Chapter 6
Sustainability and Mining: The Case of the Kola Peninsula

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Abstract This chapter discusses sustainability issues related to two mining companies – JSC "Apatit" and JSC "North-Western Phosphorous Company" – in the towns of Kirovsk and Apatity in the Murmansk region of Russia. These companies have been exploiting apatite-nepheline ore deposits in Khibiny, the largest mountain massif on the Kola Peninsula. The main question posed here is how knowledge about environmental, economic, cultural and social values decision making and knowledge systems are applied in decision making. A case study of Kirovsk and Apatity was undertaken to further understand the local planning regime and sustainability in Kirovsk and Apatity, including environmental integrity, indigenous groups and their subsistence economy, community benefits, effective engagement, and mining companies' self-reporting on sustainability. The main challenges to sustainable mining are identified for the three major stakeholder groups – mining companies, local communities, and government authorities. The chapter concludes that perceptions of sustainable development in these Russian industrial towns are shaped by the dominant role mining industry plays on the Kola Peninsula in influencing the quality of life of local people and their perceptions of environmental concerns, including questions of pollution and landscape aesthetics.

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B. Dale et al. (eds.), *The Will to Drill - Mining in Arctic Communites*, Springer Polar Sciences, DOI 10.1007/978-3-319-62610-9_6

Keywords Arctic mining and sustainability • Social license to operate • Local planning regimes • Environmental integrity • Kola Peninsula • Indigenous people

6.1 Arctic Mining in Kirovsk and Apatity

To many, sustainable development of the Arctic mining industry might sound like a contradiction in terms. Mining has been the backbone of the communities and cities in the Murmansk region since the 1930s and the environmental and social costs have been severe. At the same time, many also expect mining to be an increasingly important driver for the future development of the region, and there is a need to address critical issues relating to how mining can be done sustainably in this part of the Arctic. The focus of this chapter is the relations between mining activities, community development, environmental and indigenous concerns in the towns of Kirovsk and Apatity and their two neighbouring municipalities of the same name, located in Murmansk region in the far northwest of Russia. The chapter considers the positions and activities of various actors in the area surrounding the Khibiny Mountain Range, how they reflect upon the environmental degradation caused by mining operations, and how this is weighed against the economic benefits and social welfare that are supported by mining.

Kirovsk was established in 1929 and Apatity in 1935. The towns were established to provide homes and decent living conditions for people working in the mining industry and their families. These company towns shaped the everyday-life, education, health, networks, communal infrastructure, and welfare of their residents. In the peak years, more than 20,000 people were employed by the mining industry (Koivurova et al. 2015; Riabova and Didyk 2014). These mining operations though, with their intertwined city development and environmental impact, are located on land historically occupied by indigenous (mainly Sami) people, and for more than 20 years there have been efforts to establish a protected area in the Khibiny Mountains, but this has been continuously delayed by new mining operations.

This chapter presents recent ideas on sustainable mining and the social license to operate, and how these concepts apply to the two mining towns. One characteristic of modern Russian traditions is the influence of more than 70 years of communist rule and ideology (1917–1991). Among the surviving traditions of the Soviet period is an authoritarian type of governance, weak civil society institutions, and underdeveloped democratic decision-making procedures (Riabova and Didyk 2014). How do these circumstances influence vital elements of public policy development and the ability to reflect the interests, desires, values and preferences of citizens in planning processes and documents? Together with the other chapters in this book, the particularities of the Russian context may play out as an interesting arena for reflecting upon key assumptions and questions related to the ambitious goal of a sustainable future for Arctic mining communities.

6.2 Sustainable and Socially Acceptable Mining

What does sustainable development mean to mining enterprises and towns? An illustrative and interesting point of departure is the definition of sustainable mining presented by the Ministry of Energy and Mines and the Mining Association of British Columbia (Canada), as being "mining and mineral development that meets the growing needs of all communities while maintaining a healthy environment and vibrant economy for present and future generations" (MEM 2016). The Ministry of Energy and Mines applies several sustainability criteria in connection with their annual Mining and Sustainability Award. Among these are *environment* (actions are being taken to ensure the maintenance and strengthening of long term environmental integrity in the region of influence), *respect for indigenous peoples* (the project/operation respects the rights, culture and values of indigenous peoples), *benefits* (the operation must enhance the potential for creating economic, social and cultural benefits for the local community or region), and *effective engagement* (the relationships with those affected should be characterized by integrity and trust) (MEM 2016). In this chapter, we use these selected criteria for sustainable development to structure and frame the discussion.

The idea of sustainable mining is indeed contested. One point of departure for criticism is that mining of minerals is inherently and by definition unsustainable, and that sustainable development in extractive industries such as mining does not make sense in the same way as extraction of renewable resources such as fisheries, agriculture or forestry. Open-pit mines in particular will always alter the environment and the ecology of an area (Kokko et al. 2015). Thus, in the context of mining, sustainable development should be conceptualized according to ecological and other effects of the mining activity. Sustainable mining is therefore mining that is not ruining or undermining the overall ecological and life-supporting processes in the surrounding area. Only by linking sustainable mining to the reduction and minimization of negative impacts and the maintenance of the integrity of the surrounding ecosystems can the concept of sustainable mining avoid being a contradiction in terms. As stated by Kokko et al. (2015) ecological constraints set particular boundaries that cannot be passed without endangering the idea of sustainability, and economic and social sustainability are possible only within these limits. The relevant question here is therefore: how socially and economically sustainable can a given mining operation be, given the ecological impacts of mining?

A broader approach – and more in line with the mining companies' own understanding and application of the concept – is to put more emphasis on the social and economic elements of sustainable development, as articulated by the Brundtland Commission (WCED 1987:12):

> As for non-renewable resources, like fossil fuels and minerals, their use reduces the stock available for future generations. But this does not mean that such resources should not be used. In general, the rate of depletion should consider the criticality of that resource, the availability of technologies for minimizing depletion, and the likelihood of substitutes being available. Thus, land should not be degraded beyond reasonable recovery.

Here sustainability is understood in terms of environmental recovery and "reasonable" trade-offs between interconnected, but different and highly regarded concerns and values. This way of articulating sustainability resembles Leach et al.'s focus on the site-specific and subjective dimensions to sustainable development (Leach et al. 2010). Depending on the actors and their interests and positions, judgments over what is reasonable environmental degradation may vary considerably. Therefore, regional and national strategic, economic considerations may be used to justify mining activities with extensive or very negative ecological and other environmental effects. In our analysis, sustainable mining refers to mining that focuses on the sustainable development of *local communities* that might depend upon, and are highly influenced by mining companies. To assess and determine site specific sustainability criteria is therefore a democratic process, where multiple stakeholders must be represented. From the literature on participatory planning, the involvement of stakeholders enables the identification of their positions and interests, and allows agreement to be reached on critical issues (Armitage et al. 2011; Hovik et al. 2010; Webler 1995). This is a way to ensure broad support for the decisions taken, which largely determines the success of their implementation (Vik et al. 2011; Vatn 2007; Armitage et al. 2008).

When considering new mining projects, sustainable development is commonly dealt with through environmental impact assessments as well as social and cultural impact assessments (EIAs and SIAs; see Chap. 3) (Becker and Vancley 2003). Although these have evolved as separate practices, EIAs in many cases also include assessments of the social and economic impacts from mining. Critique has been raised that social and cultural aspects have been poorly handled during these processes in many cases (Lockie et al. 2008; Burdge 2002). Recent studies moreover suggest community-controlled impact assessments combined with negotiation of binding agreements between communities and developers. Here, local residents define critical aspects and insight about values and considerations related to positive and negative aspects of mining (O'Faircheallaigh 2017). This includes the wider political factors that must be addressed to shape the impacts of extractive projects.

The concept "social license to operate" (SLO) was coined from within the industry to conceptualise the notion that they need to get approval from the local community and wider society (Riabova and Didyk 2015). This concept explicitly addresses the host community's perception of the project or company, and is increasingly gaining momentum (see e.g. Boutilier and Thomson 2011). An SLO is present when a mining project is having a broad, ongoing approval and acceptance of society to conduct its activities (Prno 2013). Despite the use of the 'licence' terminology, SLO should not be understood as legal relationship between the company and the community. Rather, the license should be interpreted as a voluntary and self-regulated arrangement, established to maintain good relations with the local community (Kokko et al. 2015). Central to the SLO concept are three normative criteria: legitimacy, credibility and trust (Boutilier and Thomson 2011), mirroring key aspects of corporate social responsibility (CSR) (Kokko et al. 2015). Extant studies indicate that SLO is generally not a familiar concept in Russia, while corporate

social responsibility is used more widely (Riabova and Didyk 2014). Interestingly, CSR is perceived as a continuation of the USSR's practices with large state-owned companies that formed an important part of the social infrastructure (Kokko et al. 2015; Riabova and Didyk 2014).

Just like sustainable development and CSR, SLO is also a highly abstract concept, which needs to be interpreted according to time and place (Boutilier and Thomson 2011). If not interpreted and implemented in a transparent manner, efforts to establish an SLO, just like efforts to achieve sustainable development goals, may end up prioritising the interests of certain stakeholder groups, while constraining other interests, ideas, perceptions and expectations in the community. An SLO therefore depends on local people voicing their demands and concerns about the planned or existing mining activity. Typical demands might be to secure a greater share of the benefits, increased or improved participation in decision-making, improved working conditions or ensuring industry practices meet environmental standards (Koivurova et al. 2015).

As with CSR, company efforts to secure and maintain an SLO through support for social activities within the community are motivated by the desire to create a good image in the eyes of the authorities at all levels, to achieve a good reputation in the business arena, as well as to avoid conflict, protest, social tension which may lead to costs and delays (Kokko et al. 2015). The relationship to environmental and sustainability issues and concerns is rarely elaborated in the literature on SLO (but see Wilson 2016). In Russia, with a centralised and authoritarian political system, companies do not necessarily need to secure an SLO to make tough decisions with major consequences. Nonetheless, authoritarian political systems do still prefer their decisions to be supported and deemed legitimate by the local public. But in an authoritarian context with little public involvement it is less likely that local resistance, the failure to secure an SLO, or indeed the withdrawal of an SLO will jeopardize a project. In Russian company towns, like in other Arctic communities, negative environmental impacts from mining enterprises are considered against jobs and social services provided by the same companies. The rather short history of Russian environmentalism however, makes sustainable development less formalised and safeguarded than in other European countries (Oldfield 2002; Martus 2016). Thus, environmental values, standards and projects easily become subjects for negotiations between the Russian mining company and local stakeholders, including NGOs. Still, scholars claim that market mechanisms are the only method by which to facilitate corporate greening in federations like Russia (Crotty and Rodgers 2012).

6.2.1 Case Study Approach

According to the official statistics from the Murmansk government, the population of Kirovsk was 27.250, and Apatity population was 57.398 in 2012 (Municipalities of the Murmansk region 2014). The mining companies operating in both these

municipalities are extracting and processing apatite and nepheline concentrates from the world class deposits in the area. The company Apatit JSC was established in 1929 as a state enterprise, but has been a joint stock company since 1993 and is currently 100% owned by Moscow based PhosAgro, one of the biggest fertilizer manufacturers in the world. The second operation is by the relatively new North-Western Phosphorous Company (NWPC) that in 2007 started development of two deposits of apatite-nepheline in the eastern part of the Khibiny Mountains. NWPC is also among the biggest fertilizer manufacturers in the world. It was founded in 2005 by Acron, a large Russian fertilizer company, to create a new phosphate raw materials base in Murmansk region to supply its downstream facilities. Currently, the apatite concentrate is transported to fertilizer factories in central Russia and then exported abroad, while nepheline concentrate is delivered to Russian aluminium plants (PhosAgro 2016).

This chapter elaborates on earlier published material and conclusions from Didyk (2015), Riabova and Didyk (2014), and Koivurova et al. (2015). In addition to these insights, the chapter is based on empirical material that was collected with the use of multiple data sources and methods, including document analysis of legislative and strategic documents, a questionnaire, and several qualitative interviews. The questionnaire addressed individual perceptions and priorities of environmental, economic, and social values related to mining activities, expressed on the basis of their relative importance for the municipality. Sixteen people took part in the questionnaire survey, which was carried out during fieldwork in Kirovsk and Apatity in March 2015.

Insights about social values were also mapped at a stakeholder meeting with Kirovsk residents at the Apatite Mining-Geological museum, organized by the local research team. Here, the role of the mining industry in municipal development was discussed. The meeting in Kirovsk was attended by thirteen people, which may reflect a modest interest among citizens to participate in public participatory planning. Eight individual interviews were carried out with representatives of the municipalities, hiking organizations, indigenous groups, and tourist companies, and two group interviews were held with people representing three environmental NGOs (ENGOs) in Kirovsk and Apatity. It should be noted that no indigenous groups currently live or practice reindeer husbandry in the area covered by this study. There are however families and individuals of Sami origin living in Apatity and Kirovsk.

Unfortunately, the managers of the local branches of the companies did not make themselves available for interviews, but Apatit JSC provided a written response to questions sent to the CEO. In addition, data were collected during visits to the “Big Wood” downhill ski center, the art venue “Snow Village”, and the Koashva settlement in Kirovsk municipality. Finally, in-depth interviews were held at the Kola Science Center, Russian Academy of Sciences (KSC RAS), with four Russian experts in scientific disciplines that are significant for mining operations, including geology, industrial ecology and economics.

6.3 The Khibiny Mountains: Multiple Actors and Interests

Together with the Lovozero Massif in the east, the Khibiny Mountain Range represents a rare landscape phenomenon on the Kola Peninsula, which is mostly covered by lowlands, marshes and lakes. The mining operations and the city developments are located on land historically occupied by indigenous peoples. The region was inhabited mostly by the Sami people before mineral exploitation started in the 1930s. As a result of collectivization in the early years of the USSR, the Sami were largely resettled in several villages, such as Lovozero, without any compensation (Kokko et al. 2015). Most of the geographical names of mountains, lakes and rivers in the area are of Sami origin. For example, one of the largest mountains near Kirovsk city, the site of the downhill ski complex, has the Sami name Aikuaivenchorr, which means "mountain with head of mother of God". Places of socio-cultural significance connected to Sami values and lifestyle, such as former reindeer pastures and sacred landscapes, are thus also valued aspects of the Khibiny Mountains, even if the Sami no longer use the area actively. This identity and knowledge is still relevant for how some local people perceive and reflect upon environmental concerns, their levels of acceptance of landscape encroachments, and their assessments of open-pit mines. The mountains are the regional tourist brand as well as being sacred Sami culture monuments, and they attract many visitors. During the period of Soviet industrialization, the cultural values of indigenous peoples, landscape values and environmental concerns were all at stake. The largely Sami settlement of Lovozero (2.800 inhabitants) on the other side of the Khibiny Mountains from the city of Kirovsk is regarded as the "Sami capital of Russia" today.

Development of nature-based tourism in Kirovsk is seen by the local government and entrepreneurs as a promising strategy for economic diversification (Iakovleva et al. 2012). The Khibiny and Lovozero Mountains are cornerstones of the region's tourism industry. The natural beauty, good communications and access, and the relatively inexpensive character of recreational activities make the area popular also for more informal recreational hiking and skiing activities. There are no cabins in these largely pristine areas, so visitors bring tents and food when visiting the mountains.

Kirovsk is already the major alpine ski resort in Northwest Russia, and winter tourism in the Khibiny Mountains is currently evolving as a viable and growing economic sector. There are two downhill ski slopes in Kirovsk municipality. The largest one – the "Big Wood" downhill skiing center – is owned by Apatit JSC, and is a lucrative business for the company. The other is owned by Kirovsk municipality, but it receives financial support from Apatit JSC, which enabled the two slopes to be connected in 2014.

In Kirovsk and Apatity more than ten tour companies organize tours to the Khibiny Mountains with activities including downhill and cross country skiing, hiking, paragliding, snowmobile tours, and mineralogical, geological, and ecological tourism. The Snow Village is located at the foot of the Khibiny Mountains and is an indoor and outdoor ice and snow sculpture park. Here, many historical themes, figures and fairytales are illustrated and carved out of ice by Russian and foreign

artists. It was created as a brand to attract tourists from other regions of Russia and abroad as well as the local population. Apatit JSC also uses it for displaying its social responsibility credentials and emphasizing its uniqueness; the company frequently states that the Snow Village is recorded in the Russian Guinness Book of Records as the largest buildings made of snow and ice.

In Russia, people's right to free access to mountains and tourist routes is not protected by law. Due to expanding mining activities, individual and informal hikers that use the areas have experienced increased restrictions over recent years. The river valleys from where the Khibiny Mountains are accessed are now often occupied by fenced industrial lots and compounds. Several traditional access points have now become difficult to pass through, or have become places where trespassing is prohibited. According to the mining companies, the access is restricted for safety reasons.

A planning process to establish a national park in the Khibiny Mountains has been under way for more than 20 years. The mountains have many unique features and are critical habitats for plant species that are rare to the Murmansk region, and some of which are also on the Russian red list of endangered species. The planning procedure for Khibiny National Park is developing slowly though. In addition to protecting environmental values, the park is also expected to support social and cultural practices, including recreational activities. Geological tourism is growing and publications, maps and infrastructure are being developed (Voytekhovskiy and Miroshnichenko 2014). Ecological trails and routes through the beautiful landscapes are planned, with rest places for tourists.

6.4 Emergence of Kola Mining Communities

Although the Khibiny Mountains have been used for multiple purposes for hundreds of years, the mining industry currently outweighs all other forms of economic activity and sources of livelihood. The economic value of the natural landscape is dominated by a mining perspective and thus derived from the minerals and geological resources that can be exploited and the economic turnover and ripple-effects connected to all stages of this exploitation.

6.4.1 Industrialization and the Centrally Planned Economy

The close collaboration between public bodies and industrial (corporate) management in Kirovsk and Apatity evolved within the ideological and economic framework of the communist centrally planned economy. The first mining project in Kirovsk started at the end of the 1920s – the period of Soviet industrialization – because of communist leaders' ambitions to supply the young revolutionary country with raw materials and minerals. At this time, as noted above, the region was a very sparsely populated part of the Russian Arctic, inhabited mainly by the indigenous Sami.

Apatit JSC became the town-forming enterprise for Kirovsk, which in 1931 received town status and was named Khibinogorsk. During the Soviet period, the Apatit state enterprise controlled not only the industrial production, but also virtually the entire social sphere. Social infrastructure, housing and communal services, retail trade and catering, health care, sports, and culture were all provided by, and functioned as subdivisions of, the state enterprise. Several references were made by our informants to the strengths and achievements of this societal organization during the Soviet era. Winter sports and social welfare programs were often referred to. In terms of social license to operate, the company gained social acceptance during this time because of the support they provided to the community. Apatit JSC currently operates two open pit and two underground mines in Kirovsk municipality, as well as a processing plant (ANOF-3).

Apatit state enterprise was also the town-forming industry of Apatity, located just 20 km away from Kirovsk. Apatity got the status of a city in 1966 mainly because of the fast growth of population due to construction of the second apatite-nepheline processing plant (ANOF-2) and the establishment of a construction subdivision to further develop the company's production facilities. In 2012 the company accounted for more than 90% of Kirovsk's industrial production, and a significant part of the workforce in both towns is employed by the two mining enterprises. More than 36% (6.400 people) of Kirovsk work force (of 17.500) was employed by the company in 2012. In Apatity, 14% (5.000 people) of the total workforce of 35.000, were employed by Apatit JSC. In addition to mining, Apatity is home to the Kola Science Centre, a branch of the Russian Academy of Sciences, and is the largest scientific center on the Kola Peninsula with several thousand employees.

6.4.2 Post-Soviet Reforms and Liberalization

In 1993 the state enterprise Apatit was transformed into a joint stock company, Apatit JSC. When production plummeted to 25% of previous production during the 1990s, there was a deep economic crisis. Until then, the social policies of the company were made at the holding's headquarters in Moscow, far from Kirovsk. In 2002 the company was taken over by the PhosAgro holding group, which currently own 100% of the company's shares. Gradually newcomers from outside the community replaced the top management of the company. Another strategic shift in the mining industry, following Perestroika,[1] is the turn towards international and global markets and trade in equipment and technology. These changes made the mining industry more sensitive to Russia's trade balance and the exchange rate of Russian roubles. More recently, and because of the political tensions related to Ukraine, the Russian mining industry has been suffering due to western economic sanctions and a resultant lack of access to markets and technology. Consequently, the mining industry in

[1] Perestroika means restructuring and was together with glasnost (openness) central concepts in the USSR political and economic reform process in the 1980s.

Russia is in a situation where the global markets of natural resources display high price volatility, the exchange rate is disadvantageous, and sanctions affect technology transfer. Finally, the privatization of the mining companies also gave rise to policies that allowed the industry to lay off their employees, which is a big challenge for these mining towns.

In April 2013, Apatit JSC started a restructuring program to reduce operational costs and increase labour productivity. Most of the redundant staff were forced into retirement or got work with contracting companies. Thus, the total number of the company's employees dropped from 11.600 in 2012 to 7.100 by the beginning of 2015 (Didyk 2015). In the same period, the company transferred all its social facilities and infrastructure (the sports complex, the Palace of Culture, etc.) to the Kirovsk municipality, which considerably increased the burden on the municipal budget. This led Kirovsk to be listed as one of the Russian municipalities in the "most difficult socio-economic situation," among other single-industry towns or so-called "mono-profile" municipalities (Decree 2014; Didyk 2015).

Our respondents reported that the mining company traditionally demonstrated high levels of social responsibility towards its employees, as well as towards the local communities and municipalities of Kirovsk and Apatity. The strategic shift towards economic rationalization and the subsequent consequences are perceived as manifestations of deep conflicts of interest and values between the company and local communities and an increasing imbalance between economic interests and social responsibility. The company's changing strategies have induced major transformations that undermine local opportunities and prospects for social development. Local inhabitants therefore claim that the company's social responsibility has weakened, an observation that is also supported by Koivurova et al. (2015).

6.4.3 The Emergence of the North-Western Phosphorous Company (NWPC)

The economic reforms and market liberalization made it possible for other mining operators to challenge the monopolistic position of Apatit JSC. In 2005 the North-Western Phosphorous Company (NWPC) was founded as a subsidiary of the joint stock company Acron, a large Russian fertilizer manufacturer. Acron, which is a huge consumer of apatite concentrate, previously bought the concentrate from Apatit JSC. Due to disagreements with Apatit JSC over prices, Acron decided to establish their own mine in the Khibiny area. This new operator in the local labor market won a tender held by the Russian Federal Subsoil Resources Management Agency in October 2006 and acquired the mining license to develop two new deposits of apatite-nepheline ore. One was in Oleniy Ruchey (Kirovsk municipality), and one in Partomchorr (Apatity municipality). As part of the license agreement with the federal authorities[2], NWPC was obliged to support socio-economic develop-

[2] Federal Agency on Subsoil Use (under the Ministry of natural resources and ecology).

ment in the region. This included "to support the social sphere of Apatity by paying 18 million USD over 15 years" (point 4.5 in the agreement). In 2007 construction began at the mine and processing plant at Oleniy Ruchey. In 2012 production started in a combination of open pit and underground mines. Today NWPC employs about 2000 people, of whom more than 50% live in Apatity.

The new mining project created conflicts between several interest groups. First, Apatit JSC and NWPC became direct competitors, not only for apatite concentrate supplies in Russia, but also for workers and engineers. Although Apatit JSC did not apply for the tender that was won by NWPC, they had perceived the ore deposits in Oleniy Ruchey as their future reserves. Secondly, the establishment of the mine and the new processing factory created conflict with environmental NGOs since the processing plant was near the planned Khibiny National Park, which at that point was expected to be established in 2015. The conflict peaked in 2012 when the company proposed to build a road from the Partomchorr mine across the national park to the processing plant (see Fig. 6.1), which would literally split the planned national park in two.

To resolve the conflict, the Murmansk regional government established a joint commission with representatives of NWPC, NGOs and research organizations. Public hearings were not conducted during the planning and establishment of the new NWPC plants in 2006. In 2012 however, local NGOs organized a wide-reaching

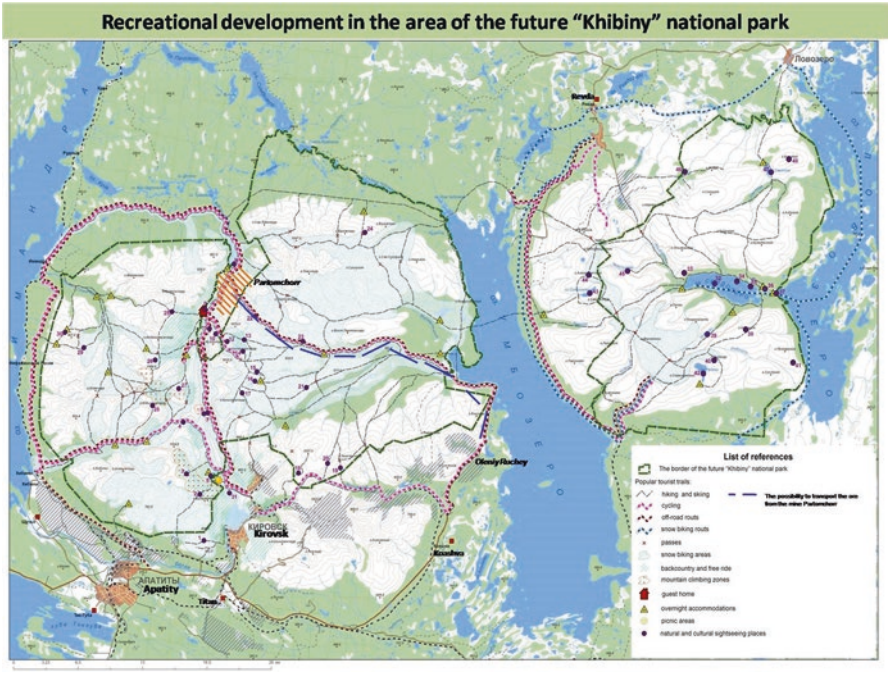

Fig. 6.1 Khibiny Mountains, the mines of Apatite Company and NWPC, and the cities of Kirovsk and Apatity

information campaign which led to lively debates in the local media. After hard negotiations, the company refrained from building the road through the planned national park, and decided instead to process the ore directly on the Partomchorr mine site.

A third conflict came about in spring 2014 when the local government of Apatity municipality sued NWPC for not fulfilling its social obligations as laid down by the state mining license to develop the Partomchorr deposit. These social obligations included annual financial transfers to municipal social welfare programs. By April 2015, after consideration of the case in the three courts (at the level of the municipality, the Murmansk Region and the North-Western Federal District), the decision was made in favour of Apatity municipality, and NWPC had to pay a sum equivalent to 6 million USD to the municipality for the period 2008–2014 (Mironov 2015).

6.4.4 Local Planning Regime

Existing federal legislation does not require municipal plans, and accordingly, not all Russian municipalities develop such strategic plans. However, in Kirovsk, a long-term development strategy – the "Strategy of Socio-Economic Development of Kirovsk Municipality to the Year 2020" – was approved by the Board of Deputies in 2011 (Kirovsk 2011). The document provides a comprehensive assessment of the current status and the main trends in the state of the environment, demographic processes, social welfare, the main economic sectors, development of natural resource potential, and budgetary provisions. The strategy includes a sustainability assessment of the current situation in the municipality. Here, the landscape values and recreational potential are defined as the town's main competitive advantage. The attractiveness of the Khibiny Mountain region is emphasized and used as the main argument for proposing the development of a large recreational and outdoor center in the municipality. Given the climatic and landscape conditions in the area, development of winter sports is regarded as having the best potential. To some extent the values displayed in the strategy therefore reflect the precious natural assets and the recreational and tourism potential of the Khibiny Mountains, as well as offering alternative prospects for municipal development to diversify the economy. At the same time, the local government does not see serious potential for conflict between further development of the mining industry and the development of a large tourist and recreation centre.

The socio-economic development strategy is one of the core planning documents for the municipality, and outlines its long-term goals, objectives, and priorities. The principal one is: "The development of human potential and increasing life quality of the population of the municipality, based on its sustainable social, economic and environmentally sound development" (Kirovsk 2011). It is interesting that the indicators used in the document do not address potential negative environmental impacts from the socio-economic development strategy which leans heavily on continued mining activities. The challenges related to utility services, such as maintenance of

housing, water supply, and heating are perceived as the responsibilities of private management companies or homeowners, rather than the municipality. The problem of unemployment and lay-offs at industrial companies is an area of particular concern within the strategy.

Stakeholder involvement and public participation in socio-economic planning has been feeble and inattentive in Kirovsk. The strategy was mostly developed and written by staff of the economic department of the municipal administration, and the draft was never disseminated for public discussion and debate. As a result of the shortcomings of the planning process, the strategic socio-economic plan primarily reflects the core values, considerations and priorities of the municipal administration, rather than the community as a whole.

The local authorities in the two mining towns seem to have largely ignored the importance of public participation, the need to involve local communities in development planning, and active participation in the implementation of the strategic objectives of the municipality. A significant number of our informants stated that there is no guarantee that the authorities would consider either the opinions of the public or independent experts and environmental organizations when they were making management decisions relating to mineral extraction or processing.

6.5 Dynamics of Sustainability in Kirovsk and Apatity

As described earlier in this book, the concept of sustainability and sustainable development must be interpreted not only according to time and place, but also to the relevant stakeholders. What is considered sustainable, acceptable, and legitimate cannot be derived outside of communities and culture, i.e. a particular frame of reference. On the other hand, the concept is not all relative, without any ultimate standards or requirements. If a mining activity is threatening or ruining the surrounding ecosystem it cannot be labelled sustainable, acknowledging that what 'threatening' or 'ruining means will of course differ.

In this section, we will present the perceptions of sustainability expressed by the Russian mining companies and various representatives of the mining communities of Kirovsk.

6.5.1 Environmental Integrity

For the respondents in this study, environmental integrity referred to the need to preserve the environment from ecological degradation, contamination of ecosystems, and landscape encroachments, as well as the need to preserve recreational values and access to mountain areas. In general, environmental integrity was perceived as salient and quite significant among the respondents in the survey. Interestingly, only a small fraction of the respondents indicated that the current

ecological situation needed to be improved. This might be explained in several ways. One is connected to the fact that multiple measures had already been taken to improve environmental and ecological conditions in the cities. Several measures had also been introduced to mitigate the heavy pollution from mining activities. During individual interviews, informants explained how Apatit JSC had organized re-cultivation and measures to reduce dust at a disused apatite-nepheline processing factory (ANOF-1) close to the center of Kirovsk. Future plans included establishing a public park with playgrounds for children on the former industrial site. At the same time, respondents expressed dissatisfaction with the work style of the new leadership of Apatit JSC, who had become more reluctant to communicate on many issues related to the development of their business and the municipality. In 2012, NWPC created a bio-geo-barrier to restore damaged land on the slopes of roads and dams (NWPC 2016). This was carried out in close collaboration with technological experts from the Kola Science Center. Riabova and Didyk (2014) found that the central role of Apatit JSC in all spheres of the municipalities' life generated loyalty and public trust towards the company among the citizens of Kirovsk and Apatity. This might be related to and partly explain the apparent acceptance of the massive environmental degradation following the mining activities, including destruction of parts of the surrounding landscape.

Other informants support the perception that environmental integrity is acknowledged as being something important by the mining companies. Representatives of environmental organizations were asked questions about knowledge, considering natural values, decision-making procedures and the mining companies' compliance with the principles of sustainable development. The head of a local environmental organization evaluated the environmental policy of Apatit JSC as "moderately positive" and that of NWPC as "neutral". Several informants, including the ENGOs stressed how mining was the foundation for their very existence, indicating how notions of pristine nature and a totally clean environment, were out of the question from the outset. At the same time, the environmentalists noted that more could be done by the companies, taking into account their potential to protect the environment and to restore damaged areas.

In the interviews, we were interested in the residents' views on the recreation value of the landscapes around the two towns. The hiking and skiing organizations, small-scale tourist companies, as well as individual hikers, expressed great concerns about access restrictions. This was particularly the case regarding development of the Partomchorr deposit. In the survey, outdoor recreation was ranked high by the majority of respondents. At the same time, several of the respondents reported no interference from the mining companies with their outdoor recreation activities, which is interesting taking into considerations the conflicts connected to Khibiny Natural Park. Thus, the access restrictions caused by the mining companies were not the highest priority for the survey respondents. Most respondents confirmed that they were faced "with minor restrictions or inconveniences due to activities of the mining companies". Tourist companies also reported that they had encountered access problems. These statements however, correspond to the way local government assesses mining-related impacts on the municipality and its prospects. Namely,

while the municipality recognises some local concerns and some harmful effects of mining on the environment, these are not seen as detrimental, as they are not impeding the establishment of a major tourist and recreation center, nor hampering the city's sustainable development.

Certain activities related to subsistence and food provision are closely related to recreational activities in the Khibiny Mountain landscapes. In Russia people commonly pick mushrooms, berries or other wild plants, or they go fishing or hunting, or they grow vegetables, fruits and herbs at their *dachas* (gardens in the countryside). Most of our respondents were seasonally engaged in such activities. Their motivations were either additional food security for the family or recreation, or both. For some, such activities also represented an additional source of income. These findings are confirmed by other studies of the region, showing how growing fruit and vegetables, picking mushrooms and berries, and fishing are popular activities among the local population, contributing to their rather modest living standards (Gushchina and Polozhentseva 2012). Representatives of municipalities and environmental NGOs stressed how NWPC's transportation of apatite concentrate had given rise to many complaints from local people. Noise and dust from the Titan railway station, where the concentrate is loaded, causes great inconvenience near many residents' dachas.

6.5.2 Indigenous Groups and Their Subsistence Economy

According to Russian EIA regulations, mining companies are obliged to provide archaeological assessments, prior to operations, in order to identify historical and cultural values, and avoid damage to these. Per sources at the Kirovsk museum of mining and geology, there have been several cases where these requirements were not thoroughly fulfilled by the mining companies. Early damage to cultural heritage took place at a time before legislation was in place, and Apatit JSC can therefore not be directly held responsible for this damage. At the same time, current planning procedures and EIAs are in many cases still ignoring the requirements for archaeological surveys. This is a clear violation of sustainable mining legislation, which should be addressed by the company's future management.

Interviews at the mining and geological museum revealed that at the time mining operations first started up in Kirovsk there were Sami settlements and several cultural monuments – sacred places – in the area. Because of the industrialization and colonization of the territory in the 1920s and 1930s many Sami cultural monuments were destroyed – sometimes unknowingly and sometimes deliberately. Sami traditional livelihoods such as reindeer herding are given strong protection in Russian legislation. At the same time, when confronted with strong mining companies the protection of the rights of these small groups in practice turns out to be inadequate (Kokko et al. 2015). The Sami in the case study area are still not entitled to any compensation for the harm done to their cultural rights, as compensation can only be given to indigenous groups that have continued their traditional way of living (Nystén-Haarala et al. 2015).

6.5.3 Community Benefits

The local government stresses that local people's quality of life is a key dimension to achieving social, economic and environmental sustainability. This is expressed in the municipal socio-economic development strategy, and came out of the interview with the head of the municipal administration, and fully corresponds to the modern Russian view of the role and tasks of local authorities. This call is echoed in the questionnaire, the interviews and the review of the local media, showing how social services (health care and housing), as well as employment and entrepreneurship are among the greatest concern for the local population.

One of the most important community benefits in the region was the 1 billion USD in investments and transfer to the Apatity municipal budget, provided by NWPC in accordance with the Partomchorr field license agreement. In addition, there are expectations of tax revenues to the regional budget from the same mining operation. The Partomchorr site also brought expectations for benefits to the Kirovsk municipality, such as additional jobs for the locals and the revival of the crisis-ridden settlement of Koashva, situated near the newly developed deposits (Riabova and Didyk 2014). The traditional way of bringing social services to the public still lingers on from the Soviet era, when companies provided these benefits. The local government and residents still have high expectations towards the companies.

The tourism industry could potentially make a significant contribution to further local development in Kirovsk, although the industry still needs more financial investments, possibly from government and large businesses. Several informants reported that the winter tourism industry is weak and fragmented. Interestingly, and quite paradoxically, Apatit JSC has been a major force in winter tourism development and in the diversification of the local economy. When the company in a company town starts new businesses, this might further constrain diversification of entrepreneurs and the private business sector, as the economic and political control is still held by the company. Nonetheless, Apatit JSC provided financial resources and competence that would otherwise not have been made available for community development. Further development could certainly benefit from alliances and public-private partnerships with larger professional tourism companies outside the region.

6.5.4 Effective Engagement

The formation and expression of public opinion must be facilitated and secured by formal institutions to meet the goals of sustainable development. This requires development of civil society institutions as well as social capital. Therefore, local government and civil society must ensure public participation in ensuring that development of local communities is sustainable, in cooperation with the town-forming mining companies operating in the local area. Our analysis reveals that the participatory role of local government and the involvement of local people in

development-related decision-making are carried out inadequately in the case study municipalities. This is a substantial critique, as it is through the active expression of public opinions, values and interests, that pressure can be applied to government authorities and mining companies.

Neither Soviet traditions nor the current federal government facilitate or encourage development of a rich and vibrant civic society. The result is a lack of meaningful arenas and opportunities for public participation and other participatory measures. It is noteworthy that many of the interviewees still believed in dialogue with mining companies to find a solution to specific problems. The mining companies are regarded as having considerable power, resources, flexibility and influence on area planning and access policy. Some respondents even stated that the chances of resolving environmental issues are higher when dealing directly with the companies than with local or national government. At least this illustrates that the companies have considerable leeway to introduce voluntary measures and to engage in activities to gain or maintain their social license to operate. An additional reason for the low levels of public participation is that the mining companies are increasingly dominated by their head offices in Moscow. The remoteness decreases the companies' motivation and ability to include the local population in decision-making processes. The local population on the other hand, does not seem to expect to take part, or even consider taking part in such processes, as long as the companies deliver "the goods" to the local population.

The result is low levels of involvement of citizens in the policy-making and decision-making processes, which is especially evident at the local level. It also reduces public control over policy implementation. If one tries to assess the activities of Apatit JSC and NWPC by the sustainability criteria presented in our introduction by analysing their real actions, it becomes clear that their compliance with the main criteria for sustainable mining is insufficient. Their compliance with the criterion "effective engagement" is poor, regarding building relationships with local communities based on trust and dialogue, and consideration of the interests of local people in its activities. However, the problem is not only related to the companies, but also to the government at all levels, as well as the apparent lack of local and regional civil society organizations. Several informants stated that there has been low level of activity of citizens in terms of defending their interests, due to the weakness of civil society institutions.

6.5.5 Mining Companies Self-Reporting on Sustainability

According to the official websites of Apatit JSC and NWPC both companies claim to be paying serious attention to sustainable development and to ensuring compliance with the legislation on environmental protection. The annual reports of both companies actively use the terms "sustainability" and "sustainable development". PhosAgro issued a special "Sustainability Report", along with their annual report of 2013. This was prepared in accordance with the recommendations of the third

version of the "Global Report Initiative" (GRI 3.1) with the enclosure for the mining and metallurgical enterprises. Indicators of standard GRI 3.1 in this report are given for the 5-year period 2009–2013. Since 2014, the company decided to issue integrated reports that included the annual report and the sustainability report in one document. The 2014 Annual Report of Acron Group is called "Investing in Sustainable Development".

When analyzing the contents of these documents, one can notice that despite the presence of sections that reflect environmental issues and cooperation with local and regional communities, the interpretation of the concept of sustainability in the mining industry in these documents is different from the one we used in our theoretical discussion in this chapter. For example, in the Integrated Report of the PhosAgro Group for 2014, the section on the principles of management states:

> Many aspects of PhosAgro activities are based on the principle of sustainable development. First and foremost, this principle is implemented by maintaining food security at the international level: our fertilizers allow farmers to increase crop yields per unit of cultivated area and meet the global demand for food.

The argument put forward is that the company contributes to sustainable development in a global scale through the use of their products in food production.

The discrepancy between the two interpretations of sustainable development is interesting and illustrates the complexities of sustainable development. Can the end product's positive contribution to sustainable development in one part of the world, compensate for the negative local or regional environmental impacts of the mineral extraction in another? The interpretation of sustainable development, provided by Apatite JSC is first and foremost referring to the economic sustainability of the company, the interests of shareholders, and to maintain food security at the international level. This can be said to be a rather skewed definition of the sustainability concept.

The sustainability policies of the two companies are partly determined by the parent holding companies (PhosAgro and Acron). Acron, being the largest producer and supplier of mineral fertilizers to the global market, claims to fully comply with international corporate standards, including commitment to social and environmental responsibility and sustainable development (Acron 2016). That the company uses international food security as a central sustainability criterion implies that they justify local environmental cost and ecological degradation as a meaningful "exchange".

Both companies include sustainable social, environmental and economic development of the areas adjacent to mining. On the Acron Group's homepage there are several references to fulfilling environmental regulations and conditions at the Oleniy Ruchey site. These include regenerating bio resources and remedying environmental damage caused by the construction of the mine (Acron 2016). The company also states (Acron 2016):

> Under an agreement with the Kirovsk administration, NWPC actively participates in the social and economic development and improvement of municipal facilities in Kirovsk and Koashva. The Company invests in the repair of key infrastructure in Kirovsk, sponsors schools and hospitals and initiates charitable giving.

According to their website, this is subordinated to "charity". NWPC address sustainability issues under the headings "Environmental policy" and "Social policy" on

their homepage, where they present their policy, plans and achievements in these fields (NWPC 2016). However, the previously mentioned conflicts and grievances of the local population about both environmental and social policy at the local level, indicate that the company's sustainability measures are still in an early phase and that the score on sustainability is rather low.

6.6 Pathways to Sustainable Mining Through a Social License to Sacrifice?

6.6.1 Focus and Framing Across Stakeholder Groups

The task of achieving sustainable development and a social license to operate presents several challenges for all major stakeholder groups – mining companies, local communities, and government authorities. The main challenge for mining companies is to balance the objectives of increasing their competitiveness and economic efficiency on the one hand, and to implement the environmental requirements of legislation, as well as voluntary commitments to their corporate social and environmental policies on the other. Future challenges for the mining companies include increasing extraction costs of non-renewable natural resources as deposits are depleted. This greatly complicates the task of reducing costs. Secondly, given the current trend of strengthening the centralization and vertical integration of the manufacturing companies within large holdings, there is a risk of weakening attention to interests of local communities in the mining regions, as the headquarters and management agencies are localized elsewhere, outside the Murmansk region. The companies provide many social services in the communities, partly in response to requirements and expectations from the government, and partly to achieve support, popularity and an SLO in the communities and to continue a pattern of practice that originated in the communist era. In general, the companies have fulfilled many of corporate social responsibility elements related to economy and various infrastructure developments, but these achievements are threatened by the rationalization processes and the associated lay-offs, which increases the likelihood of the company losing their SLO.

The commercial companies' priority of economic interests is not surprising, and therefore the most critical social and environmental requirements for mining companies need to be supported by efficient government regulations. In the Russian context this task is, however, beyond the influence of the local communities, as it is determined by decisions of the state authorities. Despite the multi-faceted conflicts described above, the government of the Murmansk region actively supported the new mining project (led by NWPC). For the local community of Kirovsk the main challenges are associated with economic development of the municipality in the context of a single-industry economy. The companies' lay-offs will inevitably lead to potentially long term negative social and economic consequences. In response to this challenge, the local authorities are making efforts to diversify the economy.

Today, the most promising path is the development of the tourism industry based on the unique natural ecosystems and recreational potential of the Khibiny Mountains. The planned national park is a vital part of the tourism development plans for the region. The ways in which Kirovsk can balance the needs of NWPC and cost-effective mining operations on the one hand, and tourism and recreational interests, including public access, environmental and landscape integrity, on the other, are therefore critical to the sustainable development of Kirovsk town. Apatity is less dependent on the mining industry, and the situation is somewhat easier, but the municipality is dependent on mining-related employment as well as the income from the mining license agreement. The incompatibilities between the ecological, economic and social elements of the development are difficult to handle, and trade-offs and hard choices are required.

Challenges for the state government are at least twofold. First, institutional incentives that encourage companies to assist the sustainable development of local communities have been missing. Second, the regulatory environmental requirements necessary for facilitating more environmentally friendly and sustainable decision-making is fragmented. The legislation related to the EIA procedures needs to be strengthened to include most or all new mining projects as well as their social impacts. When asked about Russian mining regulations compliance with the principles of sustainable development, the situation must be perceived in relation to the Russian saying that says that "the severity of Russian laws is compensated by the optionality of obeying them". This means that Russian regulations may comply with the principles of sustainable development, while their implementation and compliance does not. Experts assert that the Russian environmental legislation, for example, related to discharges of pollutants into water, is more stringent than in many other countries. However, monitoring of compliance with these requirements is not ensured to an appropriate extent.

6.6.2 The Russian Pathway

This chapter has presented the fundamental role that geological resources have played in community development on the Kola Peninsula for Russian households and individuals, through generations, during multiple stages in both professional and private life. Perceptions of sustainable development in the Russian industrial towns analysed in this chapter, are unsurprisingly shaped by the dominant role the mining industry plays on the Kola Peninsula; for the inhabitants' quality of life, perception of environmental concerns, including questions of pollution and landscape aesthetics. Recent studies show how the mining industry and Apatit JSC for a long period of operation possessed the highest level of social license from local communities (Koivurova et al. (2015); Riabova and Didyk 2014). Being the main enterprise for Kirovsk and Apatity the company holds a rather long tradition of social responsibility. In recent years however, the deep restructuring of Apatit JSC and associated lay-offs and other negative social consequences, have resulted in a

significant decrease in the level of SLO down to "acceptance" (Koivurova et al. 2015; Riabova and Didyk 2014). For NWPC, the level of «acceptance» was identified only in Kirovsk, while in Apatity "acceptance" was not detected among the citizens. These findings are supported and strengthened by this study. The decrease can partly be explained by the conflicts with ENGOs, local authorities and the court process (ibid). This also reflects the Soviet traditions where the companies were a main part of the welfare system and delivered all kinds of social services in addition to economic ones. In such a setting, the economic elements of the sustainability concept easily outweigh the social and ecological.

When asked "under what conditions do you think you can sacrifice a part of the natural landscape to facilitate further mineral extraction?" an ENGO representative required two conditions to be fulfilled. First, the benefits for the population must be greater than the damage in the long term (50–100 years). Secondly, the landscape must be fully restored after the completion of the mining operation. According to the ENGOs, the projects implemented by Apatit JSC and NWPC are not justified since the two mining companies inflict too much damage on the environment, including environmental (landscape) losses.

The local inhabitants, decision makers and even ENGOs were seemingly prepared to sacrifice environmental and cultural value in the adjacent areas, to maintain and expand mining operations. This would lead to, according to our informants, not only jobs and livelihoods, but also general welfare and social services to people. This is an interesting observation in relation to the discussion of the concept of sacrifice zones and the trade-offs between social and economic benefits on one side, and ecological and environmental degradation on the other. The ways in which all actors, even ENGOs emphasize economic and social welfare at the local level, can be perceived as compensation logic. In the case of NWPC the economic compensation is built into the license agreements. When NWPC did not fulfil their economic obligations towards Apatity municipality and the municipality brought the case to court in 2014, the compensation logic became very clear.

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