

Working Paper: TOOLS FOR MONITORING SOCIAL IMPACTS OF LARGE-SCALE INDUSTRIES

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Contents

1 Introduction.....	2
2 Social impacts are diverse	3
3 Tools for monitoring social impacts	4
3.1 Questionnaires	4
3.2 Indicators.....	5
3.3 Thematic interviews	5
3.4 Written stories.....	6
3.5 Most significant change –model.....	6
3.6 SWOT-model.....	6
3.7 Participatory GIS.....	6
4 Conclusions.....	7
References.....	8
Appendix 1, Questionnaire.....	9
Appendix 2, Example of thematic interview structure.....	19
Appendix 3, Example of SWOT model.....	22

1 Introduction

The aim of the paper is to introduce municipalities in the Northern periphery to a selection of tools to monitor social impacts caused by large scale industries. In the REGINA project, monitoring social impacts (MSI) is a base for the local *Social impact management plan (SIMP)*, which will be “a formal document and associated management system that outlines the strategies to be undertaken during the various phases of development (including closure) to monitor, report, evaluate, review and proactively respond to change”.¹

The work is carried out as part of a 3-year interregional project with the title Regional Innovation in the Nordic Arctic and Scotland with a special focus on regions with Large scale industries (REGINA) where a main task is to support local communities and municipalities to be aware of and monitor several kinds of impacts so they can prepare for the influence of large scale industries and hopefully be able to mitigate potential negative impacts and strengthen the positive ones.

In legal procedures for large-scale industries such, as environmental impact assessments (EIA) and permitting procedures, the main focus in Scandinavia is often on environmental issues. Social impact assessment (SIA) is conducted as part of the EIA in the planning phase of large scale industries. When social impact assessments are carried out they are financed by the large scale industry applying for a license for utilization of an area. It is an important part of the planning phase to ensure involvement of citizens and include their perspectives and considerations into the construction and operation plans. However, there are some limitations in SIA procedure. For example, when social impact assessment is conducted before the implementation of project, it is mostly about people’s expectations or feelings about the forthcoming industry. This illustrates a gap where legal procedures lack requirements in consistently monitoring social impacts *throughout* the operation of the large scale industries.

This is why a key objective of the Regina project is to monitor the social impacts of large-scale industries during operation of the large scale activities. An important distinction between assessing and monitoring is that monitoring social impacts is an ongoing activity and not done only as part of the planning phase of the project. To monitor social impacts, as well economical and/or environmental, of the large-scale industries is a benefit for everyone in the local communities. For the company it tells e.g. about changes in the attitudes of local people, which is necessary to avoid social risk and make the development of the project more predictable. For the host municipalities MSI brings important information to help to make decisions caused by the development of the industries. For the local people, MSI opens a way to tell about their observations, meanings and opinions related to the changes experienced in their own life and in the community.

The trend today is that people must have the right to be heard in decisions that are concerning their community and surrounding environment². For example the idea of environmental justice is to ask: “who will benefit from large-scale industries and who will share the environmental burdens”³. Also, in the extractive industries the concept of social license to operate (SLO) stresses that the mining project should seek to be accepted by the local community⁴.

¹ Franks & Vanclay 2013; see also Franks 2012

² Zillman 2002

³ Nygren 2014

⁴ e.g. Prno & Slocombe 2012; Prno 2013

2 Social impacts are diverse

According to the International Association for Impact Assessment (IAIA) social impacts are “intended or unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions.”⁵ In 2015 IAIA provided a new guide book for social impact assessment and there social impact is “understood as something that is experienced or felt, in perceptual or corporeal sense at the level of an individual, social unit (family, household/collectivity or community/society”.⁶ The definition is extensive and suggests that social impacts create change in various spheres of life: culture, community, political systems, environment, health, way of life, personal/property rights, and fears and aspirations.

For the purposes of empirical studies there are check-lists of different kinds of impacts. Table 1 lists guidelines for understanding social impacts from various sources⁷, and also empirical case- studies of social impacts in mining industry⁸. The table aims to help municipalities in the Regina project to identify the critical issues in the developments of large-scale industries in their own contexts.

Table 1 Examples of social impacts in different studies

Themes Authors →	Burdge 1995	Vanclay 2002	Asselin & Parkins 2009	Lockie et al. 2009	Franks 2012	Petkova et al. 2014
Demographic change	Population impacts., e.g. population change, temporary workers, seasonal residents, relocation, dissimilarity in age, gender, racial or ethnic composition	Health and social well-being e.g. health, subjective well-being, emotions	Population impacts	Demographic change	Social and cultural change; e.g. impacts on population and demographics, labor, gender and vulnerable groups	Demographic change
Institutional change; including human rights and possibilities for participation	Community /institutional arrangements, e.g. attitudes, interest group activity Community infrastructure needs e.g. change in community infrastructure, land acquisition and disposal	Institutional, legal, political and equity impacts e.g. participation, human rights, distribution of impacts Housing	Community/Institutional arrangements and infrastructure impacts	Demand for human services Demand for and cost of access to housing and accommodation Strength of local and regional institutions for planning and governance Opportunities for ethnic groups (here Aboriginal people)	The process of change, e.g. impacts on community engagement, consent, participation, remedy, agreements, community development Human rights and security	
Social change; including changes in community,	Conflicts between local residents and newcomers	Family and community impacts e.g.	Individual and family level impacts	Community participation and integration	Social and cultural change; e.g. social infrastructure and	

⁵ Vanclay 2003

⁶ Vanclay et al. 2015

⁷ Vanclay 2002; Franks 2012

⁸ Asselin & Parkins 2009; Lockie et al. 2009; Petkova et al. 2009

family and individual level	e.g. introduction of new social classes, change in the industrial focus of the community	family structure, social networks, cohesion Indicative gender relations impacts e.g. different gender groups and their rights, division of work, emancipation	Crime	services, crime and social order, culture and customs, labor, gender and vulnerable groups	
	Individual and family level impacts e.g. social networks, perceptions of public health and safety, change in leisure opportunities				
Social change; work and working conditions			Traffic and fatigue		Atypical work schedules
Cultural and natural heritage change; including environmental impacts experienced by the people	Effects on known cultural, historical and archaeological resources	Cultural impacts e.g. integrity of a culture, cultural and natural heritage Quality of the living environment e.g. liveability of the neighborhood and workplace, biophysical impacts	Environmental impacts	Socio-environmental change, e.g. impacts on pollution and amenity, resources (access, competition), resettlement, disturbance	Environment and amenity Ethnic groups; (here aboriginal) cultural heritage
Socio-economic change	Employment and occupational opportunities	Economic impacts and material well-being e.g. wealth and prosperity of individuals and the community	Employment opportunities and labor availability Business opportunities and constraints	Economic change; e.g. impacts on distribution of benefits, inflation/deflation, infrastructure	Business and employment opportunities and constraints Demand for and cost of access to accommodation

3 Tools for monitoring social impacts

There are two types of data that can be used in monitoring social impacts: quantitative and qualitative. Quantitative data consists of numerical information; e.g. statistics or is based on questionnaires. Qualitative data can be all kinds of material; interviews, pictures, newspaper articles, discussions in social media etc. Whatever the data, the most important thing is that it is collected systematically and based on the research question (for what question the data is answering). Also, results have to be reported openly and also the limitations of the research must be explicitly expressed.

There are several kinds of ways to gather the data. Some of them are presented in the following text.

3.1 Questionnaires

Questionnaires are useful when it is necessary to reach a large audience, such as the residents of the municipality. Questionnaires can be delivered to informants by post or by using internet programs (e.g. Webropol). One challenge with questionnaires can be a low respondent rate; nowadays the rates are

around 15-30 % in postal surveys. If the survey is done by using the Internet it might be difficult to reach all groups of the community (e.g. elderly people). Such issues have to be considered. An example of a survey developed as part of the Regina –project (appendix 1) gives an overview, a general picture of the present attitudes and experienced impacts of the mining developments in Sodankylä municipality. It was sent by post to 600 residents and was also open in municipality’s net-pages.

3.2 Indicators

An indicator is a statistical measure (variable) used to monitor change in social phenomenon.⁹ Commonly known indicators are unemployment rate, gender ratio, or income level. Relevant indicators are useful but it can be a challenge to draw conclusions based on some indicators since many factors influence such numbers (e.g. the impact on employment from large scale activities). To get a holistic picture it is useful supplement them with other factors such as changes in state policy, fluctuations of economic markets, or developments in different fields of industry¹⁰. Also, there is not always relevant and updated data from municipality level (e.g. indirect jobs provided by mining-sector are difficult to estimate). Furthermore, it is possible that data about family and community dimensions are missing¹¹.

However, there have been several projects with the aim to develop economic, environmental and social indicators for large-scale industries.¹² Also, a comprehensive attempt has been to create *Arctic social indicators*, which would measure things like (1) health and population, (2) material well-being, (3) education, (4) cultural well-being and cultural vitality, (5) contact with nature (6) and fate control. Especially tailored themes for the North are e.g. contact with nature and fate control, both relevant also for assessing the impacts of large-scale industries.¹³

3.3 Thematic interviews

A qualitative approach is useful in a situation where the aim of the research is to get information about more profound dilemmas or local conflicts where it is necessary to understand peoples’ experiences more in depth. Thematic interviews can also serve as a preparation for designing a questionnaire to ensure all relevant questions for the local habitants are included. It can be difficult for the researcher to create a questionnaire without having existing knowledge about the issues at stake in the municipality.

An example of a qualitative study carried out as a part of Regina-project was about mothers, who have quite recently moved to Sodankylä, some of them because of their husband’s or their own work in the mining industry m. In Sodankylä, and in Northern sparsely populated areas in general, as noted also in Regina project, the main demographic challenge is out-migration of young women. Hence, if the community gets new female residents and families moving to the area e.g. because of the mining, it is important to pay attention to their wellbeing.

In the Sodankylä case study, the researcher contacted mothers with the help of maternity clinic and reached 10 mothers with small children. Four group interviews were carried out, with mothers aged 28-38 years discussing about Sodankylä as a place to live and about their and their families wellbeing. Interview structure was thematic and it was based on scientific literature, basically on sociologist Erik Allardt’s¹⁴

⁹ Vanclay et al. 2015

¹⁰ Hutchins & Sutherland 2008

¹¹ Asselin & Parkins 2009

¹² Azapagic 2004; see Uhlmann et al. 2014

¹³ Arctic Social Indicators 2010

¹⁴ Allardt 1976

dimensions of wellbeing: having, loving and being. Having refers to economic and material aspects of life, loving to social relations and being refers to self-realization. Interviews were recorded, transcribed and analyzed with the help of research literature.

Interviews are a very popular way of collecting data in social sciences but it is quite a time-consuming way: to find informants, interview them, transcribe their talk to text and then analyze often a large data takes a lot of time. In some cases interviews can be done in a journalistic way; to have few exact questions and then make phone interviews among stakeholders.

3.4 Written stories

Written stories can be used as a tool to monitor social impacts and it is in particular efficient in reaching certain groups such as the youth. The method was used as part of understanding young people's perceptions regarding mining. A group of young people aged 15-16 and about to leave primary school in Kittilä, where *Kittilä gold mine* is located shared their present day experiences in everyday life, and also imagine their own and community's future. In the first page they were asked about their sex (male/female), place of living and place of birth. Then the young people were asked to tell three best and three worse things in their localities. In a second page they were asked to imagine their lives 10 years after and write a story about their life in that situation. The idea was to see how many of them planned to stay in Kittilä and also, work and have a career in the mining industry.

3.5 Most significant change –model

The most significant change model is simply an idea to ask people what has been or what they expect to be the most important result of a new issue, of a change, that community is facing. It can be asked for example, if the mine will be opened in the municipality what will be the most significant changes in (1) social and health care, (2) schooling and education, (3) economy of the municipality and (4) in the community life in general. One A4-sheet is enough for the answers and this method can be used e.g. in municipal council's meeting or in any other meetings where people are gathered together.

3.6 SWOT-model

SWOT refers to strengths, weaknesses, opportunities and threats; hence the model includes present day situation as well future aspects. Basically SWOT is only a sheet with four columns where people can write their views and visions. For example, in the questionnaire for Sodankylä municipality was asked, following the SWOT-model, what are positive or negative impacts of mining to informants' own life and what are the opportunities and threats that they see in mining developments (appendix 3). SWOT can be used as a starting point of collaborative planning; in a work shop different views and visions can be grouped and then voted what are the most important positive/negative impacts and opportunities/threats. After voting the next round can concentrate to actual steps by answering e.g. how positive impacts could be strengthened and negative mitigated, how to make use of opportunities and avoid possible threats.

3.7 Participatory GIS

Participatory GIS (geographical information system) gathers place specific data with maps and questionnaires, often with open questions. People can mark to the map e.g. environmental impacts of large-scale industries and describe how they felt these impacts. More information about the general use of GIS in relation to land use and foresight techniques can be found in REGINA working paper *Local land use planning: Guidance to spatial data, geographic information systems (GIS), and foresight analysis*.

4 Conclusions

Whatever tools used for monitoring the social impacts, it is important to remember that identification and assessment of impacts is not an end result, it is a starting point.

To monitor social impacts is a process that includes different phases; (1) understanding the issue, (2) predicting, analyzing and assessing the likely impact pathways, (3) developing and implementing strategies and (4) designing and implementing monitoring programs.¹⁵ Based on the process hopefully good and joint decisions and actual steps are taken that will lead to positive development for the industry and especially for their host communities.

¹⁵ see different phases more detailed, Vanclay et al. 2015.

References

- Allardt, E. 1976 *Sosiologia [Sociology]*. WSOY, Helsinki.
- Arctic Social Indicators. 2010 Follow-up to the Arctic Human Development Report. Nordic Council of Ministers, Copenhagen.
- Asselin, J., Parkins, J.R. 2009 Comparative case study as social impact assessment: possibilities and limitations for anticipating social change in the Far North. *Social Indicators Research* 94: 483-497.
- Azapagic, A. 2004 Developing a framework for sustainable development indicators for the mining and minerals industry. *Journal of Cleaner Production* 6(12): 639–662.
- Burdge, R.J. 1995 *A community guide to social impact assessment*. Social Ecology Press, Middleton Wisconsin.
- Franks, D. 2012 *Social impact assessment of resource projects*. International Mining for Development Centre. Mining for Development: Guide to Australian Practices.
- Franks, D.M., Brereton, D., Moran, C., Sarker, T. & Cohen, T. 2010 *Cumulative impacts – a good practice guide for the Australian coal mining industry*. Centre for Social Responsibility in Mining & Centre for Water in the Minerals Industry, Sustainable Minerals Institute, the University of Queensland. Australian Coal Association Research Program. Brisbane.
- Franks, D.M. & Vanclay, F. 2013 *Social Impact Management Plans: Innovation in corporate and public policy*. *Environmental Impact Assessment Review* 43: 40-48.
- Hutchins, M.J. & Sutherland, J.W. 2008 An exploration of measures of social sustainability and their application to supply chain decision. *Journal of Cleaner Production* 16: 1688-1698.
- Lockie, S., Franettovich, M., Petkova-Timmer, V., Rolfe, J. & Ivanova, G. 2009 Coal mining and the resource community cycle: A longitudinal assessment of the social impacts of the Coppabella coal mine. *Environmental Impact Assessment Review* 29: 330-339.
- Nygren, A. 2014 *Eco-imperialism and environmental justice* In: Lockie S, Sonnenfeld DA, Fisher DR (eds.) *Routledge international handbook of social and environmental change*. Routledge, Abingdon, Oxon, New York, 58-69.
- Petkova, V., Lockie, S., Rolfe, J. & Ivanova, G. 2014 *Mining developments and social impacts on communities: Bowen Basin case studies*. *Rural Society*, 19 (3): 211-228.
- Prno, J.D. & Slocumbe, S. 2012 Exploring the origins of 'social license to operate' in the mining sector: Perspectives from governance and sustainability theories. *Resources Policy* 37: 346-357.
- Prno, J. 2013 An analysis of factors leading to the establishment of a social license to operate in the mining industry. *Resources Policy* 38: 577-590.
- Uhlmann, V., Rifkin, W., Everingham, J.A., Head, B & May, K. 2014 *Prioritising indicators for cumulative socio-economic impacts to characterise rapid development of onshore gas resources*. *The Extractive Industries and Society* 2014, <http://dx.doi.org/10.1016/j.exis.2014.06.001>.
- Vanclay, F. 2002 *Conceptualising social impacts*. *Environ Impact Assess Rev* 22:183-211.
- Vanclay, F. 2003 *International Principles For Social Impact Assessment*. *Imp Assess and Project Appraisal* 21:5-12
- Vanclay, F., Esteves, A.M., Aucamp, I. & Franks, D.M. 2015. *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*. International Association for Impact Assessment.
- Zillman, D.N. 2002 *Introduction to public participation in the twenty-first century*. In: Zillman, D.N., Lucas, A.R. & Pring, G.R. (eds.) *Human rights in natural resource development: public participation in the sustainable development of mining and energy resources*. Oxford University Press, Oxford. 1-7.

Appendix 1, Questionnaire

General questions

1. To what extent do the following statements match your opinion about Sodankylä?

Circle the alternative that corresponds to your view.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The atmosphere in Sodankylä is active	5	4	3	2	1
The place is a nice/comfortable to live in	5	4	3	2	1
Sodankylä is a safe place to live in	5	4	3	2	1
The image of the municipality is positive	5	4	3	2	1
The municipal authorities responsibly promote the interests of the local people	5	4	3	2	1
The environment is clean and tidy	5	4	3	2	1
There are people with similar interests and thoughts as I have	5	4	3	2	1
I have a good social network (e.g. friends and relatives) in the locality	5	4	3	2	1

2. How satisfied are you with the following issues in Sodankylä municipality?

Circle the alternative that corresponds to your view.

	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied	I don't know
Public services provided by the municipality	4	3	2	1	0
Private services in the locality	4	3	2	1	0
The condition of the roads and streets	4	3	2	1	0
Safety	4	3	2	1	0
Recreation, parks and playgrounds	4	3	2	1	0
Opportunities for outdoor activities in nature	4	3	2	1	0
Free time activities	4	3	2	1	0
Supply of cultural and other events	4	3	2	1	0
Education, work and career opportunities	4	3	2	1	0
Land use and town/local planning	4	3	2	1	0
The price level of housing	4	3	2	1	0
The selection of houses/properties	4	3	2	1	0

If you wish, you can explain or complete your answers below.

Assesment of the impacts of mining

3. How would you assess the impacts of mining on your life now and in the future?

Please describe your views below.

Present	What are the positive impacts of mining on your life?	What are the negative impacts of mining on your life?
Future	What future possibilities does mining bring to your life?	What threats does mining bring to your life?

4. To what extent do the following statements match your opinion?

Circle the alternative that corresponds to your view.

	Strongly agree	Agree	Netural	Disagree	Strongly disagree
Mining has had a positive impact on the atmosphere in the locality	5	4	3	2	1
Mining has increased the attractiveness of the locality	5	4	3	2	1
Mining has decreased safety in the locality	5	4	3	2	1
Mining has uplifted the image of the municipality	5	4	3	2	1
The municipal authorities listen to local people in mining-related issues	5	4	3	2	1
Mining has harmed the environment	5	4	3	2	1
Mining has brought to the area people who share my views	5	4	3	2	1
Mining has brought new possibilities for social networking	5	4	3	2	1

5. Has mining affected the following issues in Sodankylä municipality?

Circle the alternative that corresponds to your view.

	Signifigant positive impact	Positive impact	Negative impact	Significant negative impact	No impact
Services provided by the municipality	4	3	2	1	0
Private services in the locality	4	3	2	1	0
The condition of the roads and streets	4	3	2	1	0
Safety	4	3	2	1	0
Recreation, parks and playgrounds	4	3	2	1	0
Opportunities for outdoor activities in nature	4	3	2	1	0
Free time activities	4	3	2	1	0
Supply of cultural and other events	4	3	2	1	0
Education, work and career opportunities	4	3	2	1	0
Land use and town/local planning	4	3	2	1	0
The price level of housing	4	3	2	1	0
The selection of houses/properties	4	3	2	1	0

If you wish, you can explain or complete your answers below.

6. To what extent do you agree/disagree with the following statements?

Circle the alternative that corresponds to your view.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	I don't know
I find mining and the related things it interesting	5	4	3	2	1	0
The mining operations at the locality are acceptable	5	4	3	2	1	0
The locally experienced adverse effects of mining are outweigh the benefits	5	4	3	2	1	0
Economic growth should be a priority, even if it means that the environment suffers to some extent	5	4	3	2	1	0
Mining companies should fund the public services (e.g. the infrastructure) more than they presently do	5	4	3	2	1	0
Mining companies operating in Finland should have Finnish ownership	5	4	3	2	1	0
There should be a special tax on mining companies operating in Finland	5	4	3	2	1	0
Economic fluctuation makes mining communities vulnerable	5	4	3	2	1	0
I can accept a decrease in my standard of living to protect nature	5	4	3	2	1	0
Mining operations can be organized more responsibly in Finland than in the least developed countries	5	4	3	2	1	0
Mining and sustainable development don't rule each other out	5	4	3	2	1	0
Science and technology can solve the problems of sustainability in future mining operations	5	4	3	2	1	0
Mining is essential to sustain the present standard of living	5	4	3	2	1	0
The self-sufficiency of the European Union in ore production needs to be strengthened	5	4	3	2	1	0

If you wish, you can explain or complete your answers below.

7. How would you rate the Kevitsa mine and Pahtavaara mine projects regarding the following issues?

The easiest way to rate the mining projects is to fill one column at a time. Use Finnish school grades: 10 outstanding, 9 excellent, 8 good, 7 satisfactory, 6 moderate, 5 passable, 4 unsatisfactory/fail.

If you don't want to or can't estimate some of the sections you can leave them empty.

	Kevitsa	Pahtavaara
Sufficiency of information in mining related issues		
Reliability of the information concerning the mining project		
The location of the deposit		
Estimated operating time of the mine		
The possibilities of the local people to participate in decision making		
Compensation of possible adverse effects		
Monitoring of the operations		
The company's engagement in aftercare		
Possibility to express one's opinion openly		
The company's engagement in developing the municipality		

8. How would you rate the Sakatti research project regarding the following issues?

Use Finnish school grades: 10 outstanding, 9 excellent, 8 good, 7 satisfactory, 6 moderate, 5 passable, 4 unsatisfactory/fail.

If you don't want to or can't estimate some of the sections you can leave them empty.

	Sakatti
Sufficiency of information in mining-related issues	
Reliability of the information concerning the mining project	
The location of the deposit	
The possibilities of the local people to participate in decision making	
Compensation of possible adverse effects	
Monitoring of the operations	
Possibility to openly express one's opinion	

If you wish, you can explain or complete your answers below.

9. To what extent do you agree/disagree with the following statements?

Circle the alternative that corresponds to your view.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	I don't know
The allocation of responsibility in monitoring of the mining activities is clear	5	4	3	2	1	0
Monitoring of the mining activities is not effective enough	5	4	3	2	1	0
The environmental authorities are trustworthy in monitoring the impacts of the mining activities in Sodankylä	5	4	3	2	1	0
Mining-related legislation and monitoring should be tightened even if it would decrease foreign investments	5	4	3	2	1	0
The licensing of mining activities is not binding enough	5	4	3	2	1	0
The licenses for mining are given on reasonable grounds	5	4	3	2	1	0

10. To what extent do you agree/disagree with the following statements?

Circle the alternative that corresponds to your view.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	I don't know
The mining sector has employed local people	5	4	3	2	1	0
There is enough skilled labor force in the locality for the needs of the mining sector	5	4	3	2	1	0
The municipal authorities have enough knowledge about mining-related issues	5	4	3	2	1	0
The decision-making processes of mining are comprehensible	5	4	3	2	1	0
It is easy for the local people to take part in decision-making processes related to mining	5	4	3	2	1	0
The local people are informed about mining-related issues right after the information becomes available	5	4	3	2	1	0
The linkage between the municipality and the mining companies is too strong	5	4	3	2	1	0
Mining has had a positive impact on the population	5	4	3	2	1	0
The local economy has benefitted from the mining activities	5	4	3	2	1	0
The mines have not created enough possibilities for local businesses	5	4	3	2	1	0
Mining is essential to the vitality of the municipality	5	4	3	2	1	0
The reconciliation of mining and other livelihoods in the locality has been successful	5	4	3	2	1	0

11. Have you experienced any of the following adverse impacts of mining?

Circle the alternative that corresponds to your view.

	Significant impact	Moderate impact	Minor impact	No impact
Impact on water systems	1	2	3	4
Impact on land animals/fish/plants	1	2	3	4
Impact on landscape	1	2	3	4
Dust	1	2	3	4
Noise	1	2	3	4
Mining tremors	1	2	3	4
Smell	1	2	3	4
Lighting	1	2	3	4
Radiation/hazardous chemicals	1	2	3	4
Traffic safety	1	2	3	4
Impact on picking berries or mushrooms	1	2	3	4
Impact on fishing/hunting	1	2	3	4
Impact on recreation	1	2	3	4
Impact on the tourism industry	1	2	3	4
Impact on reindeer herding	1	2	3	4
Impact on agriculture/forestry	1	2	3	4

12. Have mining operations had some other significant impacts? Please specify.

13. Please describe the emotions the mining operations in the locality raise in you?

Finally, we would like to ask a few background questions in order to group the answers.

The background data are used for scientific purposes only. The results will be published in a way that an individual respondent cannot be identified.

If you don't want to answer a question, you can leave it empty.

14. Gender

- 1 Female
- 2 Male

16. Year of birth

15. For how long have you lived in Sodankylä?

_____ years

17. How many people live in your household?

18. Location of your house/apartment

- 1 Sodankylä Centre
- 2 Aska
- 3 Hinganmaa
- 4 Jeesiö
- 5 Kelujärvi
- 6 Kersilö
- 7 Kierinki
- 8 Kukasjärvi
- 9 Lismanaapa
- 10 Lokka

- 11 Luosto
- 12 Madetkoski
- 13 Moskuvaara
- 14 Orajärvi
- 15 Petkula
- 16 Puolakkavaara
- 17 Purnumukka
- 18 Rajala
- 19 Raudanjoki
- 20 Riipi

- 21 Sassali
- 22 Sattanen
- 23 Seipäjärvi
- 24 Siurunmaa
- 25 Syväjärvi
- 26 Tankavaara
- 27 Torvinen
- 28 Uimaniemi
- 29 Unari
- 30 Vaalajärvi
- 31 Vuojärvi
- 32 Vuotso

19. Do you or does someone else in your household work at a mine?

20. Do you or does someone else in your household own property on an existing or planned mine site?

1 Yes

2 No

1 Yes, where? _____

2 No

21. Life situation (*choose an option closest to your life situation*)

1 Entrepreneur

2 Manager / Professional

3 Technician / associate professional

4 Employee

5 Unemployed

6 Student

7 Pupil

8 Retired

9 Other, please specify

16. Gross income (*an estimate of the combined monthly income of your household in euros*)

1 Less than 1000

2 1,000 – 2,999

3 3,000 – 4,999

4 5,000 – 6,999

5 7,000 – 8,999

6 9,000 – 10,999

7 11,000 euros or more

17. Education (*The highest level of education completed*)

- 1 Primary and secondary or corresponding school
 - 2 High school or vocational school
 - 3 College or polytechnic
 - 4 University
 - 5 Something else, please specify
-

18. What is the field of your vocational or higher education?

- 1 Education / teaching
 - 2 Arts and Humanities
 - 3 Business and economics
 - 4 Tourism and/or catering
 - 5 Transport
 - 6 Social sciences
 - 7 Natural sciences, mathematics and statistics
 - 8 Technical education
 - 9 Agriculture and forestry
 - 10 Health care and social services
 - 11 I don't have a vocational education
 - 12 Something else, please specify
-

If you have anything else in mind about your municipality, mining, or this questionnaire, feel free to write down your thoughts here.

Appendix 2, Example of thematic interview structure

Marianne Kuisma, University of Lapland

WELL-BEING EXPERIENCES OF MOTHERS, WHO HAVE MOVED TO SODANKYLÄ

Four group interviews were held in April, 2016 at Sodankylä. The interviewees were contacted with the help of maternity clinic and reached 10 mothers. Interview structure was thematic and it was based on sociologist Erik Allardt's dimensions of wellbeing: having, loving and being. Interviews happened in groups, where the discussion was held according to the themes. Questions below give direction to an open discussion.

INTERVIEW QUESTIONS

General information

Age?

How many kids do you have?

How long have you lived in Sodankylä?

LOVING (refers to social relations, friendships, marriage, communality, and sense of belonging somewhere or some group)

Life in Sodankylä:

What is it like to live here in Sodankylä?

Do you have friends at Sodankylä?

Who is present in your daily life?

With whom do you spend your free time?

Safety net:

Do you keep in contact with your relatives?

Do you have safety net around you in Sodankylä?

What kind of safety net would you need here?

Could the municipality help your family somehow?

Integrating to society:

Have your kids integrated/adjusted to Sodankylä?

Has your spouse integrated/adjusted to Sodankylä?

Do you feel like you have time to take care of your relationship with your partner?

Do you feel like the municipality offers enough support for you to take care of your relationship?

Municipality services:

Are you happy with the municipality's services?

Do you feel like families are appreciated?

Do you feel like your opinions are listened to in the municipality?

Have you participated in municipality's decision making?

HAVING (refers to economic, work, education, health, ecological practices)

Living:

Did you find a cozy home from Sodankylä right away when you moved?

Have you had any problems or challenges concerning living?

Did the location of the mine affect where you decided to live?

Work:

What kind of work situation you and your spouse have?

Do you work outside home or are you taking care of the kids at home?

What kind of good/bad sides are in your or your spouse's work situation?

What kind of working hours do you or your spouse have?

Are there any challenges in your daily life concerning childcare or hobbies?

Do you feel like you can affect your work situation or working hours?

Mine work:

If you or your spouse are working at the mines, is there something characteristic about the work that you would like to share?

How does your or your spouse's work affect your family's daily life?

How does your or your spouse's work situation look like in the future?

What hopes or dreams do you have concerning mine work?

Financial situation:

How do you feel about your financial situation?

Do you feel like you can affect your financial situation?

Education:

Are you studying?

Would you like to study or have a degree from another study field?

Do you think the municipality of Sodankylä offers you enough variety in educational field?

Health:

What do you think about your or your family's general health at the moment?

Are there any concerns about your or your family member's health?

Does the municipality of Sodankylä offer you enough health services?

Ecological practices:

Are environmental issues important for you?

Do you think about environment in your daily life?

Do you worry about the environment?

Do you consider what kind of environment the future generations are going to have?

Do you feel concern for the future generations?

BEING (refers to self-expression, sense of coherence; life is comprehensible, manageable and meaningful)

Do you feel like you can express yourself or do things that matter to you?

Do you feel like living a meaningful life?

Do you have worries?

Do you feel like you can affect your own life or things that happen in your life?

Future dreams: (empowering questions)

If you could have an impact on the municipality, what would Sodankylä look like in 5-10 years from now? What would your own life look like?

Appendix 3, Example of SWOT model – an example used in the questionnaire about impacts of mining in Sodankylä municipality.

How would you assess the impacts of mining on your life now and in the future?

<p>What are positive impacts of mining on your own life?</p> <p>"It has offered me a job for 20 years already." "In general, it has increased jobs and tax revenues to the municipality." "The municipality has got more residents." "The level of services has improved." "When I sold my house, I got the price I wanted." "Life in Sodankylä has enlivened along new people" "For the locality and its vitality, the mine has had a great impact. We get purchasing power via mine! Therefore I will have also plenty of work!" "I have relatives at Miner education." "It has impacted in a positive way to businesses."</p>	<p>What are negative impacts of mining on your own life?</p> <p>"Mining threatens important protected areas." "Mining business has already ruined regions forests and rivers. Fish have disappeared." "Possibilities to influence are very weak. The villagers have been heard in different groups, but we haven't had any chance to influence." "Heavy traffic has increased remarkably, but no-one hasn't done anything for the road safety." "Heavy traffic damages roads." "I'm concerned about the nature and water systems staying unpolluted." "Continuing fear that the Sakatti mine will be opened. The Kevitsa mine has ruined the wilderness." "I'm concerned about environmental issues, sometimes even frightened." "It creates insecurity in livelihood." (Reindeer herding)</p>
<p>What future possibilities does mining bring to your life?</p> <p>"It can increase the value of properties." "The municipality develops and there will be money for infrastructure and increasing leisure activities. Families and youth will get on well." "It will stop the population decreasing and keep the services in the municipality." "I believe the services will stay better and develop in the locality." "Services will diversify." "Hopefully and possibly the new mine (Sakatti) would bring new job opportunities for people."</p>	<p>What threats does mining bring to your life?</p> <p>"Waters will become polluted and protected areas will be ruined." "Recreation possibilities will diminish." "The traffic will increase too much and bring insecurity and noise." "The noise and dust will disturb if the mine comes too close to living areas." "Hunting grounds will decrease and already weakened fishing waters will be destroyed." "The mining will end." "The mining time is limited." "How to restore the nature after mining." "Reindeer herding will become more difficult." "Hiking and hunting will become more difficult."</p>