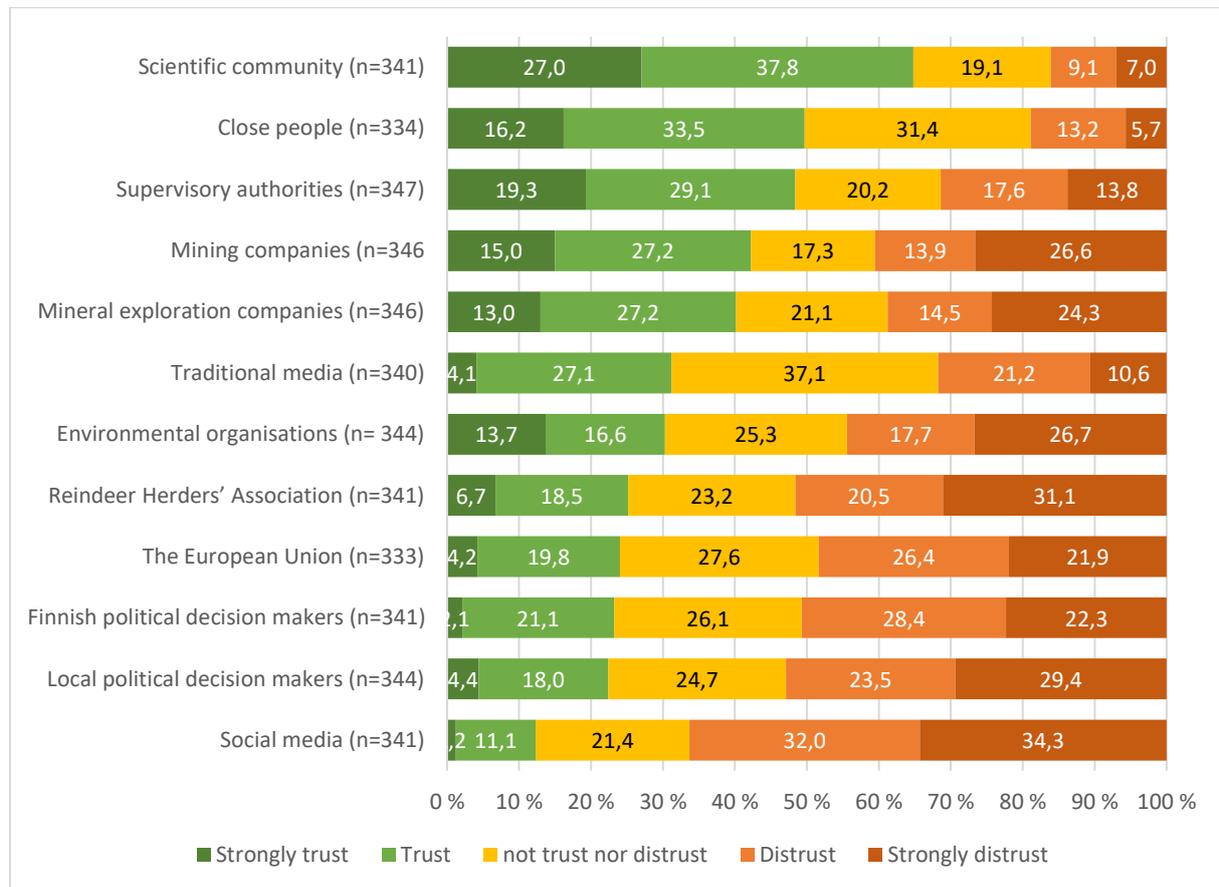


Figure 17 Trust in various actors in mining-related matters.

Trust in various actors in mining-related matters was requested for the first time, which means that comparison to previous surveys is not possible.

The scientific community was considered by far the most trustworthy source by 64.8% of the respondents. That said, the open-ended replies also brought out other views. One respondent thought that the survey was “a charade” and doubted whether we will publish “criticism of mining” (227). The second most trustworthy sources were close relatives and friends and supervisory authorities, both of which were trusted by almost half of the respondents (relatives and friends 49.7% and authorities 48.4%). Roughly two out of five respondents reported that they trust mining companies (42.2%) and mineral exploration companies (40.2%), but almost as many did not trust these actors (mining companies 40.5% and mineral exploration companies 38.8%). A lack of confidence in the companies became apparent, for instance, in replies concerning impact assessment, where dependence on the companies was criticised: “a mining company is NOT a trustworthy source, as they have their own money involved in the study” (102).

Based on the survey, 30.3% of the respondents trusted environmental organisations and 25.2% trusted the Reindeer Herders' Association. The European Union was considered the most trustworthy political actor by 24.0% of the respondents. Finnish political decision makers were trusted by 23.2% and local politicians by 22.4% of the respondents. The traditional media were considered far more reliable than social media, which was the least trusted alternative with only 12.3% of the respondents relying on it. The share of those relying on the traditional media (31.2%) was nearly the same as the share of those that did not trust them (31.8%) in mining-related affairs.

The respondents' trust was greater than distrust only when it came to the scientific community, supervisory authorities, mining companies, and close people. All other actors were considered unreliable by a larger share than those who considered them reliable.

When comparing the distribution of trust according to whether the respondents agreed or disagreed with the statement "Mining in the locality is acceptable", the differences between the groups were significant.

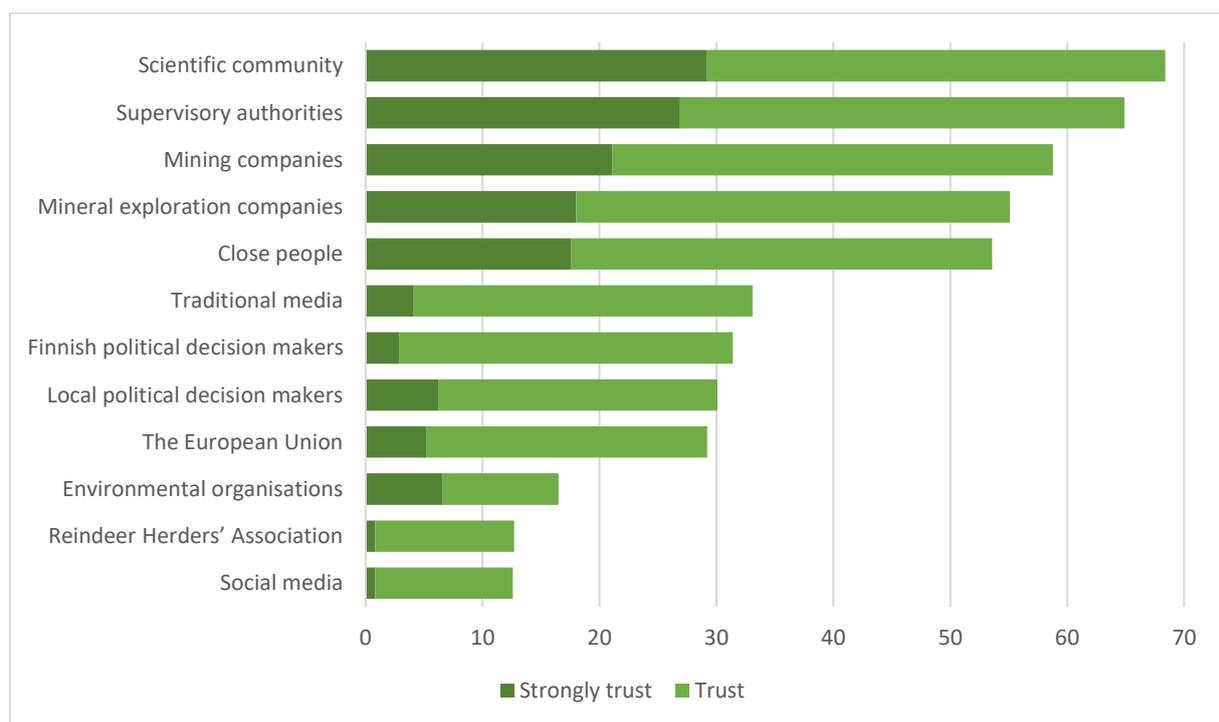


Figure 18 Trust in various actors within respondents who accept mining in Sodankylä (n=233–247).

Those who approved of mining stated that the scientific community, authorities, and mining companies were the most trustworthy actors. In addition, mineral exploration companies and close people were among the actors that were trusted by more than half of the respondents. The least trustworthy sources were social media, the Reindeer Herders' Association, and environmental organisations.

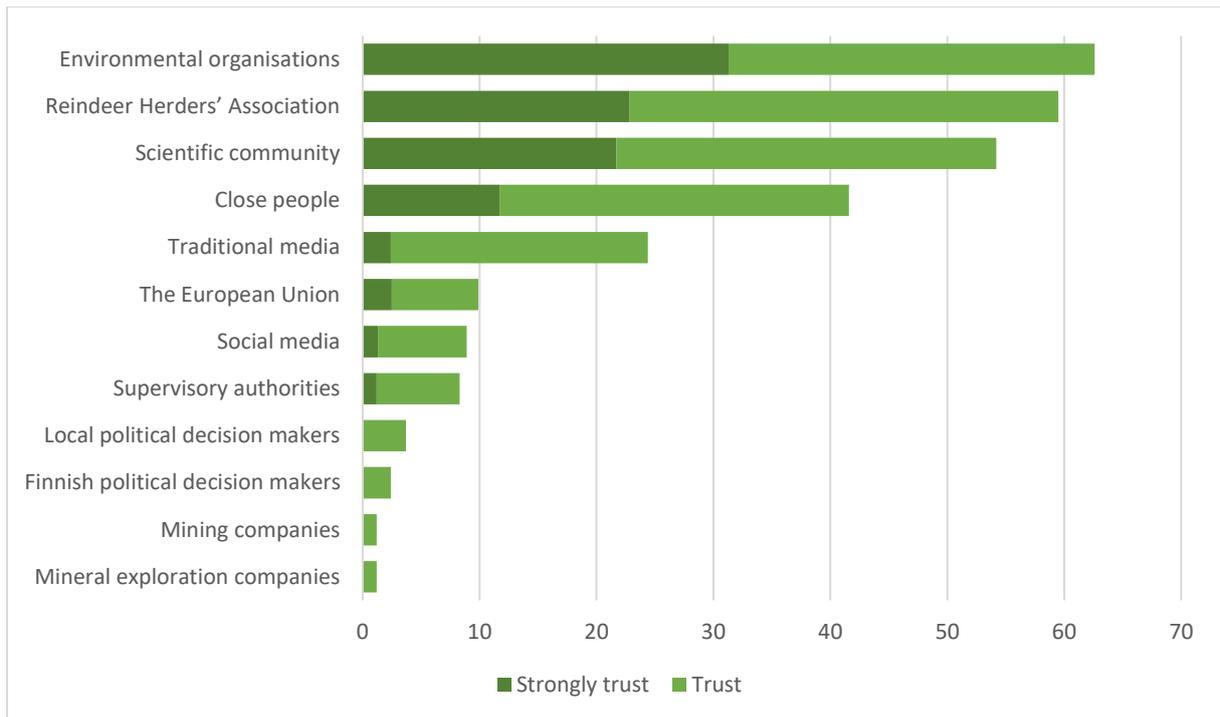


Figure 19 Trust in various actors within respondents who don't accept mining in Sodankylä (n=77–84).

Those who did not approve of mining in the locality regarded environmental organisations, the Reindeer Herders' Association, and the scientific community as the most trustworthy actors. Mineral exploration companies, mining companies, and Finnish political decision makers were regarded as the least trustworthy actors. Irrespective of the actor, the measure of trust was lower among this group than among those who approved of mining.

Taloustutkimus got similar results in a survey conducted in Kolari municipality in 2020. The survey mapped local people's opinions on Hannukainen mining project. Also in this survey, there were significant differences between respondents who were for mining and those who were against it when asked which actor they trusted in mining related issues. (Lapin Kansa 9.6.2020.)

4.3 Mining companies' social license to operate

The social license to operate refers to the local acceptance of a company or project. Whenever a company starts operations, it happens in a specific, local context that cannot be influenced. The contextual factors include the population and economy, earlier experiences of mining, and the political power structure in the locality. The idea behind the social license to operate pertains to how a company constructs its relationship with the local community, interest groups, and rightholders. The license is earned through daily activities and encounters with people. By and large, the minimum requirement is open and up-to-date unidirectional

communication, but the license is at its strongest when the company is genuinely part of the local community and its development. (Mononen & Suopajärvi 2016.)

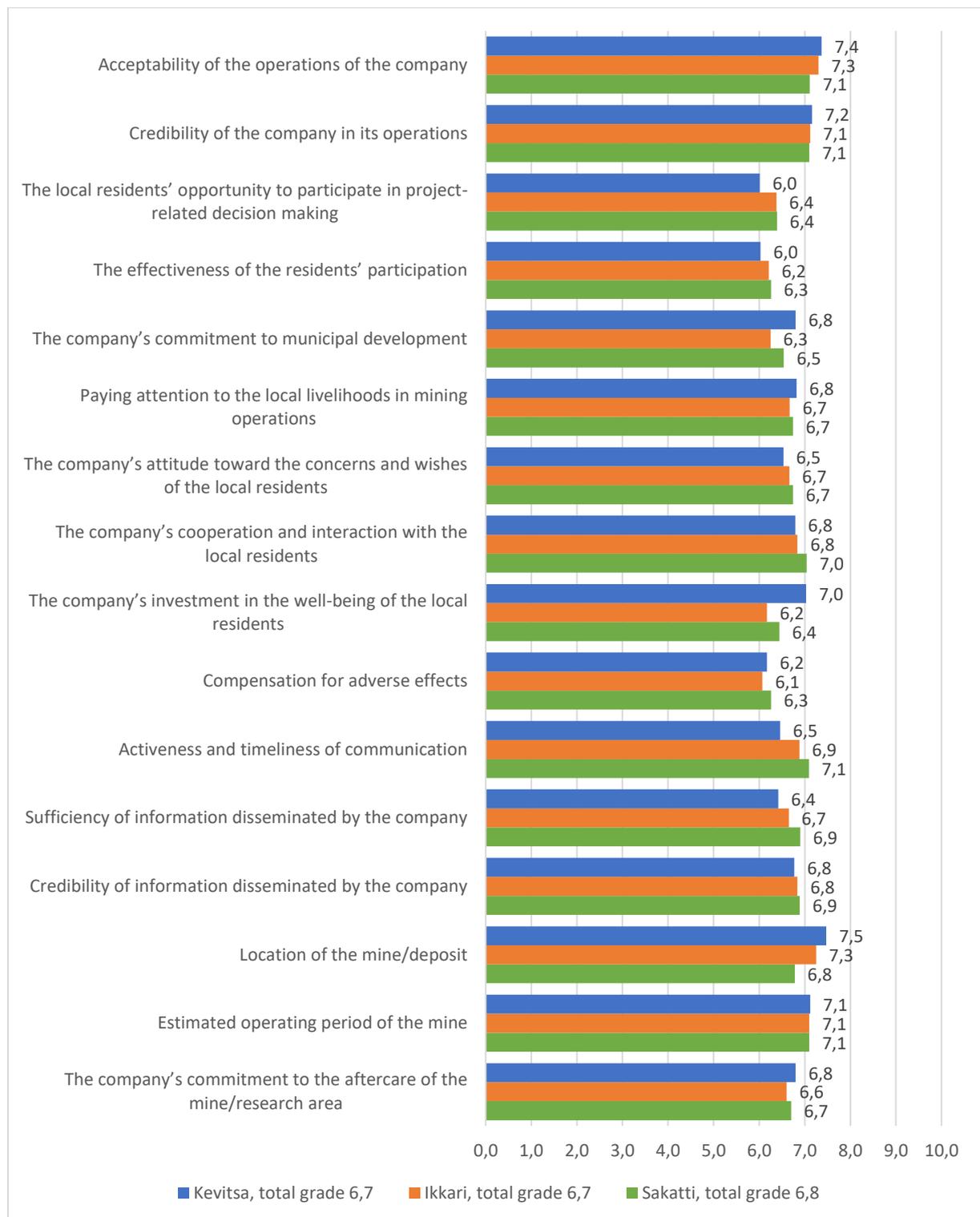


Figure 20 Project-specific assessment (n=290–340).

The project-specific evaluation was carried out using a school grade scale (4–10). In previous years, Kevitsa, Sakatti and Pahtavaara have been evaluated, but after the Ikkari mining project became relevant, Pahtavaara was replaced by Ikkari. In the case of the Ikkari project, a comparison with the previous one cannot therefore be made. In other respects, the assessment was carried out as in previous studies. The averages calculated from the grades ranged from moderate (6.0) to good (7.5) and the overall grade for all projects was satisfactory (Kevitsa 6.7, Ikkari 6.7 and Sakatti 6.8). Kevitsa received its highest marks for the location of the mine (7.5), the acceptability of the company's operations (7.4) and the reliability of the company's operations (7.2).

5 Conclusion

While acknowledging certain limitations related to the generalisation of the material, it can be noted that Sodankylä residents mainly have a positive attitude toward their municipality and the mining industry. Sodankylä was considered a safe, attractive, and clean place to live, and most of the respondents were satisfied with their social networks in the locality. By and large, however, the assessments were more negative than before with the exception of residents' possibility to participate in and influence municipal affairs.

The respondents felt that mining had affected positively the municipal economy and employment and career options. On the whole and compared to the previous surveys, the respondents' experiences of the impacts of the industry in the locality had clearly turned more negative. In particular, they were dissatisfied with mining's impact on the supply and cost of housing and property in Sodankylä.

As the previous surveys have shown, the acceptability of the mining industry is strongly linked with the industry's effects on employment and the economy, and with the experienced and anticipated environmental impacts. According to the survey, the mining industry had strengthened the local economy by creating jobs and a demand for services. The respondents felt that the jobs offered by the industry attract working-age people and thereby affect the municipal population structure in a positive way.

Adverse environmental effects were seen as a downside of the positive effects on the economy. The most often reported problems were adverse effects on lakes, rivers, the landscape, and natural plants and animals. Practical and recreational uses of nature were also considered casualties of the mining industry. On the whole, environmental impacts were reported more than before. Besides the experienced adverse environmental effects, the opinions of the respondents were affected by mining-related environmental risks. Anticipation of potential future adverse effects was present in the replies, and many respondents called for more efficient supervision by the authorities and open communication by both authorities and companies.

As regards the acceptability of mining, it is important that residents get enough information about local projects. Clear, comprehensible, and punctual communication by the authorities

and companies helps to reinforce trust and thereby contributes to the acceptability of the industry in the locality. People's possibilities to influence decision making in their municipality are clearly linked with their experience of the locality.

Advancing the residents' participation is in fact important in terms of mining companies' social license to operate, the fair distribution of adverse effects and benefits, and a positive experience of one's home municipality.

In matters concerning the mining industry, trust in various actors divided the respondents profoundly based on their attitudes toward the industry. Except for the scientific community, the proponents and opponents trusted different actors. Those with a supporting attitude trusted supervisory authorities and mining companies, whereas those with a critical attitude trusted mostly environmental organisations and the Reindeer Herders' Association. The divergence of trust is problematic, because it hinders a constructive discourse on mining-related affairs in the municipality.

This was the fourth time that Sodankylä residents recounted their views on the effects of the mining industry through a survey implemented by the University of Lapland. Regular recording of local views and experiences provides valuable information on the cumulative impacts of the mining industry for both the municipality and the mining companies. In terms of the sustainable development of the company operations and the municipality, it is desirable that the follow-up surveys are continued in the future.

References

- Lapin Kansa (9.6.2020) Tutkimus: Enemmistö kolarilaisista kannattaa kaivoshanketta – Eniten huolettavat Hannukaisen ympäristövaikutukset. Retrieved 21.6.2023:
<https://www.lapinkansa.fi/tutkimus-enemmisto-kolarilaisista-kannattaa-kaivos/2597865>
- Lapin Kansa (9.11.2022) Kaivokset nousivat verokärkeen Lapissa – katso tästä oman kuntasi kovimmat yhteisöveron maksajat. Retrieved 21.6.2023:
<https://www.lapinkansa.fi/kaivokset-nousivat-verokärkeen-lapissa-katso-tasta/5080560>
- Lapin Kansa (22.5.2023) Ikkarin kaivoksen purkupuutettiin, syanidiliuotukseen ja muihin ympäristövaikutuksiin voi nyt ottaa kantaa. Myös Sakatin yva-täydennys on lausunnolla. Suhangon ympäristöluvan päivitys on jätetty aluehallintovirastoon. Retrieved 27.6.2023:
<https://www.lapinkansa.fi/ikkarin-kaivoksen-purkupuutettiin-syanidiliuotukseen-/5555052>
- Mononen Tuija & Suopajärvi Leena (toim.) (2016) Kaivos suomalaisessa yhteiskunnassa. Lapin yliopistokustannus, Rovaniemi.
- Municipality of Sodankylä (2018) Sodankylä Municipality's Mining Programme 2018-2021. Principles of economically, socially and ecologically sustainable mining. Retrieved 27.6.2023:
https://static1.squarespace.com/static/5649b47fe4b0b9e2752c60c9/t/5ba35cf5b8a045210e1272bc/1537432833401/Sodankyl%C3%A4n_kaivosohjelma_EN_v12_WEB.pdf
- Peltonen Lasse (2016) Kaivostoiminnan legitimitietin muotoutuminen: paikallisesta hyväksyttävyydestä yhteiskuntakelpoisuuden ymmärtämiseen. Kirjassa Mononen Tuija & Suopajärvi Leena (toim.) (2016) Kaivos suomalaisessa yhteiskunnassa. Lapin yliopistokustannus, Rovaniemi. Sivut 135–159.
- Tilastokeskus. 11re -- Väestö iän (1-v.) ja sukupuolen mukaan alueittain, 1972–2022. Retrieved 3.5.2023:
https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__vaerak/statfin_vaerak_pxt_11re.px/
- Tilastokeskus. 11rf -- Väestö iän (1-v.) ja sukupuolen mukaan alueittain kunkin tilastovuoden aluejaolla, 2003–2022. Retrieved 3.5.2023:
https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__vaerak/statfin_vaerak_pxt_11rf.px/table/tableViewLayout1/
- Tilastokeskus. 115i -- Työlliset alueen, toimialan (TOL 2008), sukupuolen ja vuoden mukaan, 2007–2021. Retrieved 3.5.2023:
https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__tyokay/statfin_tyokay_pxt_115i.px/
- Tilastokeskus. 115b -- Väestö alueen, pääasiallisen toiminnan, sukupuolen, iän ja vuoden mukaan, 1987–2021. Retrieved 3.5.2023:
https://pxdata.stat.fi/PxWeb/pxweb/fi/StatFin/StatFin__tyokay/statfin_tyokay_pxt_115b.px/table/tableViewLayout1/