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REPORT ON THE STUDY OF MINING AND SOCIETY AND ITS IMPLICATIONS

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Dr. Elizabeth Adey, UNEXE - University of Exeter - Camborne School of Mines, The UK
Professor Frances Wall, UNEXE - University of Exeter - Camborne School of Mines, The UK
Dr. Robin Shail, UNEXE - University of Exeter - Camborne School of Mines, The UK
Dr. Matthias Varul, UNEXE - University of Exeter - Camborne School of Mines, The UK

Submitted by:
GEONARDO Environmental Technologies Ltd.
(Project Coordinator)

Project Coordinator name:
Mr. Peter Gyuris

Project Coordinator organization name:
GEONARDO, Hungary

SEVENTH FRAMEWORK PROGRAMME

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Summary

The ImpactMin demo site descriptions and background information are provided in report 3.1. Report 3.1 also contains information on: responsible mining, potential socio-economic impacts of mining, corporate social responsibility (CSR) in the mining industry, environmental and social regulations and standards that are used within the industry, in addition to providing a detailed socio-economic background of each of the demo sites used in this study. Report 3.2 presents the results of the comparative study across the seven ImpactMin demo sites, looking at what people think of mining and how mining has affected their lives. These findings provide information on what the socio-economic impacts of mining have been at each of the sites, including how mining companies develop social responsibility programs, how they engage with different stakeholders and ultimately what the stakeholder perceptions are from people who have participated in the interviews and surveys. Overall, because the socio-economic impacts of mining are tied to the environmental impacts that mining may have, many of the questions in the survey and interviews explore how people feel about their physical environment, including looking at their perception of what changes mining has had on their physical environment and how these changes have affected their lives.

This report comprises five chapters: chapter 1 introducing the work undertaken, chapter 2 providing the research methods used (these methods are discussed in further detail in report 3.1), chapter 3 providing the results of the work undertaken, chapter 4 discussing the implications of these results and chapter 5 detailing future work to be undertaken in work package 3 and the potential applications of remote sensing as a spatial planning tool.

Executive summary

The findings presented in this report show how mining affects people in many different ways and how people have very different perceptions and perspectives of mining in general, and more specifically on how mining has affected their lives. The understanding people have of mining differs across the sites used in the ImpactMin project. There is a variation across the sites relating to how able people felt in their ability to express their views. The willingness of people to participate in a survey or interview was different across the seven sites and there were obvious discrepancies relating to the 'free-will and openness' of people in how they felt they could respond to questions and express their views. These issues are a likely reflection of the culture and general socio-economic background of the different study sites, with the ImpactMin demo sites representing a wide range of societies, where both Russia and Romania have until 1991 and 1989 respectively, been under communist rule. The downfall of the 'iron curtain' and overturn of Nicolae Ceauşescu in Romania and Mikhail Gorbachev in the Union of Soviet Socialist Republics (USSR), has seen massive changes in the ideology of how these countries were being governed. The proceeding 20 years, up to the present date, has seen massive changes in both countries, yet in Romania, some of the interviewees made implications that they believed every one should receive 'one benefit' from the proposed gold mining project, perhaps indicative of the legacy of communism on the mind-set of people today. Basic observations made across the three demo sites in Russia were of how difficult it was to get people to participate in the survey or interviews. People who were handed questionnaires to complete, frequently handed them back the next day when we went to collect them, making references to their connections to the mining or metal processing industry and how they did now feel comfortable completing the surveys. This was most notable in Karabash which is the demo site with the most severe impacts from the past mining and current smelter industries.

Findings show that the majority of people interviewed across the demo sites have a positive view of mining in general. This contrasts distinctly with the media portrayal of the industry which often suggesting the opposite is true and that people dislike mining and related activities. The suggestion we offer here is that where you have a 'mining community', or a community where mining has until recently been an important economic activity, the majority of people readily connect and make positive associations with the industry and these views most likely contrast significantly with the views of people in a community that has never seen mining. There are exceptions to this rule within the ImpactMin demo sites and likely explanations for the differences we identified. For example, at the Vihovići site in Mostar where less than 40 % of people felt positive about mining, the city of Mostar has undergone massive changes in population and ethnic background as a result of the Balkans war which lasted from 1992-1995. The changes in population in the city have meant that many of the residents have no association with Vihovići being an active coal mine. In Karabash and Mednogorsk, survey respondents also felt much less positive about mining and both of these sites have active copper smelters that emit a wide range of potentially harmful pollutants to the surrounding population. Karabash, in particular, has such widespread environmental

issues (as discussed in report 3.1) that it has previously been named as one of the most polluted towns in the world (Ekaterinburg, 2010). The implications of the environmental damage in Karabash, and the potential harm to the surrounding population from the smelter emissions in Karabash and Mednogorsk, will have an impact on people's general views of mining and is likely to account for the responses seen here. To test this theory it would be interesting to examine the views of mining in a community that had never experienced mining.

Across all of the sites, except Vihovići, the majority of people felt that mining was an important part of their identity / heritage / tradition. Respondents in Mostar, relating to Vihovići, as discussed above, have been influenced by inwards and outwards migration of residents from Mostar. Across the other sites, Cornwall and Roşia Montană have both had active mines for several thousands of years and Gay, Karabash, Mednogorsk and Kristineberg, are all towns / villages that grew and exist because of mining and related industries. This provides the link and basic premise for residents of these areas having strong connections with mining.

It is evident that there is room for improvement in how mining companies consult and engage with stakeholders and how they try to meet expectations or 'manage expectations' of different stakeholders. Out of all of the demo sites, it is only in Roşia Montană where the majority of survey respondents felt sufficiently engaged by their local mining company / the local government. This reflects the high level of consultation that Roşia Montană Gold Corporation (RMGC) have had with stakeholders and in particular with the local community. Across the other sites it was generally observed that even in areas that were undergoing quite extensive mining activities, companies were not making attempts to engage with local people at a level that was viewed as appropriate. Using appropriate consultation methods is essential for the communication of any information on the environmental impacts of mining produced in further areas of the ImpactMin project, and information shown in this report can help guide how information can be given to a community and how they can be engaged.. Conversely, it is important to recognise and acknowledge that meeting the goals of all stakeholders would be an impossible task for mining companies and also would not be appropriate, and furthermore that the mining companies cannot be expected to solve all the problems in a community. There has to be a balance where mining companies respect stakeholders and create open dialogue between their representatives and all stakeholder groups, where they can add value to a community and have positive and long-lasting benefits as responsible businesses.

Discrepancies were evident across the demo sites relating to the expectations stakeholders have of the mining company, highlighting the idea that CSR is fluid and that it cannot be defined into a one size fit all approach. The present study has clearly identified that CSR needs adapting to the context of an individual site. Without CSR being adapted to the specific context of stakeholders at a site, CSR is unlikely to work. Each community is fundamentally different based on their socio-economic background and physical environment, and also on their past experiences in how they have dealt with companies. This means that within every community they will have a different idea

of what CSR is and how a particular mining project should benefit their community given the prerequisite for CSR being that a company should ‘add value’ outside of their business transactions and above their legal obligation. Based on observations made of how companies operate across the ImpactMin demo sites, CSR is demonstrated in many different ways.

Figure list:

Table List:

Acknowledgements

This work would not have been possible without the kind assistance of a large number of people who we would like to thank, including: Professor Calin Baciu from the University of Babes-Boylai, Romania; Thomas Ejdemo, Professor Frauke Ecke and Dr Lena Alakangas from Luleå University of Technology, Sweden; Professor Ivan Lovric, Professor Ivo Colak, Mirna Raič, Danijela Maslac and Dr Ivana Zouko from the University of Mostar, Bosnia Herzegovina, Dr Valery Udachin, Dr Oleg Telenkov,Dr Pavel Aminov, Eugene Bazhenov and Ivan Startez from the Institute of Mineralogy, Miass, Russia; Dr Peter Whitbread-Abrutat from the Eden Project and Dr Matthias Varul from the University of Exeter. We would also like to thank Peter Gyuris the ImpactMin project coordinator and Jamie Keech for his help in undertaking the work in Roşia Montană. There are lots of other people across the 5 different sites who have supported the logistics of this work through various different ways, such as by helping translate and arrange the work schedule. We thank you all for your cooperation and assisstance with the project.

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Finally and of utmost importance, thank you to all the people who have particpated in this project and contributed to the research through undertaking the survey and to those people who gave up their time to be interviewed.

Chapter 1 Introduction

1.1 Aims of the project

ImpactMin Work Package 3 aims to create a better understanding of the socio-economic impacts of mining, including investigating how we can develop CSR policy that will incorporate and disseminate best practice within the industry. Work package 3 has looked at stakeholder views and understanding about mining and how mining has affected people's lives. Stakeholder relationships across the different demo sites will also be investigated. This research was carried out using surveys, plus interviews and focus groups. The survey, administered across all of the sites, helped assess people's views and perception of mining in their region and what they are concerned about at each of the sites. Interviews and focus groups of stakeholders, including where possible the mining companies, explored how people felt mining had impacted their lives, providing an insight into how different stakeholder groups interact and work together.

One of the reasons behind the ImpactMin WP3 work is the premise that in the future there will be a need to increase mining within Europe as a way of ensuring security of supply of mineral resources. Thus, by finding out what people think of mining and how it has affected their lives, we have a way of relaying this information to mining companies and governments and allowing them to successfully implement policies that can mitigate negative impacts and maximise the positive benefits that mining can have. By having a knowledge of how mining affects people and communities, mining companies can assess the key factors in developing successful working relationships with different stakeholders. Mining companies have increasing numbers of social and environmental management 'voluntary' codes that they can follow, in addition to legislation, and being able to adhere to voluntary CSR guidelines will help a company maintain their 'social licence' to operate in the eyes of the stakeholder groups they work alongside. Maintaining public image and the 'social license to operate' has become essential within the mining industry, due to the wide publicity that any negative mining incidents receive in the local, national and international media. For example, whilst you hear little about the day to day operations of mines and the positive impact mining can have to the communities in which they operate, any negative incident will be widely reported throughout the media. If people only hear bad things discussed about an industry, their perception of this industry is likely to be very negative. This highlights the need for mining companies to ensure they operate responsibly from a socio-economic and environmental perspective.

Demo sites from Bosnia Herzegovina (Vihovići), Romania (Roşia Montană), Russia (Gay, Karabash, Mednogorsk), Sweden (Kristineberg) and the UK (Cornwall) were selected by the EU and provide a variation in stages of mining for the purpose of this research, from exploration phases through to post-mining projects.

This report will focus on providing results from the survey and interviews carried out across these sites, providing a comparison of the findings of the research. Results will be useful in determining:

1. The level of concern for environmental issues.
2. How best to disseminate results of the remote sensing on the environmental impacts of mining.

Chapter 2 Methods

Data collection methods are discussed in detail in report 3.1. This report also contains copies of the surveys that were administered across each of the demo sites, lists of interview questions and details of who were interviewed at each of the sites. On request, copies of the lengthy interview transcriptions of interviews can be made available; however, they have not been included in this report as it would add hundreds of pages. The demo sites used in this report reflect the sites where the remote sensing techniques will be tested, in addition to using Cornwall, UK.

This research for this project used a cross-comparative survey, plus interview and focus groups to enable more in-depth issues to be explored. The survey was administered across all of the project demo sites. The interviews and focus groups involved key stakeholders and informal decision leaders within the communities who are linked to mining or metal processing industries. Each survey used at the seven sites contained generic questions to enable basic demographic information to be collected, alongside questions that were asked to enable responses to be compared. In addition to these questions, further questions were asked at each of the sites to address specific issues. These issues had been identified by correspondence with partners working at these sites and add interest and breadth to the cross-comparative questions. The survey was designed through consultation with partners involved at the different demo sites and was administered at each site to try and get as high a number of responses as was possible and to cover a cross-section of people from different backgrounds. There were difficulties at some of the sites getting people to participate in the survey so sampling was done on an opportunistic basis. This meant that although it was difficult to get people to partake in the surveys, that the focus was on trying to get a good cross-section of people to participate from different backgrounds. Furthermore, the added complication of undertaking this work was that the interviews and surveys were being carried out in five different languages.

To ensure optimum understanding of the survey and interview questions, the design of the survey and interview questions had to be carefully thought out to consider how words and interpretation of words would be made. The ultimate emphasis of how questions were designed was with the intention of keeping things as simple as possible to enable straightforward translations to be made into the five respective languages. Some questions had to be adapted slightly to aid understanding at certain sites. For example, one of the questions assessing the preference of different types of developments compared to a mine, at the three demo sites in Russia an ‘eco-town’ was

instead referred to as simply a ‘town development’, as discussion with Russian colleagues led us to believe that in Russia people would not understand what an ‘eco-town was. The survey was administered using paper format across all of the sites, in addition to being carried out electronically in Cornwall. The preference would have been to undertake the survey electronically across all of the sites but the logistics of doing so, and the discrepancies in access to computer equipment in some of the sites, made this impossible and would have biased who could respond to the survey at some of the sites. The work undertaken in this project was granted approval by the University of Exeter ethics committee prior to any research commencing. Participants in the survey or interviews were made fully aware of the purpose of the research they were becoming involved in and of how the results would be used. Anonymity was provided and guaranteed for participants who completed the survey but not for those people who participated in the interviews due to the importance of knowing who had been interviewed for research purposes. It is important for the purpose and understanding of this work that we can identify who different stakeholders are, although we will use our discretion to make individual community members comments anonymous within this report. Interviewees have therefore been referred to using limited information, for example; ‘resident of Brea’ (a village in Cornwall). This provides a context for the response given whilst protecting the identity of the individual.

Some of the answers to open ended survey responses have been coded to provide more meaningful information and data. Codes were constructed to enable responses to be interpreted into categories that were based on what answers people gave to questions.

Table 1 Surveys completed across the ImpactMin demo sites.

Country	Demo site	Number of surveys completed
Bosnia Herzegovina	Vihovići	124
Romania	Roşia Montană	97
Russia	Gay	41
Russia	Karabash	40
Russia	Mednogorsk	32
Sweden	Kristineberg	66
UK	Cornwall	303

Figure 1 Map of the ImpactMin demo sites across Europe and Russia. From west to east the sites are Cornwall (UK), Vihovići (Bosnia Herzegovina), Malå (Sweden), Roşia Montană (Romania) and Russia (Karabash to the north and Gay and Mednogorsk in the south).

Chapter 3 Results from across the project demo-sites

3.1 Bosnia Herzegovina, Vihovići

Coal mining ceased in Vihovići (Mostar) in 1991 prior to the outbreak of war in the region from 1992-1995. During the war, the abandoned pit was used as a dumping ground for municipal waste. Over the past few years this site has undergone extensive rehabilitation and clean-up undertaken by Fichtner consultants. The site is now 'clean' and free of rubbish but suffers from two main issues: slope stability; where houses have been constructed illegally very close to the pit edge, and the ongoing issue of how to redevelop the site. There are further complications around the site. The pit has water channels that run directly to the Neretva River that flows through the centre of Mostar. Previously, the site had issues with underground fires on seams of coal which used to be exacerbated during the summer months when the temperature was high. Fichtner consultants used a slurry-ash mix to help solve the problems with the underground fires.

Results from the survey reflect the main issues at the site, where the top three environmental concerns rated 'high impact' were issues of land instability and damage to nature / water contamination (Table 2). The top three socio-economic concerns rated 'high impact' were job dependency, workforce health and safety and community health and safety (Table 2). Vihovići was open between 1919 and 1991 and during this time would have been a major employer within Mostar, with the coal produced from the mine supplementing other industries in the area. Despite environmental concerns respondents have, when people were asked whether they would like Vihovići to reopen, nearly 50 % of people gave answers that were in favour of it reopening (Figure 2). This result is interesting in the context of the responses given when people were asked about the significance of mining in the past, present and what they think it will be in the future, where just over 80 % of people felt that mining had been significant in the past, compared to only 13.9 % in the present and 16.5 % in the future (Table 3). This suggests that whilst nearly half of the respondents would like Vihovići to reopen, that the results from Figure 2 show that only 32 % of respondents didn't want Vihovići to reopen. Relating to the desire of people for more information ont he environmental impacts of mining, 57 % of people wanted more information (Figure 3). The survey also asked people to categorise how they felt about the performance of the mining industry relating to a range of different factors (education and training opportunities, local community participation, reducing pollution, restoring vegetation, meeting public expectations, workplace health and safety, community health and safety, local employment, community resources, aiding the public understanding of mining and improving housing) (Table 4). Results from this question show that 60.4 % of people thought local employment opportunities were improving, with 41.8 % and 37.3 % of people thinking community resources and aiding the public understanding of mining respectively were also improving (see Table 4). From a negative perspective, the key issues that came out were that nearly 50 % of people thought that the industry was deteriorating in how it was reducing pollution and restoring vegetation. This is quite surprising given the extensive site clean up and rehabilitation that has been carried out.

Table 2 Environmental and socio-economic concerns rated 'high impact' at Vihovići, Mostar, Bosnia Herzegovina.

Vihovići, Bosnia Herzegovina			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Land instability	Damage to nature	Water contamination
%	61	43	42
Total responses	119	115	118
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Workforce health and safety	Community health and safety
%	48	47	28
Total responses	118	116	113

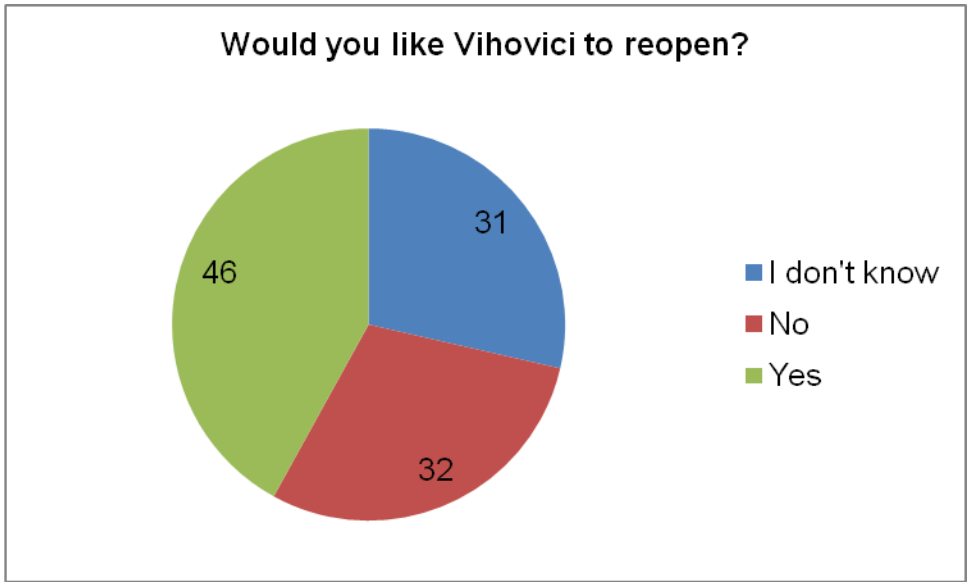

Figure 2 Would you like Vihovići to reopen? Total responses = 102, based on coded answers.

Table 3 What is the significance of mining in Vihovići in the past, present and future?

Bosnia Herzegovina, Vihovići			
	Past %	Present %	Future %
Significant	80.2	13.9	16.5
Not significant	5.8	67	19.8
I don't know	14	19.1	63.6
Number of responses	121	115	121

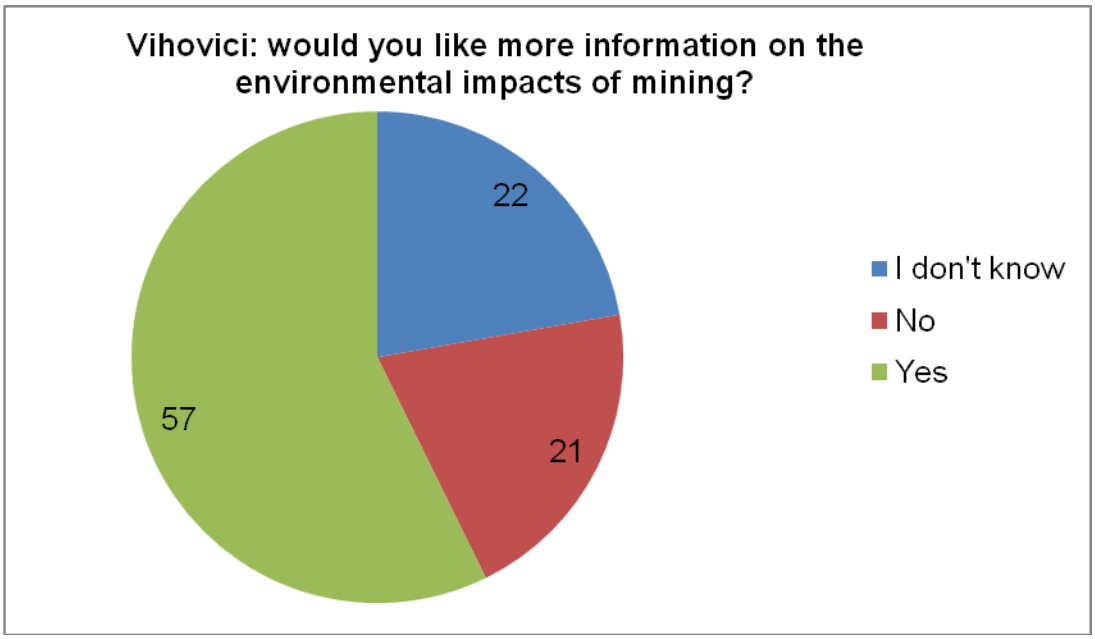

Figure 3 Would you like more information on the environmental impacts of mining at Vihovići, Bosnia Herzegovina? Total responses = 117.

Table 4 How is the mining industry performing? Vihovići, Bosnia Herzegovina.

Bosnia Herzegovina, Vihovići: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	22.0	43.1	11.0	23.9	109
Local community participation	24.8	35.8	10.1	29.4	109
Reducing pollution	10.8	18.9	49.5	20.7	111
Restoring vegetation	8.2	18.2	49.1	24.5	110
Meeting public expectations	5.5	40.0	11.8	42.7	110
Workplace health and safety	6.4	35.8	39.4	18.3	109
Community health and safety	8.3	39.8	31.5	20.4	108
Local employment	60.4	18.0	5.4	16.2	111
Community resources	41.8	20.0	10.0	28.2	110
Aiding the public understanding of mining	37.3	25.5	5.5	31.8	110
Improving housing	19.1	38.2	14.5	28.2	110

The Interviews undertaken in Mostar, about the former coal mine at Vihovići, provided some wide ranging discussions and responses. Relating to the perceived importance of mining in the region, attitudes varied when people were asked if they thought mining was important in the region:

“I don’t think so” (resident of Mostar).

“Not in this situation” (resident of Mostar).

“Some time in the history of Bosnia and Herzegovina it was very rich in minerals and then mining was very important. The situation has changed but mining is still economically important in Bosnia and Herzegovina” (geologist from Mostar).

There was a great deal of uncertainty relating to who had funded the rehabilitation work undertaken at the Vihovići site:

“Funds from Vihovići have been paid for by the EU and Germany” (Mostar government official).

“Who knows” (geologist from Mostar).

Interesting responses were given when people were asked “what has the mine company done for the local community”:

“As far as local communities are concerned, they (the mine company) really worked for the financial benefit of the whole community” (resident of Mostar).

“One of the positive affects or impacts has been that mines influenced the development of the Mostar region. Without taking into consideration the negative affects that every mine has, it has influenced the development of the economy of the region” (geologist from Mostar).

An ex-miner at Vihovići was asked about the specific negative impacts from mining at Vihovići and responded discussing specific issues to the site:

“One of the negative impacts was during the work with mines the houses had problems and some of them were destroyed by the blasting”.

The ongoing issue with the site at Vihovići that was investigated was firstly whether people perceived mining to be over and secondly if they did think mining was over, how would they like to see the site developed? Comments from the interviews undertaken in Mostar included:

“Vihovici – as far as I know there is no potential for reopening. I am also well informed about the environmental problems at Vihovici. I know that after the war that was one of the biggest city garbage dumps. There are significant amounts of coal left at Vihovici.

The underground water needs emphasising here. Some kind of exploitation is possible but only in the framework of rehabilitation of the site. It could be some kind of recreation centre" (geologist from Mostar).

Relating specifically to whether mining is over at the site:

"It depends on whether it is profitable to exploit" (resident of Mostar).

"It is too close to the city. Excavation of the pit would be too dangerous to the city and cause more damage" (resident of Mostar).

"Vihovici should not have any more mining. The area around Vihovici is developed and therefore should not be mined" (resident of Mostar).

Further comments were made about potential development of the site include

"As a park".

"Given the current situation in Mostar, I wouldn't be surprised if a department store ends up there!" This response provoked much laughter in the room.

Overall, these views on whether Vihovići could reopen as a mine contrast with the survey responses, where 46 % of people gave positive answers alluding to the fact they would like the mine to reopen (Figure 2).They also provide a basis from how the disparities in survey responses can be viewed.

3.2 Romania, Roşiă Montana

Mining ceased in Roşia Montană in 2006. Prior to this date and since 1997, Roşia Montană Gold Corporation (RMGC) has been working to reopen the state owned mines. Failure to restart mining and maintain continuous production has seen large scale unemployment in the region. There are environmental issues left over as a consequence of the previous 2000 years of mining, with particular issues relating to water contamination from AMD / ARD caused by the high level of sulphide minerals in the rocks. One of the local rivers is contaminated as a consequence. Levels of environmental concerns rated 'high impact' amongst residents were, however, very low, with the highest level of concern rated high impact being on visual intrusion (13 %) followed by water contamination and issues with noise at 12 and 4 % respectively (see Table 5). Assessing the responses to potential socio-economic impacts of mining, responses rated job dependency, workforce health and safety and community health and safety as being the highest concerns that were classifiable in people's perceptions as being of 'high impact' (Table 5). 84 % of people responded saying they would like more information on the environmental impacts of mining (Figure 4). Every person who responded to the survey considered that mining was significant in the past, however, only 77 % of people thought it was significant at the present. This figure increases to 93

% of people believing that mining will be significant again for the future of Roşia Montană. When asked to respond to how they perceived the mining industry to be performing, results revealed that many people thought the mining industry (namely RMGC in Roşia Montană) were improving in how they were performing relating to many different aspects, with the following all achieving over 85 % of people saying they were 'improving': local employment, community resources, housing, aiding the understanding of mining, education and training opportunities and local community participation (Table 7). The lowest rated factor classified as 'improving', was meeting public expectations (only 26.2 % of people surveyed felt the industry was improving relating to meeting people's expectations). This result is quite surprising considering the high level of positive responses for nearly all the other factors. The majority of people responded to how the industry was meeting public expectations stating they thought there was either no change in their performance or that they did not know (Table 7).

One question that was asked specifically in the Roşia Montană survey was why people thought reopening the mines was so controversial. This question was asked as an open ended way where responses were assessed and categorised (see Table 8). Some responses were categorised into multiple groups as they offered a number of possible reasons for the controversy. The most frequently cited cause of the controversy was interest groups (e.g. opposition NGOs). This was followed by other reasons such as: government / politics, economics and lack of information being provided to stakeholders.

Table 5 Environmental and socio-economic concerns rated 'high impact' at Roşia Montană, Romania.

Roşia Montană, Romania			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Visual intrusion	Water contamination	Noise
%	13	12	4
Total responses	73	77	78
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Workforce health and safety	Community health and safety
%	37	22	22
Total responses	86	83	81

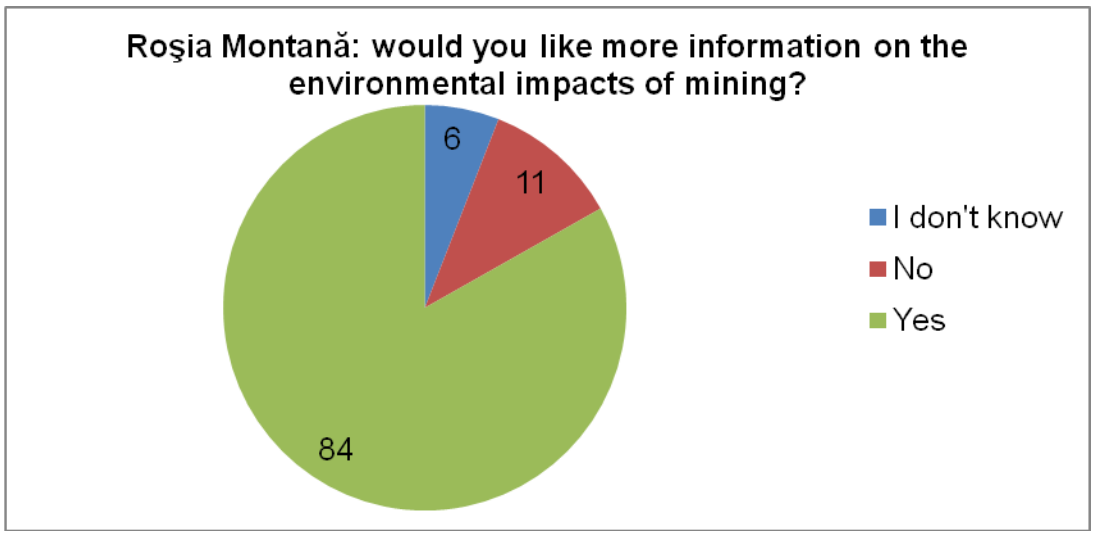

Figure 4 Would you like more information on the environmental impacts of mining at Roşia Montană, Romania? Total responses = 85.

Table 6 What is the significance of mining in Roşia Montană in the past, present and future?

Romania, Roşia Montană			
	Past %	Present %	Future %
Significant	100	77	93
Not significant	0	22	0
I don't know	0	1	7
Number of responses	93	92	91

Table 7 How is the mining industry performing? Roşia Montană, Romania.

Romania, Roşia Montană: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	92.1	6.7	1.1	0.0	89
Local community participation	87.5	9.0	1.1	2.3	88
Reducing pollution	37.9	55.2	3.4	3.4	87
Restoring vegetation	57.0	33.7	4.7	4.7	86
Meeting public expectations	26.2	46.4	3.6	23.8	84
Workplace health and safety	65.5	31.0	1.1	2.3	87
Community health and safety	54.5	40.9	1.1	3.4	88
Local employment	97.9	0.0	1.1	1.1	94
Community resources	95.5	1.1	1.1	2.3	88
Aiding the public understanding of mining	92.9	3.2	0.0	3.5	85
Improving housing	94.6	4.3	0.0	1.1	92

Table 8 Why is reopening the mines in Roşia Montană so controversial? Responses have been coded.

Why is reopening the mines in Roşia Montană so controversial?	
	Responses
Government / politics	18
Image mining industry	3
Local people	4
Economics	13
Interest groups e.g. Opposition NGOs	30
Environmental issues	8
Lack of information to stakeholders	13
Opposition companies	9
Uncertainty about project	6
Legislation	3
Media	5
(categories above are based on coded answers)	

Observations made during the interviews and focus groups undertaken in Roşia Montană showed how the community had a very strong level of support for mining to restart in the area, for example:

“In the beginning, in the early years of the project, there were some sceptics and people are now very eager to see the project go ahead” (resident from Roşia Montană commune).

“Delays are the major concern as they do not know what to do. Very uncertain situation. 13 years have passed since the project started and no decision has been made” (resident from Roşia Montană commune).

When asked why people wanted the project to go ahead, the following responses were given:

“The locals are in need of jobs. It is a very crucial situation for them” (journalist in Roşia Montană).

“Most of the people are miners or come from mining backgrounds. It brings jobs in the area. The area is a mining area. It is not suitable for other activities. The land is not good for anything else” (teacher and resident from Roşia Montană commune).

Within the community, however, it is clear that the project has been contentious despite there being a high level of support:

“People are split and in camps. This is a split community as with any mine operation” (resident, worker and informal opinion leader in Roşia Montană).

Discussing what people perceive as being the main impacts (both negative and positive) from the project, responses varied:

“As proposed by the project, the mining will be beneficial for the area. We hope this mine will bring something for our children and our children’s children. As long as they don’t destroy the environment, people will support the project” (teacher from Roşia Montană commune).

It was clear that amongst the people interviewed for this project that one of the most contentious issues created by the project related to the purchase of residential and non-residential properties. What became apparent was that although RMGC have a set method of calculating house / land / property prices, that this was not perceived by many of the people interviewed, for example:

“The phenomenon is like that, people who are outside of the impacted area would like to sell their house to the company and those who are inside the impacted area would not like to do this (the grass is always greener on the other side!!)” (teacher from Roşia Montană commune).

“The company was not that fair in negotiating properties and prices with people. It happens that I know one example, a family with 5 children where no members of the family are employed by the company. Another a family with 2 children where both husband and wife are employed by the company and they have already moved from the area and bought a house through the company in a different town, whereas the family with 5 children who aren’t employed by the company remain behind with no employment. Not even one family member is employed” (teacher from Roşia Montană commune).

“More than 80% of the population was somehow forced to leave the area and their properties” (Greenpeace Romania spokeswoman).

Discussions with a sociologist who works for RMGC alluded to the fact that they used the World Bank guideline for the cost of houses.

There were, however, issues that came out amongst different community members about how the project had been handled and areas where there was room for improvement. One of the key issues with a project like Roşia Montană, is how people should benefit. When interviewees were asked what benefits they thought the community should have from the project, the resounding response from a number of people interviewed was that everyone wanted one benefit (one benefit for everyone). These responses could reflect the underlying influence of living in a previously communist society e.g. “one benefit for everyone affected by the mine”, which could be likened to being a socialist ideology , with cooperation and lack of competition being key features.

In one of the interviews, and this was reflected in other interviews undertaken, it was clear that some people perceived the opposition to the project to come predominantly from outside Roşia Montană, for example:

“I was angry about the Redgrave woman campaigning (actress Vanessa Redgrave). I would like to ask Stephanie Roth why she feels it is her business to campaign about a community she does not live in. Vanessa Redgrave owns 1 m^2 of land in Roşia Montană and is trying to stop development based on her ownership of this plot of land”.

This referred to a protest by Vanessa Redgrave about the project proposal at a film festival in Romania. The cause of the controversy of the mining project was also questioned in the survey, where a variety of reasons were put forward by residents of Roşia Montană, for example:

“Discord economical interests; the defective image of the mining industry”.

“Economical and political causes”.

“Because of the scepticism of the local population in certain circumstances of negotiation and communication”.

“Existence of various groups of interests; possible contamination; uncertainty”.

“Because of the Environment Ministry, which doesn't agree with the project. Because of the residents who are divided in 2 groups: one of them supports the project and the other doesn’t and because of other opponents from outside of the country for example: Hungary”.

One of the most insightful questions put to people in interviews was to get their opinion on what percentage of people they thought from Roşia Montană supported the project. Throughout most of the interviews undertaken, people were typically quoting that they thought 90 – 95 % of the population supported the project:

“Over 90 %” (student from Roşia Montană).

Greenpeace Romania and a local NGO who are against the project going ahead, however, provided a contrasting opinion on the level of support for the project going ahead:

“The population that refused to sell the properties and are still living there in Rosia Montana, they are against the project” (Greenpeace Romania spokeswoman).

“In the past, 98 % of people have been against the mining project but now I don’t know” (leader of Cultural Foundation opposition NGO).

It is evident that there are people in the community who are against the project, that many of whom belong to one of the two opposition NGOs: Alburnus Maior being the main group and the 'Cultural Foundation' the other opposition group.

The interview with the leader of the Cultural Foundation NGO talked about how mining heritage was important also and about how the project has destroyed the community through "divide and conquer".

Interview questions relating to how RMGC (and mining companies in general) could have a more positive impacts whilst minimising their negative impacts saw issues of creating an open and honest culture between stakeholders and the company being raised:

"Improved communication with locals. More involvement of local people with activities. The company and the school were now always communicating in the best way possible. This needs improving. They have asked the company to be more open with the school on numerous occasions but this has not happened" (teacher from Roşia Montană commune).

But later on in this same focus group a suggestion was made as to why they felt the project had experienced such long delays:

"The responsibility for the central government is also high in this issue as they are responsible for giving the environmental permits that will enable the project to start" (teacher from Roşia Montană commune).

Conversations and comments made throughout many of the interviews replicated the frustration many local people felt about the delays being experienced in the mines reopening. This phrase was brought up in many of the interviews, recounting the disappointment of local people many of whom who did not have jobs since the mines closed back in 2006:

"Our mountains bear gold and we are begging from door to door" (resident of Roşia Montană).

One of the key issues that came out of the interviews was the need for RMGC to involve the local community more, with a suggestion being made in one of the interviews with an employee of the company that people from the Canadian owned company, Gabriel Resources (who own the majority of RMGC), need to engage more with local people and keep them better informed:

"The company should be more involved in the local community. Also the foreign management should be more involved in the local community and that will lead to the involvement of the locals in the decision making process. Currently the people are confused" (employee of RMGC).

This highlights the importance and need for dialogue with stakeholders and the company (including with very senior people and directly with people from Gabriel Resources as well as RMGC).

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3.3 Russia: Gay

Gay has been a mining town since the 1950's. Environmental concerns rated 'high impact' by people who participated in the survey showed apprehensions focused on air quality, water contamination and land contamination (36 %, 32 % and 30 % respectively – see Table 9). Responses showed a higher level of concern for socio-economic issues caused by mining, with 82 % of people classifying job dependency as being of 'high impact', followed by concern for workforce health and safety and the ageing population (Table 9). 83 % of respondents gave answers that were favourable relating to the mining industry expanding (Figure 5) and 75 % of people would like more information on the environmental impacts of mining (Figure 6). Over 90 % of people thought that mining was significant in the past, compared to reduced numbers of 85.4 % at the present and 66.7 % of people considering it will be significant in the future (Table 10). Responses to different issues that relate to how the mining industry is performing show that 73.7 % of people thought that education and training opportunities were improving, and nearly 50 % of people thought 'local employment' is also improving (Table 11). However, there are quite high levels of people who responded saying they felt certain elements were deteriorating in how they perform: community health and safety (48.6 %), restoring vegetation (40.5 %) and reducing pollution (37.8 %).

Table 9 Environmental and socio-economic concerns rated 'high impact' at Gay, Russia.

Gay, Russia			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Air quality	Water contamination	Land contamination
%	36	32	30
Total responses	42	37	37
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Workforce health and safety	Ageing population
%	82	65	37
Total responses	38	40	35

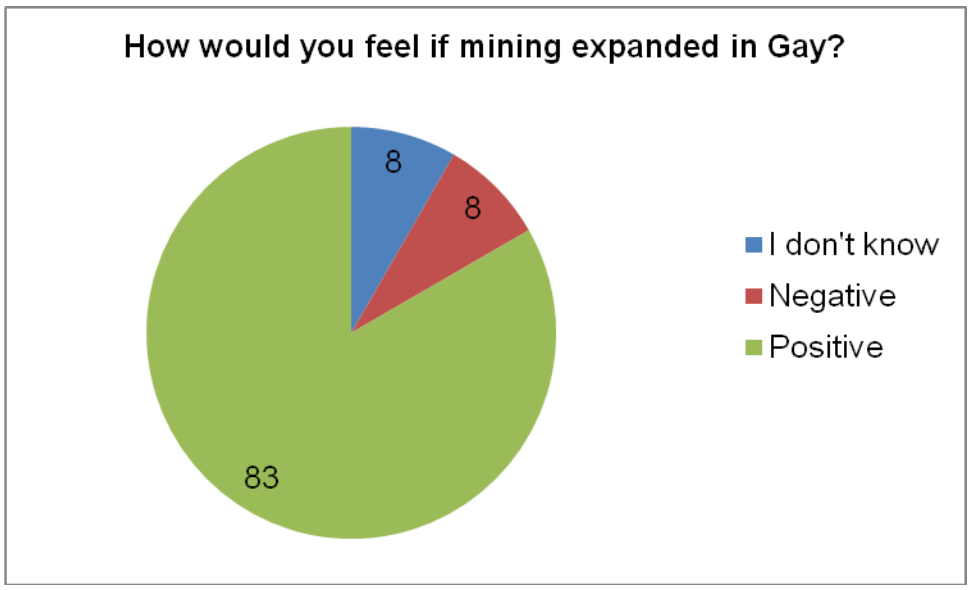

Figure 5 How would you feel if mining expanded in Gay, Russia (%)? Total responses = 36, based on coded answers.

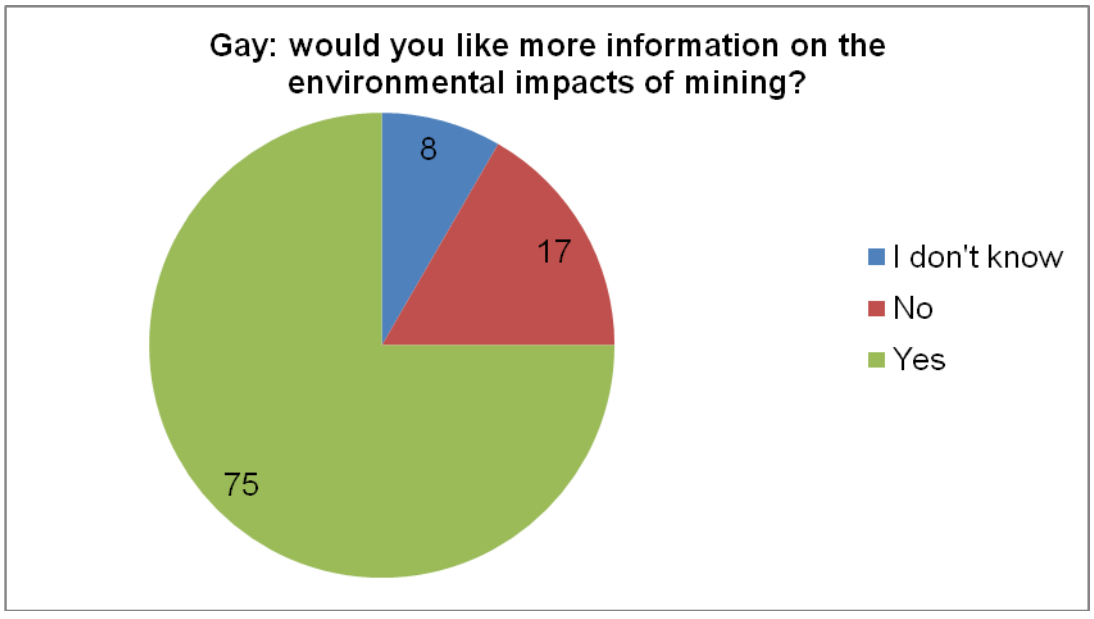

Figure 6 Would you like more information on the environmental impacts of mining at Gay, Russia? Total responses = 24.

Table 10 What is the significance of mining in Gay in the past, present and future?

Russia, Gay			
	Past %	Present %	Future %
Significant	92.5	85.4	66.7
Not significant	0	7.3	5.1
I don't know	7.5	7.3	28.2
Number of responses	40	41	39

Table 11 How is the mining industry performing? Gay, Russia.

Russia, Gay: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	73.7	7.9	0.0	18.4	38
Local community participation	32.4	29.7	18.9	18.9	37
Reducing pollution	8.1	18.9	37.8	35.1	37
Restoring vegetation	8.1	13.5	40.5	37.8	37
Meeting public expectations	16.2	35.1	35.1	13.5	37
Workplace health and safety	5.1	46.2	35.9	12.8	39
Community health and safety	8.1	29.7	48.6	13.5	37
Local employment	47.5	10.0	32.5	10.0	40
Community resources	14.6	14.6	17.1	53.7	41
Aiding the public understanding of mining	22.5	10.0	22.5	45.0	40
Improving housing	21.1	34.2	31.6	13.2	38

It was difficult in Russia to get people to agree to be interviewed. There were some interesting comments that reflect observations made out in the field when this work was carried out, comments that are connected to the general lack of willingness to talk openly. When asked about whether the views of local people were acknowledged by the company, a chief geologist from the mining town Gay replied:

“The opinions of ordinary people are almost never considered, not only in our country. People are the same everywhere”.

A similar response was given in an interview with a female shopkeeper in Gay:

“Public opinion has hardly any weight. Why? I do not have the right to vote, because I get fired tomorrow, I'll be without bread”.

Within the same interview the responses suggested that in their opinion there were few environmental impacts from mining in Gay and their overall belief was that mining had no negative impacts and only positive ones:

“I think there are no negative impacts at all. At the mine the salaries are higher than other enterprises in the city, and in the general mining industry - the main financial source for the city. Only the pros, I think”.

When asked what the mining companies can do for local people, one reply was simple:

“More funds, less accidents” (female shopkeeper in Gay). In the same interview the, lady discussed how “everything is built on money, unfortunately”, but despite these comments she spoke positively about any potential expansion or further development of new mines in the area.

3.4 Russia: Karabash

Mining started in Karabash at the beginning of the Twentieth century. It has now ceased in the area and only the smelting industry remains. Perceptions of ‘high impact’ environmental concerns in Karabash revealed that the main issues related to air quality (87 %),followed by land and water contamination (78 % and 76 %) (Table 12). Fewer people classified potential socio-economic impacts of mining as being of high impact, with workforce health and safety being of greatest concern (57 %), followed by community health and safety and job dependency (56 % and 43 %). Despite these concerns, 56 % of people responded in a positive way to the idea of mines reopening or the metal processing industry expanding (Figure 7), although 28 % of people responded negatively to this suggestion. Despite these results, and the obvious environmental concerns residents in Karabash have, only 49 % of residents wanted more information on the environmental impacts of mining and 41 % said they did not want more information (Figure 8). People’s perception of the significance of mining in Karabash has evidently declined, with 92.5 % of survey respondents thinking it was significant in

the past compared to only 56.4 % at present and 44.7 % in the future (Table 13). The views of respondents on the performance of the mining industry are shown in Table 14. The key factors identified as 'improving' are local employment (42.5 %), education and training opportunities (40.5 %) and housing (35.1 %) (Table 14). Two main issues arise from comments that respondents made on what is deteriorating within the industry: restoring vegetation and reducing pollution (where 59. 5 % and 54.3 % of people felt there was a deterioration in the industry performance) (Table 14).

Table 12 Environmental and socio-economic concerns rated 'high impact' at Karabash, Russia (based on 40 responses).

	Karabash, Russia		
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Air quality	Land contamination	Water contamination
%	87	78	76
Total responses	38	37	41
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Workforce health and safety	Community health and safety	Job dependency
%	57	56	43
Total responses	35	37	39

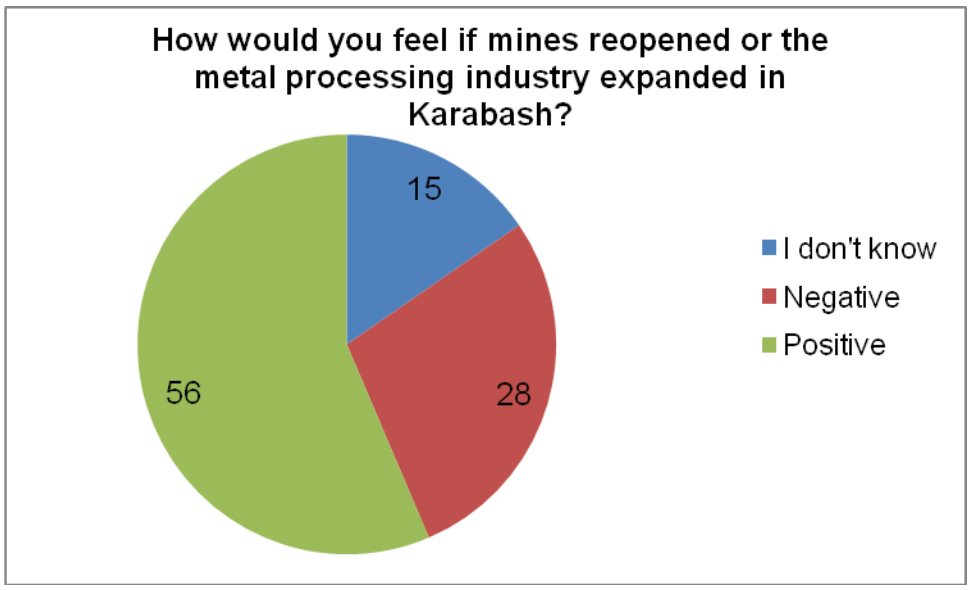

Figure 7 How would you feel if mining expanded in Karabash, Russia (%)? Total responses = 39, based on coded answers.

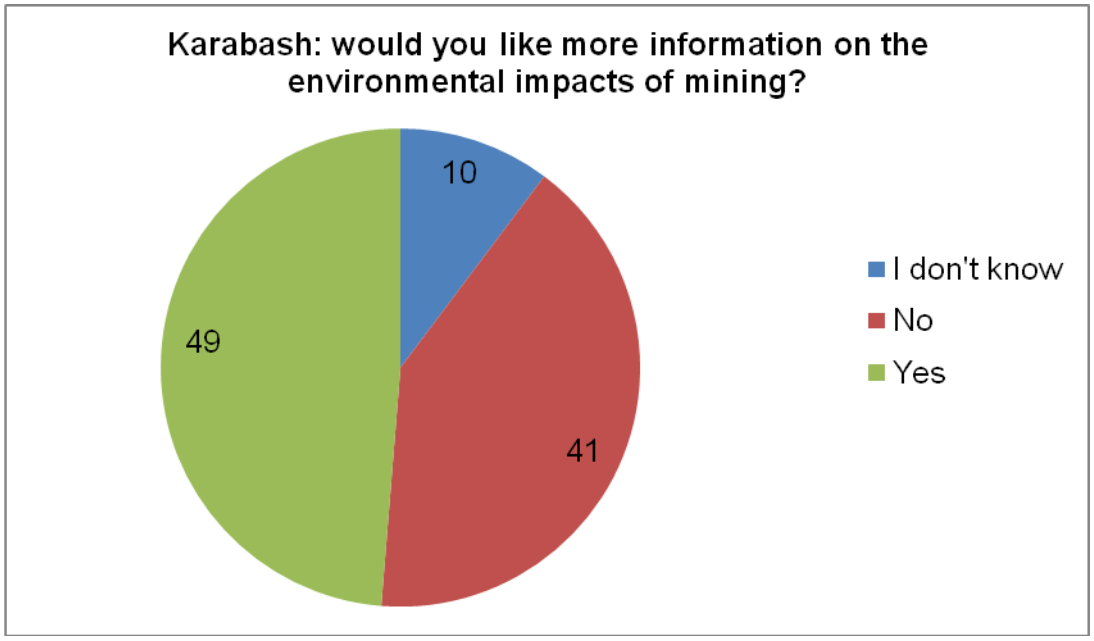

Figure 8 Would you like more information on the environmental impacts of mining at Karabash, Russia? Total responses = 39.

Table 13 What is the significance of mining in Karabash in the past, present and future?

Russia, Karabash			
	Past %	Present %	Future %
Significant	92.5	56.4	44.7
Not significant	0	25.6	0
I don't know	7.5	18	55.3
Number of responses	40	39	38

Table 14 How is the mining industry performing? Karabash, Russia.

Russia, Karabash: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	40.5	32.4	2.7	24.3	37
Local community participation	14.3	48.6	14.3	22.9	35
Reducing pollution	8.6	31.4	54.3	5.7	35
Restoring vegetation	13.5	16.2	59.5	10.8	37
Meeting public expectations	11.9	28.6	26.2	33.3	42
Workplace health and safety	18.9	21.6	21.6	37.8	37
Community health and safety	27.8	33.3	16.7	22.2	36
Local employment	42.5	45.0	2.5	10.0	40
Community resources	14.3	37.1	17.1	31.4	35
Aiding the public understanding of mining	12.5	37.5	3.1	46.9	32
Improving housing	35.1	43.2	8.1	13.5	37

The environmental consequences of past mining, and the current and past impact of copper smelting, are apparent all around Karabash. The damage is so widespread that there are immediate connections that have to be made relating living in an environment like this to negative impacts on human health.

One of the key issues at Karabash is the fine balance that exists between the smelter providing the major source of employment in the region (and ultimately the reason Karabash exsits), to it being the sole cause of vast environmental degradation in the region and having potential harmful consequences on human health. Two interviewees made these references to the socio-economic benefits of the smelter:

“This is the main town enterprise, for our trouble and joy. There was a time when the smelter was closed, and of course people immediately began to go away and work on a rotational basis in other locations” (female quarry chief and resident of Karabash).

“All the taxes from the copper smelter company are primarily spent on social needs of the city. When the smelter closed we organised the transportation of people for job opportunities in neighboring cities” (Mayor Karabash).

It is easy to see how the very existence of Karabash is therefore defined by the continuation of the smelter and that when during the 1990s when the smelter closed down for over 6 years, this had vast implications relating to the job dependency of most families in Karabash to employment of at least one parent at the smelter:

“The city is located in a hollow, gas is constantly spreading here. We can compare it to past years - I've already said that we had a period when the plant was not working, trees and grass began to grow and started creeping down the slope. We had a daughter when the air became cleaner, we decided to let the baby breathe clean air. The plant started again and everything went according to new pollution!” (female quarry chief and resident of Karabash).

Further discussion during the same interview about whether closing the smelter would be preferable, show how the importance of the economic benefits of the smelter to residents in Karabash are held in many respects above the potential impacts on human health that were inferred throughout the interview:

“The plant closing is impossible! We need to improve technology. There have been new filters installed and the various treatment facilities, but closing the plant cannot be! After all, in principle, there are good conditions for work (female quarry chief and resident of Karabash).

Further comments made in one of the open ended questions on the survey related to the vast array of environmental issues and the potential for these issues to have implications on the health of residents in Karabash:

“Protect the population from the emissions of harmful substances”.

“Pay more attention to the environment”.

“Clean air from the smelter. To hire people from Karabash”.

“Construction of treatment plants”.

“More money to the city budget”.

The above quotes are all from residents of Karabash.

“Today the question of closing the company does not go. The main tasks now are the environmental issues” (Mayor of Karabash).

The connection of the town’s people of Karabash is apparent in how they celebrate the existence of the smelter in ‘national smelter day’:

“On Saturday we will celebrate 100 years of our smelter, it will be a holiday ‘Day of the city’. Now the factory makes gifts, one-time payment of money to veterans. We have little social support, for example, prescribing free newspapers, etc. That is how it supports its veterans - those who worked at the plant (female quarry chief and resident of Karabash).

Relating to CSR and how the Russian Copper Company who own the smelter bring benefits to the local community in which they operate, the mayor of Karabash replied:

“We have an agreement on social partnership, where the copper company addresses social issues in conjunction with the city administration (for example, through the treatment of children under 14 years in the sanatorium). Schools and kindergartens are paid for in the city budget, but I must say that the copper company is a sponsor for the largest kindergarten and school”.

3.5 Russia: Mednogorsk

Mednogorsk smelter plant opened in the 1930s. Environmental concerns rated high impact by survey respondents in Mednogorsk are air quality, damage to nature and dust (52 %, 44 % and 41 % respectively – see Table 15). It is evident from assessing the socio-economic concerns rated ‘high impact’ that people are more worried about issues such as: job dependency, ageing population and community health and safety (77 %, 60 % and 44 % respectively – see Table 15). 71 % of people felt positive about mines expanding or reopening in Mednogorsk compared with 26 % of people feeling negative (Figure 9). Furthermore, the majority of respondents (67 %) wanted more information on the environmental impacts of mining (Figure 10). Similar to what was found in Gay and Karabash (as suggested above), people perceive the mining industry to be declining and of less importance at the present and in the future than it has been in the past (93.5 %, 86.2 % and 69 % significant in the past, present and future – Table 16). People

perceive that the mining industry is improving in providing education and training opportunities and local employment (63 and 70 % respectively – Table 17), yet a third of people think the mine company is deteriorating in restoring vegetation around Mednogorsk.

An interview carried out with the mayor of Mednogorsk discussed how the smelter plant undertook activities in a voluntary manner beyond their legal obligations:

“Today, Mednogorsk copper plant (owned by the Urals Mining and Metallurgical Company) contributes 80% of the city's budget. It also contributes to the social sphere of the city, for example on children's activities, training centres, an additional pension of their employees. It employs about 2500 thousand people from the 16,000 able-bodied population of the city and taking into account any service companies, there will be around 6000 people employed in the mining industry – its construction, transport, etc” (mayor of Mednogorsk and former employee at the smelter).

In addition to CSR enterprises from the Urals Mining and Metallurgical Company, the mayor also reflected on the links he has made with company representatives and how they have a two-way dialogue:

“I have worked for 5 years and introduced the notion of the "information day" which is a monthly meeting with representatives of the plant for dialogue. We discuss issues and interests of enterprises and from our side the administrative requirements”.

Table 15 Environmental and socio-economic concerns rated ‘high impact’ at Mednogorsk, Russia.

Mednogorsk, Russia			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Air quality	Damage to nature	Dust
%	52	44	41
Total responses	33	27	27
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Ageing population	Community health and safety
%	77	60	44
Total responses	31	25	32

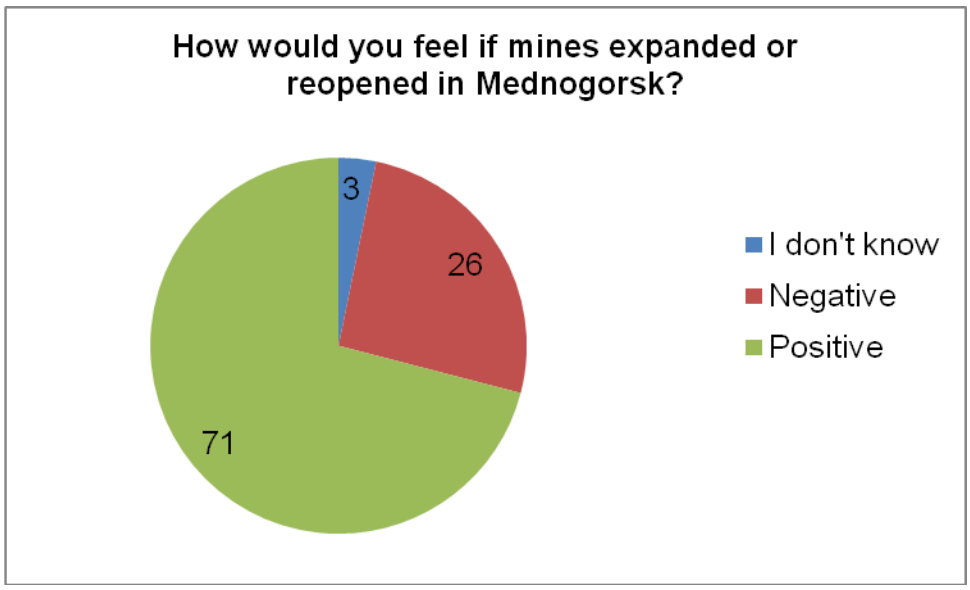

Figure 9 How would you feel if mining expanded in Mednogorsk, Russia (%)? Total responses = 31, based on coded answers.

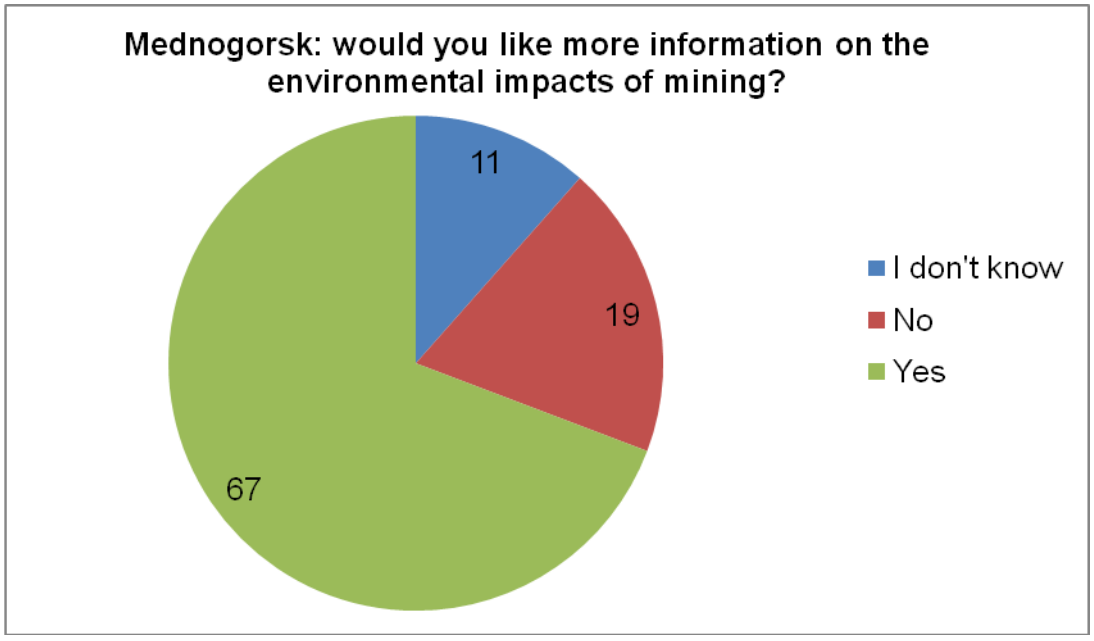

Figure 10 Would you like more information on the environmental impacts of mining at Mednogorsk, Russia? Total responses = 26.

Table 16 What is the significance of mining in Medonogorsk in the past, present and future?

Russia, Mednogorsk			
	Past %	Present %	Future %
Significant	93.5	86.2	69
Not significant	0	3.4	0
I don't know	6.5	10.3	31
Number of responses	31	29	29

Table 17 How is the mining industry performing? Mednogorsk, Russia.

Russia, Mednogorsk: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	63.0	7.4	3.7	25.9	27
Local community participation	25.9	37.0	0.0	37.0	27
Reducing pollution	40.0	20.0	20.0	20.0	30
Restoring vegetation	29.6	14.8	33.3	22.2	27
Meeting public expectations	14.3	28.6	14.3	42.9	21
Workplace health and safety	35.7	21.4	14.3	28.6	28
Community health and safety	42.3	26.9	19.2	11.5	26
Local employment	70.0	20.0	0.0	10.0	30
Community resources	30.0	10.0	0.0	60.0	20
Aiding the public understanding of mining	15.0	45.0	0.0	40.0	20
Improving housing	38.7	9.7	19.4	32.3	31

3.6 Sweden, Kristineberg

The three main environmental issues that survey respondents regarded as being of 'high impact' were: water contamination, land contamination and damage to nature (46 %, 39 % and 38 % - Table 18). Socio-economic concerns focused predominantly on issues of job dependency (68 %) and also workforce health and safety and community health and safety (Table 18). Despite these concerns, 89 % of people gave positive responses about mines expanding or reopening in the region (Figure 11). Only 52 % of people said they would like more information on the environmental impacts of mining and 30 % said they would not (Figure 12). Interestingly, when people surveyed were asked about the significance of mining in the area, more people thought it was significant at present compared to in the past (96.9 % at present, 95.3 % in the past), however, this figure dropped to 92.3 % in the future. When people were asked about their views on the performance of the mining industry relating to a whole list of different factors, there were key areas where people thought the industry was improving in how they perform (workplace health and safety (44.8 %), education and training opportunities (44.6 %), reducing pollution (42.1 %) and restoring vegetation (41.8 %) – Table 20). Conversely, the key areas for concern, where people thought the mining industry was deteriorating in how they were performing, were in improving housing (29.3 %), providing community resources (21.1 %), local employment (20.7 %) and in local community participation (20 %) (Table 20).

Table 18 Environmental and socio-economic concerns rated 'high impact' at Kristineberg / Malå, Sweden.

Kristineberg / Malå, Sweden			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Water contamination	Land contamination	Damage to nature
%	46	39	38
Total responses	61	61	63
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Workforce health and safety	Community health and safety
%	68	23	18
Total responses	62	61	56

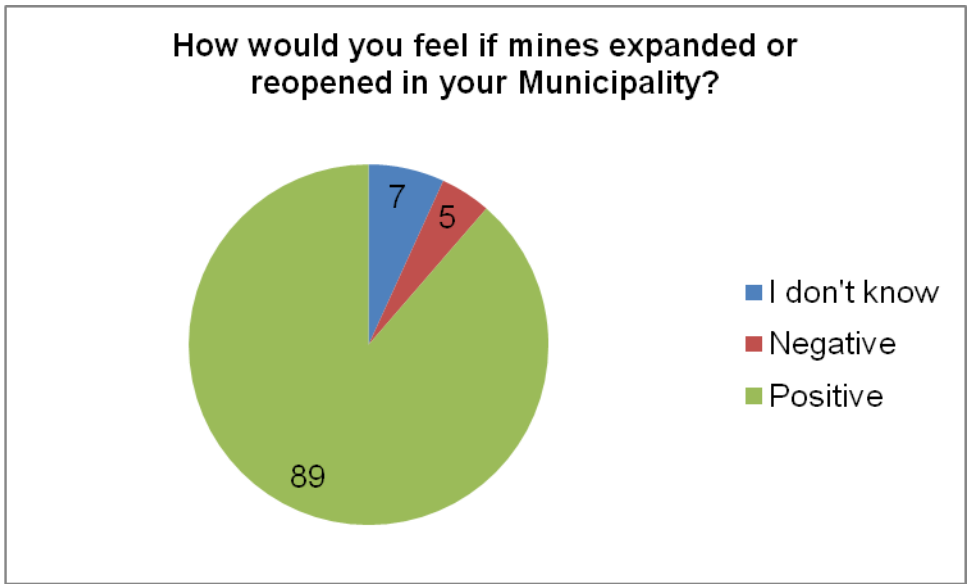

Figure 11 How would you feel if mining expanded in your municipality, Sweden (%)? Total responses = 44, based on coded answers.

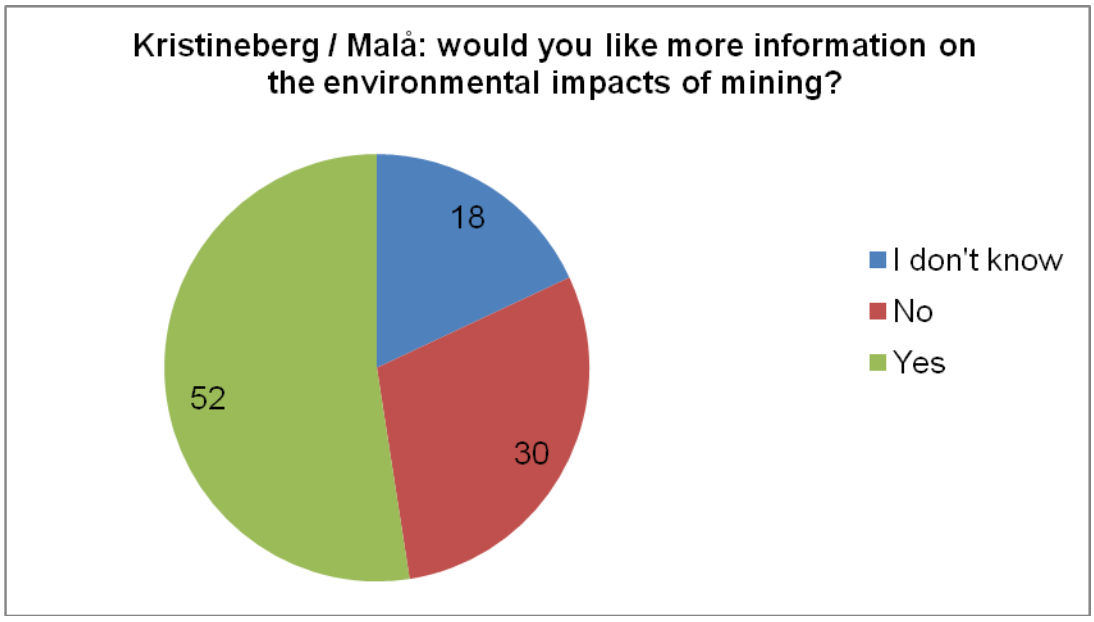

Figure 12 Would you like more information on the environmental impacts of mining at Kristineberg / Malå? Total responses = 61.

Table 19 What is the significance of mining in Kristineberg / Malå in the past, present and future?

Sweden, Kristineberg / Malå			
	Past %	Present %	Future %
Significant	95.3	96.9	92.3
Not significant	0	1,5	0
I don't know	4.7	1.5	7.7
Number of responses	64	65	65

Table 20 How is the mining industry performing? Kristineberg / Malå, Sweden.

Sweden, Kristineberg / Malå: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	44.6	23.2	7.1	25.0	56
Local community participation	16.4	40.0	20.0	23.6	55
Reducing pollution	42.1	15.8	15.8	26.3	57
Restoring vegetation	41.8	23.6	10.9	23.6	55
Meeting public expectations	18.5	33.3	13.0	35.2	54
Workplace health and safety	44.8	27.6	0.0	27.6	58
Community health and safety	26.8	35.7	7.1	30.4	56
Local employment	37.9	20.7	20.7	20.7	58
Community resources	24.6	22.8	21.1	31.6	57
Aiding the public understanding of mining	32.8	36.2	8.6	22.4	58
Improving housing	15.5	29.3	29.3	25.9	58

Kristineberg, near Malå, was one of main hubs of mining activities carried out by Boliden. Changes to the industry have, however, seen the closure of one of the processing plants and the reduction in numbers of people employed by Boliden. The decline in the number of jobs at Boliden and the decrease in the population of Kristineberg has changed the purpose of the village, from being a village that exists entirely because of mining in the area and to house people who work in the industry. The consequences on Kristineberg have seen the services provided within the village decrease. Some residents of Kristineberg have taken drastic measures where due to the low prices they would achieve by selling their house (lack of market and value), has necessitated people moving their entire house to a new plot where they want to relocate (including, based on site observations made, even removing the paving stones from their front path). In an interview carried out with an employee from Boliden, they were asked if they thought the empty houses in Kristineberg were Boliden's problem, the response was:

"No it is not a problem for Boliden but it is a problem for the people who live here because this village looks bad, and everybody that passes here says oh god, how can anyone live here? You get a very negative feeling when you pass the village and it looks like nobody cares" (Boliden employee).

A further view on the issue of who is responsible for the issues at Kristineberg also suggests that Boliden should not be responsible for the decline of the village:

"I do not really think anyone is responsible. I do not think that you can blame someone in particular for people moving, because that is just how it is. And we should not blame technology, because progress is what we strive for" (retired resident of Kristineberg and former employee at the mine).

This opinion was also reflected in the views of another resident of the village:

"No I don't feel they have an obligation to it now. Maybe Boliden doesn't contribute directly financially but they might help out with services that are otherwise expensive e.g. loaning out a tractor or an electrician so I feel that they are supportive of our community and what we do at the youth centre) (resident of Kristineberg and youth worker in the village).

It appears that in all the interviews carried out that people do not feel Boliden is responsible for the issues in Kristineberg, regardless of fact that many of the houses in the village were actually constructed by Boliden. An employee of Boliden also viewed the companies 'social contribution' as decreasing:

"Socially I think Boliden does less today than it has done before" (Boliden employee).

The perception interviewees had of what relationships were like between stakeholders and Boliden were positive, for example:

“Relationships are positive. I think local mining companies have the support of the local community” (forestry worker from Malå).

However, interestingly, this particular person responded with a suggestion that the stakeholders with the greatest concerns regarding mining were reindeer herders from the Sami community:

“I think the most negative people here to the mines are the Sami’s. Here in this area we have Samish people who have reindeer in this area living here the whole year. They need nature for the reindeers” (forestry worker from Malå).

Malå Sami community are active reindeer farmers in Västerbotten County, with a maximum herd size of 6200. Although there are two types of reindeer: fell and forest reindeer, the reindeer herds that the local Sami community keep are forest reindeer which are moved from the inland summer ground towards the coast in the winter. The interview with three members of Malå Sami community found that the reindeer themselves were much more affected by changes in infrastructure, such as new roads created to install wind turbines in the area, than by any active or abandoned mine sites in the area.

Malå Sami community representatives spoke openly about how they are happy with the current dialogue they have with the mining companies:

J: “Yes, we have good relations” (Sami community president).

A: “Nowadays it has got better and better, but in the beginning we were not heard. They used to start mines and not consult with us (Sami community member)”.

These views contrast with the perception from the forestry worker, that the Sami had negative views towards mining.

Further conversations with people from Malå Sami community revealed that they felt their lives as reindeer herders, and the associated subsequent impacts on the reindeer, were impacted more by changes in forestry practices and by the number of wind turbines that were being erected in the area than by mining. When they were asked whether it was easier to deal with the mining and wind turbine companies, it was evident straight away that they found the mine companies easier to work with as stakeholders. The reasons they gave as to why the Sami community members found the mining companies easier to work with relate to their view that mining activities had much tighter regulations and controls than putting up wind turbines, for example:

“They ask city councils if they can build them (wind turbines) and they get told ok”.

Other local residents were asked what they wanted the mining companies to do for their local community and responses given included:

“Take more responsibility for the local community”.

“Contribute more to the community”.

“Contribute to a better environment”.

3.7 UK, Cornwall

People who participated in the survey in Cornwall have greater concerns rated ‘high impact’ that relate to the socio-economic impacts of mining rather than environmental impacts (Table 21). The main environmental concerns are issues of land instability, damage to nature and water contamination (37 %, 32 % and 31 % - Table 21). Socio-economic concerns focus on issues of job dependency within the industry, workforce health and safety and community health and safety (75 %, 58 % and 25 % - Table 21). Overall, respondents were very supportive of any industry expansion, with 82 % of people giving a positives response to mines expanding and only 5 % giving a negative response (see Figure 13). The majority of respondents are not interested in having more information on the environmental impacts of mining (51 % said no compared to 44 % saying yes – see Figure 14). Survey responses show how significant people feel mining has been in the past in Cornwall (96.5 %), however, only just under half of the responses indicate that people feel mining is a significant industry in the present climate (49.6 %), rising to 53 % in the future (Table 22). Perceptions of respondents on industry performance show large areas where people feel there is no change in how the industry is performing, but the key areas where it is improving in Cornwall are in workplace health and safety (39.7 %), in restoring vegetation (39.4 %) and in issues relating to community health and safety (30.2 %) (Table 23).The main area people think the mining industry is deteriorating in relates to employing local people, where 19.1 % of respondents feel they are deteriorating in how they are performing (Table 23).

Cornwall is one of four sites around the UK that has been selected to have new ‘eco-towns’ built. This survey posed an interesting opportunity to ask people how they viewed the project in general and what they thought the impacts of the project would be on the Clay Lands area around St. Austell where they have a number of sites where the eco-town will be developed. 21 % of people thought the eco-town would have a positive impact on the area, compared to: 20 % of people thinking it would have both positive and negative impacts, 12 % just negative impacts, 8 % of people feeling neutral about the development and 39 % of people saying they did not know what impacts it would have (see Figure 15). A further question, that was structured in an open ended way and then had responses categorised into: positive land use, negative land use, affordable housing / positive housing impacts, employment, infrastructure benefits, infrastructure pressure / increased traffic, economic growth, negative environmental impact, eco-benefits / knowledge, not much difference, won’t go ahead, I don’t know and unemployment. These categories were devised by the responses given by people. The highest number of respondents felt that the development was a negative land use,

followed short by people feeling it was an overall positive land use (Table 24). People were concerned about the pressure increased traffic from the project would put on current infrastructure and that the project would have overall negative environmental impacts. There were positive comments made by respondents about the potential benefits to housing stock, with many comments relating to the affordable housing scheme that will make up a significant element of the housing being built by the eco-town (Table 24).

Table 21 Environmental and socio-economic concerns rated 'high impact' at Cornwall, UK.

Cornwall, UK			
Top 3 environmental concerns rated 'high impact'			
	1	2	3
Concern	Land instability	Damage to nature	Water contamination
%	37	32	31
	283	281	283
Top 3 socio-economic concerns rated 'high impact'			
	1	2	3
Concern	Job dependency	Workforce health and safety	Community health and safety
%	75	58	25
	276	277	275

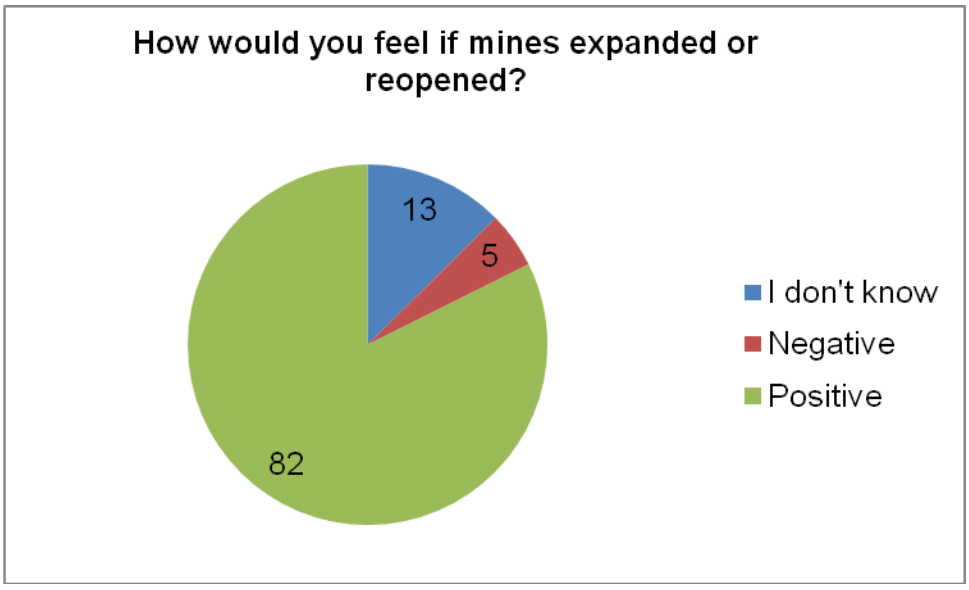

Figure 13 How would you feel if mining expanded in Cornwall, UK (%)? Total responses = 238, based on coded answers.

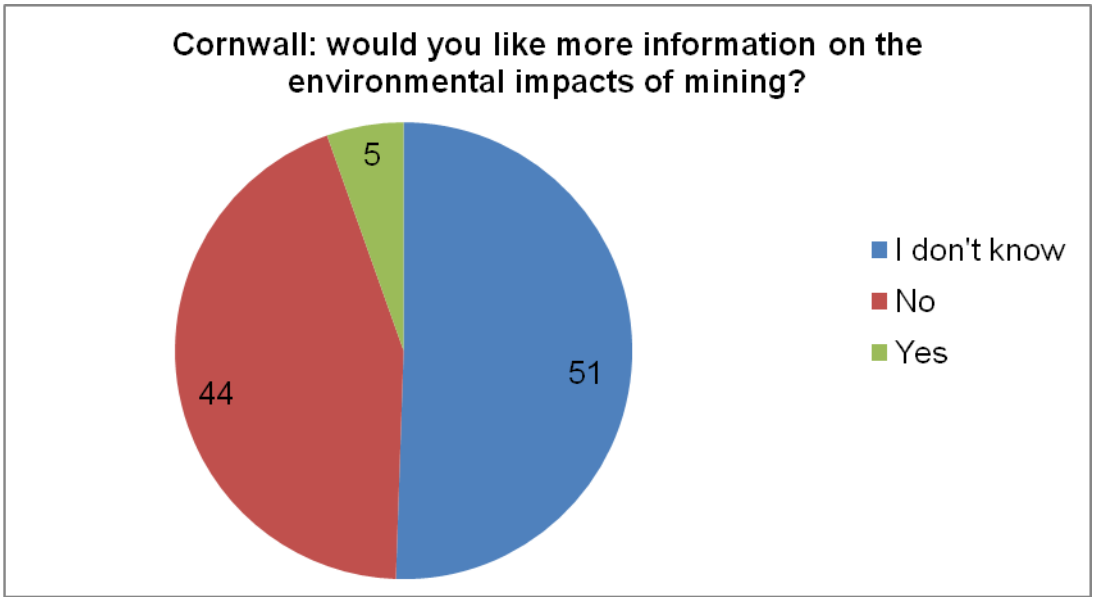

Figure 14 Would you like more information on the environmental impacts of mining at Cornwall, UK? Total responses = 275.

Table 22 What is the significance of mining in Cornwall in the past, present and future?

UK, Cornwall			
	Past %	Present %	Future %
Significant	96.5	49.6	53
Not significant	0	37.9	16
I don't know	3.5	12.4	31
Number of responses	283	282	281

Table 23 How is the mining industry performing? Cornwall, UK.

UK, Cornwall: How is the mining industry performing relating to (%):	Improving	No change	Deteriorating	I don't know	Total responses
Education and training opportunities	27.0	34.3	9.7	29.0	248
Local community participation	24.2	35.1	12.9	27.8	248
Reducing pollution	28.9	31.7	7.3	32.1	246
Restoring vegetation	39.4	26.0	5.7	28.9	246
Meeting public expectations	16.0	37.7	9.8	36.5	244
Workplace health and safety	39.7	23.5	2.4	34.4	247
Community health and safety	30.2	30.6	3.3	35.9	245
Local employment	29.3	25.2	19.1	26.4	246
Community resources	16.3	35.4	11.0	37.4	246
Aiding the public understanding of mining	29.6	30.0	10.5	30.0	247
Improving housing	10.2	40.4	10.2	39.2	245

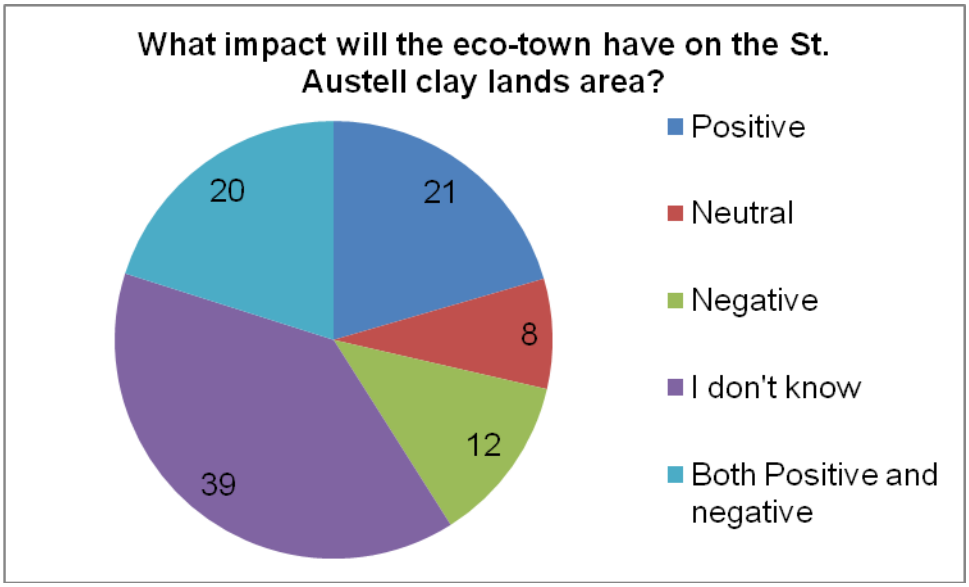

Figure 15 What impact will the eco-town have on the St. Austell clay lands area? Total responses = 283.

Table 24 What will the main impacts be on the Clay Lands area? Answers have been coded into categories seen below.

What will the main impacts be on the Clay lands area?	
Positive land use	32
Negative land use	37
Affordable housing/housing benefits	21
Employment	14
Infrastructure benefits	7
Infrastructure pressure/increased traffic	24
Economic growth	14
Negative environmental impact	17
Eco-benefits/ knowledge	16
Not much difference	2
Won't go ahead	2
I don't know	17
Unemployment	14
(categories above are based on coded answers, total responses = 137, some responses fit in multiple categories)	

Despite the decline in metalliferous mining in Cornwall, there is still an active china clay industry that employs approximately 1000 people. The last metal mine, South Crofty,

closed back in 1998 and is currently undergoing exploration work by people who intend on reopening it. Western United Mines (WUM) are carrying out the current exploration work and have, as part of the work they are proposing, carried out extensive consultation events with local people. It was interesting to talk to residents and establish how they perceived the level of overall community engagement and what these consultation events had been like. When asked to what extent local people are involved in community decision-making regarding mines reopening at South Crofty, a resident of Brea (a village near South Crofty mine) answered:

“No, I can’t see local people having much enthusiasm in making these decisions. Back a few years ago, people used to be a community, where people used to communally vote and make decisions. Nowadays, people don’t care because they don’t have any belief in the system. I know as far as voting goes, no community votes the same do they? Everyone has their own opinion on it and some people aren’t interested or some people might be interested in making decisions” (21 year old resident of Brea).

An older resident had a contrasting opinion, discussing how many residents had attended meetings regarding the reopening of South Crofty mine and that some of them had not been entirely satisfied with the responses they received:

“A lot of them were not satisfied with the answers they were given to the questions they asked. My husband came back and said that most of the people who went to the meetings were not satisfied with their answers” (resident of Brea near South Crofty mine).

These contrasting observations could represent the view points that different generations have on community engagement and whether they want to feel involved in the community decision making process. However, as shown by talking to younger people at other sites such as in Roşia Montană, the younger generation are often actively involved and concerned about their environment and want to ensure that any potential mineral exploitation is carried out in a responsible manner. The opinions of the younger resident discussed above have also been predominantly formed outside of a time period where active hard metal mining has been undertaken in Cornwall and this will have effected their overall perception.

During an interview South Crofty (WUM) the chief operating officer referred to the change in mindset people needed relating to how they viewed metal mining in Cornwall:

“Cornwall is not just Crofty and it’s not just tin, those are two mental adjustments that people have to make” (chief operating officer, WUM).

During the same interview with WUM, one of the questions was what they thought people in surrounding villages to South Crofty thought of the project and if there had been any negative comments:

“Not really. There was an issue with Brea village because the new concentrator building was supposed to go right up against the railway and some of the residents of Brea would have heard it and seen it. However, that building was designed for (to process) 150 tonnes an hour which would include crushing, grinding, flotation and all the other stuff. The concept that I’ve brought in since I arrived is underground pre-concentration, which means you have a processing plant underground which reduces the ore to basically a heavy mineral concentrate which contains all sorts of heavy minerals. Then that would be pumped to surface and you treat that. Going from 150 tonnes an hour, we now need 15 tonnes an hour, so that’s about the same size as your dad’s shed. In comparison there’s this massive building that looked like an escapee from the Boeing site and it was designed like a sardine can for some rather bizarre reason. They’re still continuing with that because they have permission for that” (chief operating officer, WUM).

A further comment was made about the positive feedback in the same interview with WUM about the positive support they have received from local community:

“Extremely good. Excellent. We’ve had very little negative feedback. The only negative feedback we get is that they think we don’t believe we’ll be in production in 2 years”.

An interview carried out with someone who lives in one of the villages surrounding South crofty mine reflected very positive views of mining that had been reciprocated in the overall findings from the survey undertaken:

“If mining was to begin again there’d be more jobs I believe, probably more community in the local area. I’m not really sure about more positives. Negative side of things, I can’t really see a negative of having jobs” (Resident of Brea near South Crofty mine).

However, Imerys, the main china clay operators in Cornwall, discussed how the surrounding local community expected more relating to how they operate:

“There have been changes in how the local community expects us to operate. 30 years ago people just assumed, for example, that the industry created dust and that was part and parcel of living here. People won’t accept that now and demand tighter environmental controls. This has also been brought on by people moving into the area and thinking ‘why do we have to put up with this” (Mineral Services Manager – Imerys).

A response given by one of the Cornwall Council cabinet members shows how essential engagement and participation is with all stakeholders involved to ensure any potential issues are solved as a mining project progresses:

“Mining companies work with the communities, and I think they can, and with the councils to actually mitigate the difficulties” (cabinet member 1 for Cornwall Council).

There are evidently further issues that need considering regarding any development of former mine sites:

“There is often a lot of negotiation to be had between potential regeneration projects and the need to safeguard resources. The solution may end up costing more but is essential” (mineral planner, Cornwall Council).

This highlights the complexity (in the UK) of dealing with the need to ensure mineral deposits are safeguarded, yet at the same time allow future use for inactive mine sites. For example, conflicting uses and needs to fulfil different aims arose when CPR Regeneration (Camborne-Pool-Redruth – an area in Cornwall) started work on numerous large scale projects where millions of pounds worth of money was being invested to try and generate major economic transformation and uplift of this area that had declined since the closure of many mines in this area. The conflict here was caused by the need to meet mineral planning rules in safeguarding resources for future use whilst the regeneration initiative aimed at delivering large-scale projects around the areas that needed safeguarding:

“Well you’ve got the ROMPS (review of mineral planning) discussions that were taking place which was all to do with the mineral area of search and the protection of access to minerals. And that really again was something that had been bubbling around for quite some time, the renewal of the ROMPS application. I’m not a minerals planner so I had to make sure they were talking because it’s not my bag really, but I needed them to understand what they needed to do. Again it was a bit of a torturous process, it perhaps took a little longer than either party wanted, but at least it got to a conclusion. And I think one of the sticking points in that was that obviously you had people who were looking at very specific mining proposals with a lot of detailed knowledge. And you had a mineral planning authority who was saying explain to us why you want to do this, you know, evidence of why you want to do this. There was a dialogue but perhaps not as much communication as there was dialogue. And that’s not being critical of either side, I think it was just a reality of the positions they were coming from. You had a district authority and a county council moving into a unitary, so there was a lot of change there. You had the existing mine operation, a new investor, a joint venture development company all trying to do things and the romps sat there in the background needing to be signed off before anything could be done” (CPR Regeneration).

It is clear from multiple interviews undertaken in Cornwall (and from the survey responses) that people in Cornwall have a strong association and connection with mining and on the whole quite a high level of support for current and future activities. This was demonstrated in another interview from a Cornwall Council cabinet member:

“I think the wider community would generally be supportive. Obviously we’ve got mining going on, China Clay and all of that anyhow and certainly in those communities mining is an important part of the community in terms of its culture, but also in terms of its employment. So there would need to be consideration of how mines were to be placed in the future, and you would want them to take into account the residential settlement and what the impacts were going to be on all of that. But I don’t think we should be closed to the idea of future mining” (cabinet member two for Cornwall Council).

This also raises issues relating to the need to balance different commitments to a variety of stakeholders over both the short and long term. There are further complications and challenges to restarting mining in Cornwall or developing sites further as Cornwall gained World Heritage Status in 2006 for its unique mining landscape, there are further conflicts created between this status and the potential reopening of mines within this area:

"I think once they understood that it was about commercial viability and not just moving it because it's easier, then there was a recognition of the value of that reinvestment. But they were very keen to ensure that the landscape and the heritage value of that landscape wasn't adversely affected and that there were safeguards beyond the investment so that when it comes to the potential of that mine in however many years closing again, that the reinstatement provisions are such that it protects that environment and doesn't compromise it so we don't get left with loads of sheds on the surface not looking very nice. Because part of the heritage of the site is that it has naturally reinstated itself. Again you're still dealing with two separate processes. You're dealing with a commercial viability of a business and you're dealing with heritage which they don't always sit as good bedfellows because they have different objectives. Communication is the key to most of it and with a dialogue and with pragmatism, some of the plans have had to be tailored to suit and some of the development ambitions are going to have to be restricted a little bit but with that we'll get both away. It's been a challenge, it'll continue to be a challenge because even when WUM start developing, there's still a monitoring regime that's got to continue because it's got to built as it should be and we've got to make sure it doesn't compromise other things. But it's good. It's the same wherever we work. Working down at Hayle, World Heritage status down there, again slightly different issues but the same principle: get round the table, work it through, let's not stop productive use of a place just because we've decided it's got special status" (CPR Regeneration).

3.8 Comparison of the results across the seven demo sites

The majority of people who completed the survey across the seven demo sites felt positive about mining in general, with over 95 % of survey respondents in Roşia Montană feeling positive (Figure 16). Overall, very few people across the seven sites felt entirely negative about mining, with the highest proportion of respondents who felt negative about mining coming from Karabash (Figure 16). Sites such as Cornwall, Vihovići, Karabash and Mednogorsk had large numbers of people responding saying they felt both positive and negative about mining. Figure 16 shows that there are wide discrepancies relating to how people feel about mining, ranging from sites such as Roşia Montană, Gay, Cornwall and Kristineberg where the majority of people have positive perceptions of mining, to a site like Karabash, where people have very negative associations to mining in general.

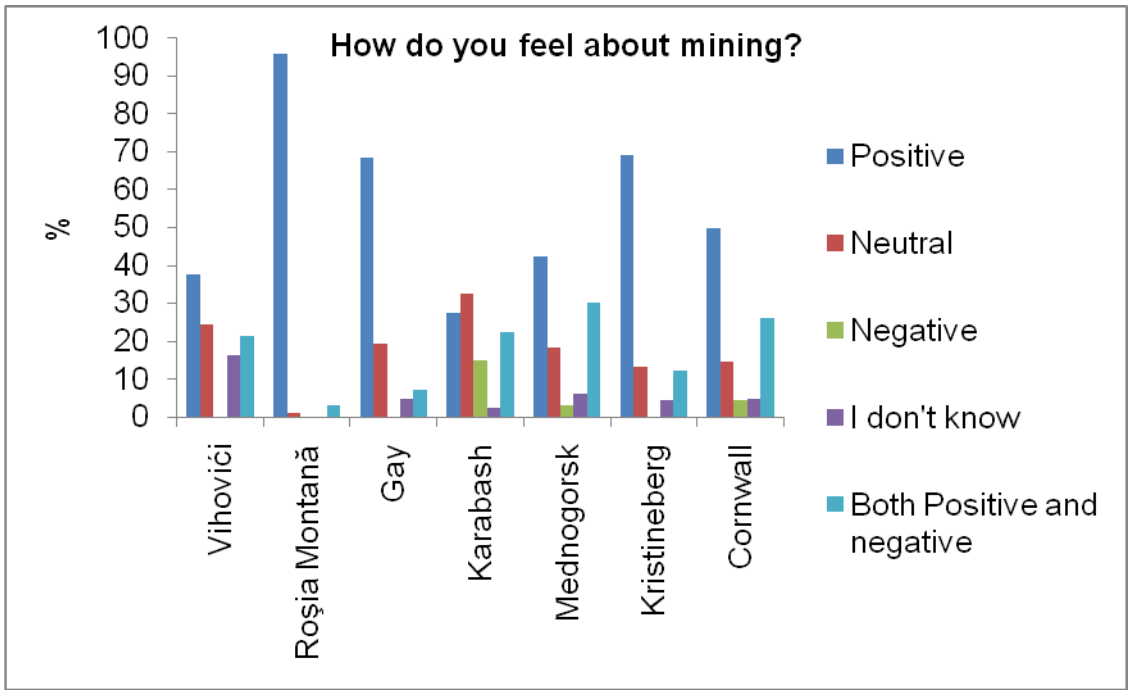

Figure 16 How do you feel about mining in general? Total responses Vihovići = 122, Roşia Montană = 91, Gay = 41, Karabash = 40, Mednogorsk = 33, Kristineberg / Malå = 65, Cornwall = 285.

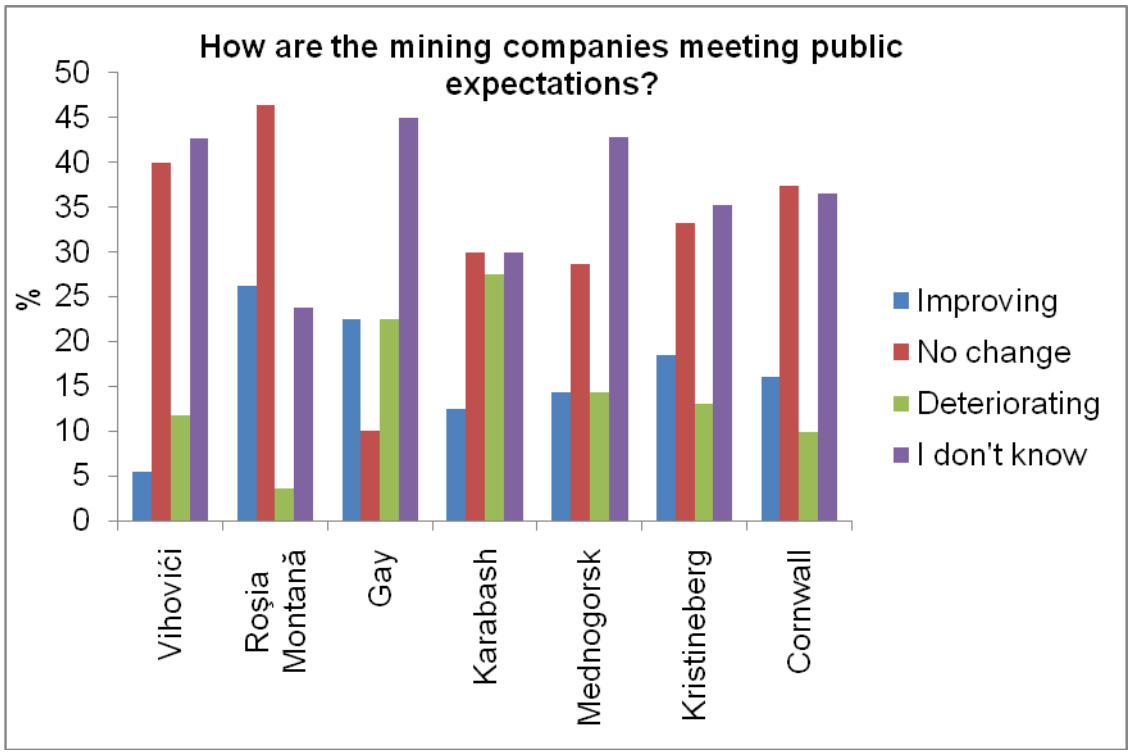

Figure 17 How are mining companies meeting public expectations? Total responses Vihovići = 110, Roşia Montană = 84, Gay = 37, Karabash = 40, Mednogorsk = 21, Kristineberg / Malå = 54, Cornwall = 243.

There are wide variations relating to how people perceive mining companies across the ImpactMin demo sites are meeting public expectations (Figure 17). Roşia Montană was the site where the highest percentage of people thought the company (namely RMGC) was meeting public expectations, although this figure was still only just over 25 %. Conversely, Roşia Montană also had the lowest percentage of people thinking the mining company was deteriorating in meeting public expectations. Karabash has the highest percentage of people (over 25 %) who felt the mining company is deteriorating in meeting public expectations (Figure 17). Across all of the sites, the majority of people responded saying they felt there had been no change or that they did no know whether the company was meeting public expectations.

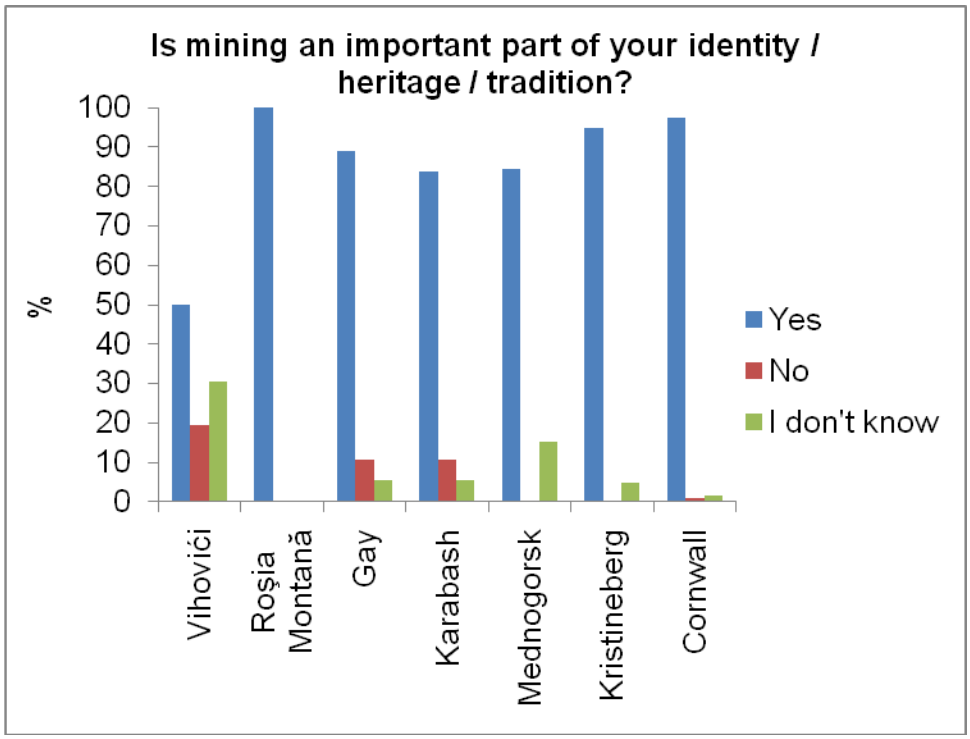

Figure 18 Is mining an important part of your identity / heritage / tradition? Total responses Vihovići = 118, Roşia Montană = 86, Gay = 22, Karabash = 37, Mednogorsk = 26, Kristineberg / Malå = 62, Cornwall = 272.

Vihovići stands out compared to all of the other sites in that fewer people place importance on mining as part of their identity / heritage / tradition (Figure 18). Even so, 50 % of respondents at Vihovići still felt that mining was an important part of their identity / heritage / tradition. This contrasts distinctly, however, with Roşia Montană where 100 % of people thought mining was an important part of their identity / heritage / tradition. Even at sites like Karabash, where people have more negative opinions about mining in general (Figure 16), over 80 % of people still consider that mining is an important part of their identity / heritage / tradition.

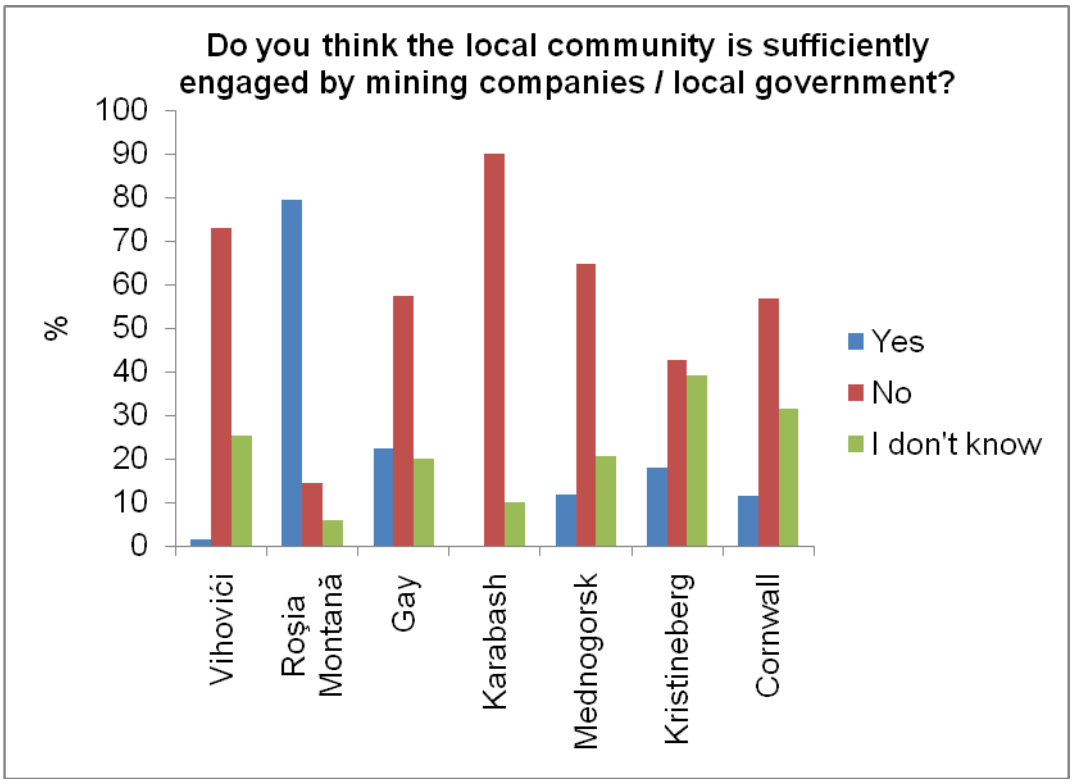

Figure 19 Do you think the local community is sufficiently engaged by mining companies / local government regarding potential mine developments or expansions? Total responses Vihovići = 118, Roşia Montană = 83, Gay = 40, Karabash = 40, Mednogorsk = 34, Kristineberg / Malå = 61, Cornwall = 273.

Nearly 80 % of survey respondents in Roşia Montană feel sufficiently engaged by mining companies and / or the local government regarding potential mine developments of expansions (Figure 19). The other sites have very low levels of people feeling they are 'sufficiently' engaged (Figure 19). In Karabash, no one felt sufficiently engaged by the Russian Copper Company who own Karabash copper smelter and 90 % of respondents felt they were not sufficiently engaged. The findings of this question need interpreting with the context and in particular, the mining stage of each of the sites. The site at Vihovići, for example, has not been mined since 1991 whereas in Roşia Montană mining only ceased 5 years ago. All of the other sites still have active mines or metal processing industries in the vicinity. This will alter people's perceptions of how the industry is performing and also in reality how active the companies working in the area are on engaging different stakeholders in their project.

It is evident from Table 25, that whilst there are two key forms of consultation that people like across the sites: public display boards and public meetings, that there are other methods of consultation that are popular at some of the sites. For example, phone surveys came out in Mednogorsk as the most preferred choice of consultation by survey respondents, yet at many of the sites this was the least preferred methods of consultation (Table 25). Table 26 shows the top two sources where people get their information on mining as selected by survey respondents across all seven demo sites.

The sources vary across the demo sites but news organisations / the media are the top sources of information in Vihovići, Karabash, Mednogorsk and Cornwall, and the second source of information in Gay and Kristineberg (Table 26). In Roşia Montană, survey respondents identified the mining company as being where people get most of their information on mining. This was the only sites where the mining company was one of the top two sources of where people get their information from.

Table 27 provides information on how the local mining / metal processing company have consulted with people who completed the survey. This provides information firstly on whether they have been consulted by their local company, and secondly, how they have been consulted. Survey respondents were allowed to select all types of consultation that applied to them. In Vihovići the highest response selected by people was that they had no consultation from the local mining companies (Table 27). This was followed by a relatively large number of people replying saying there was no local mining and that this was therefore not applicable to them. Roşia Montană had the highest proportion of people, based on total numbers of respondents, having partaken in some form of consultation with RMGC. The top source was 84 of all respondents having had face to face discussions with the company (Table 27). This was followed by the use of internet surveys (63 responses) and public meetings and leaflets. Across the three demo sites in Russia, it is interesting that more people had expereinced some form of consultation than people who said they had not been consulted. In Karabash, 22 respondents had attended public meetings about the copper smelter. 40 people in Kristineberg had not been consulted by local mining companies, with relatively few numbers of people having participated in any form of consultation: e.g. face to face discussions (6 people) and 5 people in a public meeting. These figures seem quite low given how active for mining the area still is. In Cornwall, 92 people had not been consulted and 90 people selected that they felt it was not applicable as there was no local mining in the area. This could relate to the origin of survey respondents, as not everyone who completed the survey in Cornwall either currently lived or had ever resided in Cornwall. Large numbers of people have, however, attended public meetings (54 people) and had looked at public display boards (48 people).

Survey respondents were asked what they thought were the benefits from the presence of the mining / metal processing industry in their area. This question was worded openly in order to not restrict people based on pre-conceived ideas of what the benefits might be of mining. Answers were subsequently categorized as seen on Table 28. The main perceived benefit of the industry that people gave at each of the demo sites related to employment opportunities from the industry. There were interesting variations in other perceived benefits across the demo sites. At Vihovići, metals / minerals were the second most frequently cited benefit (referring to the production of coal in this instance). This was not mirrored by responses given at the other sites. Economic benefits / money were the second most frequently cited benefit by people in Roşia Montană, Mednogorsk, Kristineberg and Cornwall (Table 28). In Cornwall the third and fourth most frequently cites benefits of the mining industry were tourism / heritage and mining prowess / progress. These were both categories of responses that were only mentioned

to any extent at the Cornwall demo site and therefore appear to be quite unique to people's perceptions of mining in Cornwall.

Across the demo sites one of the comparative survey questions asked people what mining / metal processing companies should do to avoid negative impacts and improve the positive impacts that mining can have. This question was open ended and responses were categorised. The most frequently selected category changed across each of the sites, however, at Vihovići, Karabash and Mednogorsk it related to increased environmental awareness / monitoring / EIAs (Table 29). This category was also the second most frequent answer in the survey in Cornwall. In Cornwall the most common answer related to the need for mining companies to be more transparent and improve communication / education / engagement (this was the second most frequently cited response in Kristineberg) (see Table 29). In Roşia Montană they wanted RMGC to employ local people, with the third most frequent answer being 'to start mining'. In Gay and Kristineberg the most common response fell into the category that the mining company should provide some kind of social benefits (for example: to the community, health services, infrastructure, wage, sourcing local equipment, health and safety etc – Table 29). This was also the second most frequent response in Roşia Montană and the third in Cornwall. Overall, the key things most people across the communities want mining companies to do are: provide social benefits (add value), take care of the environment, employ local people, operate in a transparent and engaging manner, and in the case of Roşia Montană, start mining again.

Refer to tables 30 to 36 for results assessing people's perception on the preference of different types of developments compared to a mine. Across each of the ImpactMin demo sites there is a wide variation in how preferable a mine development is compared to other potential developments. At Vihovići, Karabash and Mednogorsk mines do not appear to be as preferable, compared to other potential developments, as they do as other sites. In Roşia Montană (Table 31), a mine is more preferable than any other type of development listed in the survey. The most preferable development at Vihovići, compared to a mine, is the construction of a hospital. Hospitals were also the most preferable type of development compared to a mine, at Kristineberg and Cornwall and joint preferable (along with a town development) at Mednogorsk. A town development / eco-town was the most preferential type of development in Gay and Karabash. The Russian demo sites referred to a 'town development' rather than an 'eco-town development' as discussion with our Russian partners led us to conclude that most people would not understand the term 'eco-town' in Russia. At Vihovići, the least preferable development compared to a mine, was a prison. This was the same across many of the other sites including: Gay, Karabash, Mednogorsk and Kristineberg. In Roşia Montană the least preferred development (compared to a mine) was a waste incinerator and in Cornwall it was a landfill site (refer to tables 31 and 36).

Table 25 What would be the most useful form of consultation for you with a mining company working / planning to work in your area? Respondents were asked to select the most useful forms of consultation. Total responses Vihovići = 172, Roşia Montană = 198, Gay = 65, Karabash = 77, Mednogorsk = 43, Kristineberg / Malå = 88, Cornwall = 545.

	Most useful forms of consultation		
	First	**Second**	**Least preferred**
Vihovići	Public display	Public meeting	Postal survey
Roşia Montană	Public display	Face to face discussions	Postal survey
Gay	Public meeting	Internet survey	Public display
Karabash	Public meeting	Public display	Phone survey
Mednogorsk	Phone survey	Internet survey	Postal survey/public display
Kristineberg	Public meeting	Leaflets	Phone survey/Internet survey
Cornwall	Public meeting	Public display	Phone survey

Table 26 From whom do you get your information on mining? Respondents were asked to select their top 2 sources (mining company, government / council, news organizations or the media, I do not get information, NGOs, local community groups, neighbours / family / friends or other). Total responses Vihovići = 150, Roşia Montană = 198, Gay = 59, Karabash = 63, Mednogorsk = 50, Kristineberg / Malå = 112, Cornwall = 516.

Top two sources where people get their information on mining			
		Source 1	**Source 2**
Bosnia Herzegovina	Vihovići	News organisations/media	Neighbours/family/friends
Romania	Roşia Montană	Mining company	Government/council
Russia	Gay	Neighbours/family/friends	News organisations/media
Russia	Karabash	News organisations/media	Neighbours/family/friends
Russia	Mednogorsk	News organisations/media	NGO's / Neighbours/family/friends
Sweden	Kristineberg	Neighbours/family/friends	News organisations/media
UK	Cornwall	News organisations/media	Neighbours/family/friends

Table 27 Consultation methods across ImpactMin demo sites. Answers have been categorised.

How do your local mining / metal processing company consult with you?							
Country	Bosnia Herzegovina	Romania	Russia	Russia	Russia	Sweden	UK
Demo site	Vihovići	Roşia Montană	Gay	Karabash	Mednogorsk	Kristineberg	Cornwall
No consultation	69	3	6	9	7	40	92
Face to face discussions	7	84	10	2	11	6	29
Phone survey	3	19	7	0	6	2	0
Public meeting	3	28	9	22	4	5	54
Internet survey	3	63	10	9	8	0	5
Postal survey	3	3	0	10	0	0	2
Face to face survey	2	2	2	2	1	1	7
Public display	4	1	9	0	5	3	48
Leaflets	5	20	0	0	0	4	26
Not applicable - no mining	28	0	0	0	0	1	90
Other	6	0	0	0	0	3	21
Total responses*	133	223	53	54	42	65	374

* People were eligible to select all consultation methods that applied to them

Table 28 Perceived benefits from the presence of the mining / metal processing industry across the ImpactMin demo sites. Answers have been categorised.

What have been the benefits from the presence of the mining / metal processing industry in your area?							
	Bosnia Herzegovina Vihovići	**Romania Roşia Montană**	**Russia Gay**	**Russia Karabash**	**Russia Mednogorsk**	**Sweden Kristineberg**	**UK Cornwall**
Jobs/employment	38	72	21	26	19	53	160
Economic benefits / money	16	29	4	4	9	11	141
People to area/community	1	21	0	0	0	10	12
I don't know	15	0	0	1	0	1	2
Infrastructure	1	0	0	0	0	3	12
Tourism / heritage	0	3	0	0	0	1	63
other	4	7	1	0	0	1	18
Metals / minerals	18	4	0	0	0	1	10
Positive'	0	1	8	0	2	0	0
Only negatives	3	0	0	4	0	0	1
Mining prowess / progress	2	1	0	0	0	0	54
(categories above are based on coded answers)							

Table 29 What should mining / metal processing companies do to avoid negative impacts and improve the positive impacts? Answers have been categorized.

What should mining / metal processing companies do to avoid negative impacts and improve the positive impacts?	Vihovići	Roşia Montană	Gay	Karabash	Mednogorsk	Kristineberg	Cornwall
Not applicable	0	0	0	0	0	0	19
I don't know	0	8	0	2	1	6	15
Social benefits (e.g. community, health services, infrastructure, wage equality, source local equipment, health and safety)	2	24	11	4	3	23	21
Environmental monitoring / awareness benefits / EIA	9	0	1	8	8	1	33
Environmental negatives	0	0	0	0	0	0	2
Economic benefits	0	1	1	1	0	0	2
Start mining / increase mining activities	0	15	0	0	0	0	4
Employ local people	0	33	4	1	2	3	14
Transparency (e.g. Improve communication /education / engagement)	1	7	0	0	0	12	105
Heritage development	0	1	0	0	0	0	2
Meeting standards in industry (e.g. Sustainability guidelines / best practice)	6	2	1	0	3	0	16
Appropriate restoration	0	0	0	0	0	0	13

Don't open mines / close them down	0	1	0	0	0	0	0

(categories above are based on coded answers)

3.8.1 Comparison of views across demo sites on different developments compared to a mine

Table 30 Vihovići: Preference of developments compared to a new mine?

Vihovići: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	36.4	27.1	29.9	6.5	117
Factory	48.7	34.5	9.7	7.1	113
Amusement park	59.6	11.5	20.2	8.7	104
Wind farm	60.9	21.8	7.3	10.0	110
Prison	22.7	18.2	44.5	14.5	110
School	61.8	10.0	19.1	9.1	110
Eco-town development	65.1	12.8	11.9	10.1	109
Hospital	72.0	13.1	6.5	8.4	107
Power station	45.4	32.4	10.2	21.0	108
Landfill site	38.1	26.5	30.1	5.3	113

Table 31 Roşia Montană: Preference of developments compared to a new mine?

Roşia Montană: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	6.5	0.0	88.3	5.2	77
Factory	8.5	32.9	52.4	6.1	82
Amusement park	2.6	19.5	68.8	9.1	77
Wind farm	7.5	8.8	71.3	12.5	80
Prison	0.0	1.4	86.3	12.3	73
School	3.8	19.2	64.1	12.8	78
Hospital	6.3	16.5	69.6	7.6	79
Power station	2.6	17.1	71.1	9.2	76
Landfill site	2.6	1.3	85.5	10.5	76

Table 32 Gay: Preference of developments compared to a new mine?

Gay: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	0.0	59.0	28.2	12.8	39
Factory	27.0	40.5	18.9	13.5	37
Amusement park	17.9	28.2	43.6	10.3	39
Wind farm	10.3	20.7	62.1	6.9	29
Prison	0.0	3.0	90.9	6.1	33
School	10.8	29.7	54.1	5.4	37
Town development	37.5	50.0	7.5	5.0	40
Hospital	21.1	47.4	26.3	5.3	38
Power station	0.0	50.0	28.9	21.1	38
Landfill site	0.0	39.5	39.5	21.1	38

Table 33 Karabash: Preference of developments compared to a new mine?

Karabash: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	22.7	45.5	31.8	0.0	22
Factory	42.9	61.9	0.0	0.0	21
Amusement park	51.9	29.6	18.5	0.0	27
Wind farm	29.4	35.3	17.6	17.6	17
Prison	0.0	0.0	78.6	21.4	14
School	52.9	0.0	47.1	0.0	17
Town development	83.3	16.7	0.0	0.0	36
Hospital	41.7	58.3	0.0	0.0	24
Power station	0.0	66.7	16.7	16.7	18
Landfill site	17.6	47.1	35.3	0.0	17

Table 34 Mednogorsk: Preference of developments compared to a new mine?

Mednogorsk: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	4.5	45.5	22.7	22.7	22
Factory	62.5	33.3	4.2	0.0	24
Amusement park	57.9	26.3	15.8	0.0	19
Wind farm	23.8	19.0	28.6	28.6	21
Prison	0.0	19.0	61.9	19.0	21
School	30.4	43.5	21.7	4.3	23
Town development	66.7	33.3	0.0	0.0	24
Hospital	66.7	25.9	3.7	3.7	27
Power station	14.3	47.6	23.8	14.3	21
Landfill site	10.5	63.2	21.1	15.8	19

Table 35 Kristineberg / Malå: Preference of developments compared to a new mine?

Kristineberg / Malå: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	3.6	19.6	69.6	7.1	56
Factory	11.5	63.9	18.0	6.6	61
Amusement park	12.1	25.9	48.3	13.8	58
Wind farm	13.3	50.0	30.0	6.7	60
Prison	1.7	11.9	76.3	10.2	59
School	25.4	49.2	16.9	8.5	59
Eco-town development	14.3	33.9	32.1	19.6	56
Hospital	33.3	40.0	21.7	5.0	60
Power station	8.5	30.5	49.2	11.9	59
Landfill site	3.4	15.3	69.5	11.9	59

Table 36 Cornwall: Preference of developments compared to a new mine?

Cornwall: Indicate your level of preference compared to a new mine development (%):					
Option	More preferable	Same preference	Less preferable	I don't know	Total responses
Waste incinerator	3.2	28.6	62.9	5.4	280
Factory	14.4	55.8	26.6	3.2	278
Amusement park	14.5	23.6	57.5	4.4	275
Wind farm	41.3	32.2	24.6	1.8	276
Prison	4.7	20.0	70.2	5.1	275
School	56.7	31.0	9.0	3.2	277
Eco-town development	39.6	27.1	28.6	4.8	273
Hospital	57.3	30.1	11.1	1.4	279
Power station	6.9	45.1	45.8	2.2	275
Landfill site	1.4	17.6	78.8	2.2	278

Chapter 4 Discussion

This study has allowed an assessment to be made of what the socio-economic impacts of mining have been at each of the sites, including how mining companies develop social responsibility programmes and how they engage with different stakeholders. The socio-economic impacts of mining are tied to the environmental impacts, the environment continually influences all aspects of people's lives. We have separated the discussions into individual sites and then provided a comparison of the results found across all of the sites.

4.1 Bosnia Herzegovina, Vihovići

Vihovići provides a unique example of the complexities of post-mining development and difficulty in changing the use of a mine site to reflect the needs and wants of local people. Bosnia Herzegovina is a country that has undergone massive changes to the population demographics due to war in the region. There have been large changes to the population and in particular to the ethnic composition of Mostar since the war (ANON, 2002). These changes mean that a lot of people who now live in Mostar were not there when the mines were working. This is reflected in the low number of people who said they felt positive about mining relative to other sites except Karabash (Figure 16) and the low level of connection people have with mining as part of their identity / heritage / tradition (Figure 18). Similarly, when asked how preferable different types of developments were compared to a mine it is clear that respondents to the survey at Vihovići view mines as not being as preferable as many other types of development (Table 25). However, when people were asked whether they would like Vihovići to reopen, nearly 50 % of people gave answers that were in favour of Vihovići reopening (Figure 2). This appears to contrast distinctly with the general views respondents have of mining but perhaps aligns more easily with the importance placed on job dependency, shown by the number of respondents who rated 'job dependency' as high impact (Table 2).

Since mining ceased at Vihovići in 1991, and the nearest active mines to Mostar are bauxite mines at least 20 km away near Čitluk, it is unlikely people would have been consulted on issues regarding mine developments and this is reflected in the low number of people feeling sufficiently engaged by mining companies / the local government regarding any new developments of expansions of existing mines (Figure 19) and this is also reflected in the findings shown in Table 27 where Vihovići was the site where the highest percentage of respondents said they has not been consulted regarding any development. Survey respondents rated addressing and mitigating against potential environmental issues caused by mining as the most important thing that mining companies can do to reduce their negative impacts and increase their positive impacts (Table 29). The importance people place on the environment may relate to the perception of nearly 50 % of respondents, that the mining companies are deteriorating in their performance at reducing levels of pollution and restoring vegetation (Table 4). Interviews carried out highlight the specific concerns people have with the site at Vihovići, such as slope stability, proximity of the mine site to the city (if it should ever reopen) and how the site will be developed in the future.

4.2 Romania, Roşia Montana

Roşia Montană provides a fascinating case study for many different reasons. Diverse stakeholders have contrasting views of the project and throughout all the interviews it became apparent that there are many hidden complexities and theories given as to why the project has been controversial and why the process of gaining the environmental permit has taken so long. Perceptions from an outsider, and in particular, from looking at the main opposition NGO (Alburnus Maior), suggest that there is widespread opposition for the project. Overall findings of this study show a contrasting picture based a sample of local people, where findings from the survey and interviews carried out for this project show that there is a high level of support from within the community for the project reopening. Unfortunately, despite many attempts to try and interview a representative of Alburnus Maior they informed us that it was not possible to arrange an interview.

Roşia Montană has the highest percentage of respondents who had positive views about mining compared to all the other sites (Figure 16). Roşia Montană also stands out compared to other demo sites, as they had the highest percentage of respondents saying mining companies were meeting public expectations (Figure 17), the highest percentage of respondents feeling mining was an important part of their identity / heritage / tradition (Figure 18) and the highest number of responses indicating that people perceived that RMGC and the local government were sufficiently engaging local people (Figure 19). Whilst these results reflect very positively on how RMGC are performing, particularly with how they are actively engaging with a range of stakeholders about the project, it is evident from the issues highlighted from this project that RMGC could still improve how they communicate with local people. One key example of this is the need for clarification about the policy they have on purchasing residential and non-residential properties. This was brought up during many of the interviews undertaken and has obviously been a contentious issues amongst residents who are not getting their property purchased. The perception of some of the people interviewed was that RMGC had not been fair in how they had gone about purchasing property and land. The process of undertaking the purchase of any sort of property / land needs carefully considering and it needs to be done in a transparent manner where people are all informed of how it is being done and that it is following set guidelines (in this instance from the World Bank). Miscommunications or the failure to discuss issues could have caused the conflict that has arisen about the house prices in Roşia Montană. When people were asked to give an explanation as to why reopening the mines in Roşia Montană was so controversial, the most common response given related to the involvement of interest groups such as opposition NGOs followed by government / politics, economic reasons and lack of information given to stakeholders (Table 8).

Whilst the proposed project has a clearly defined ‘environmental boundary’, the social boundary of real people being affected by many different aspects of the proposed project is not so easily quantifiable. Solomon et al. (2008) suggest that often the word ‘social’ was interpreted just as referring to issues relating to just the local community, whilst in reality social impacts should include and consider the wider community outside

of the direct environmental impacts of a project. This view emphasises the need for RMGC to ensure they address the social impacts of their proposed project outside of the direct community. This is a challenging issue to address as you have an environmental project boundary that is readily definable, but a social 'boundary' without any obvious delimitation. This has created a situation for RMGC that because of the strictly defined 'environmental boundary', that may be people living 10 m outside of this area who still feels they are being affected by the project and are envious of their neighbours just within the boundary who are receiving an above average-local price for their house.

In Roşia Montană people are more concerned about job dependency than environmental issues (Table 5). From an environmental perspective, however, most people want more information on the environmental impacts of mining (Figure 4). This also relates to the need for companies to be more transparent and open about the good and the bad that their project will do for society and the environment in which they operate. It is clear that more people perceive that mining will be more important in the future again than it is at present in Roşia Montană (this reflects the fact there are no active metalliferous mines in Romania at the present time). Roşia Montană had the highest levels of respondents indicating that they feel RMGC are improving in how they are performing relating to a wide range of different factors (see Table 7). There are also wider divisions that the project proposal has obviously had on the community and many people in interviews who may have had positive views on the project, inferred the need for RMGC to improve how they communicate information, especially relating to opening up communication from Gabriel Resources who own 80 % of RMGC.

4.3 Russia: Gay, Karabash and Mednogorsk

Results from these sites will be discussed together due to the similarities between the sites. Overall, across all of the demo sites in Russia, it was difficult to get people to complete questionnaires and participate in interviews. Even within the interviews undertaken, people made comments about public opinion not being considered and carrying little weight. Karabash was a very interesting case study as it has such wide scale environmental issues, but despite these issues, people remain driven by the basic economic necessity of needing a job to survive and the fact that when the smelter did close due to environmental issues, that people wanted the smelter to reopen because they did not have jobs. It is clear that all three demo sites in Russia still have a high job dependency on mining and metal processing industries, leaving them vulnerable to any market fluctuations and technological changes that would reduce the number of employees required. It was also observed that the town budgets are heavily reliant on the taxes and duties they receive from these companies. Any changes in circumstances would also be reflected in major budget deficit issues in these towns.

Whilst survey respondents have concerns about the environmental impacts from mining across all of the sites, the two smelter towns: Karabash and Mednogorsk, have the highest level of environmental concerns, with air quality being of particular concern at Karabash (tables 9, 12 and 15). In Gay and Mednogorsk, the respondents perceived job

dependency to be the highest rated socio-economic concern from the mining and smelter industries. In Gay and Mednogorsk (figures 5 and 9), there was a high level of support above what was identified in Karabash for the expansion of mining or the metal processing industries, but even in Karabash, over half of the respondents felt positive about mine reopening or the metal processing industry expanding (Figure 7). This finding reflects the extent of the environmental damage around Karabash compared to the other two sites. Conversely, the percentage of people saying they would like more information on the environmental impacts of mining is lower in Karabash than the other two sites. This is interesting given the scale of environmental impacts at the site and the potential for these to affect human health. In the two interviews undertaken in Karabash, in addition to the comments made in open ended questions on the survey, people have serious concerns about the affects their heavily polluted environment are having on their health. There was a level of optimism that the new Ausmelt technology installed on the smelter in Karabash would reduce the potential harm of the smelter emissions on the local population. The issue of the intensity and scale of the environmental impacts, such as the slag heaps, acid mine drainage, abandoned mines and tailings dams, still stands despite any reduction in overall smelter emissions. These are issues that have the potential to have a detrimental impact on human health until remediation is undertaken. Rehabilitation of the surrounding environment, based on western standards, would, based on field observations, be phenomenally costly and unlikely to be achieved given the lack of funds to carry it out.

Across all three sites there is an anticipated downward trend in perceived significance of the mining / metal processing industry in the future (tables 10, 13 and 16). Gay has the highest percentage of respondents across the three demo sites in Russia who think that local community participation is improving. The key concerns across all of the sites relate to company performance in reducing pollution levels and restoring vegetation (see tables 11, 14 and 17). Gay and Mednogorsk have higher rates of improvement seen particularly in education and training opportunities and local employment. Even in Karabash, people perceive that the Russian Copper Company has made significant improvements in education and training opportunities, local employment and improving housing stock. Respondents feel more positive about mining in Gay than they do in Mednogorsk or Karabash (Figure 16). There is a similar pattern emerging relating to perceived industry performance in meeting public expectations (Figure 17). Respondents place importance at all three of the sites to their identity / heritage / tradition (Figure 18). However, it is clear that at all of the sites (especially at Karabash) respondents feel the mining / metal processing companies are not sufficiently engaging with local people. Table 27 shows that there has been some consultation by the companies which is positive and does show a change, but, based on observations made during the fieldwork, in addition to the findings from in the survey and interviews, there does not appear to have been a major paradigm shift creating open dialogue between people living in these mining / metal processing communities and the companies themselves. However, Russia is continuing to undergo rapid change and it is likely that over the next decade that the need for companies to engage more with local people will rapidly increase as people's expectations rise and the country moves away any legacy and associations with communism.

4.4 Sweden, Kristineberg / Malå

Kristineberg has a very small population of around 300 people, so for the purpose of this research it has been linked to Malå (population around 3000) to enable the interviews and surveys to be carried out with a wider cross-section of people and stakeholders involved with the mining industry. Kristineberg / Malå have very strong ties with mining and the industry is still very active. This is reflected in the high level of survey respondents saying mining will be important in the future (92.3 %, Table 19) and the high level of responses in the survey from people feeling that mining is an important part of their identity / heritage / tradition. Furthermore, most people feel positive about the idea of mines expanding in the region (Figure 11). There has been some decline in the scale of the industry, with Boliden closing a processing plant at Kristineberg, and this caused a decline in people wanting to live in Kristineberg. It is, however, clear from the amount of exploration work at the present time in this area that it has a strong industry at present that is likely to be sustainable for some time to come. This opinion was ascertained from an interview with an employee from Boliden. Despite optimism for the industry, job dependency on mining was the socio-economic issue that most concerned survey respondents (Table 18). Kristineberg has serious socio-economic issues relating to depopulation in the village and the lack of facilities within the village at present. A key example of how this is showing itself, is that some residents have moved their entire house in the village rather than selling the house, as it is deemed to have such little value. What was interesting from the interviews carried out is the lack of responsibility people place on Boliden for the current issues in Kristineberg. This is even more surprising given that Boliden built much of Kristineberg and that it exists because of the mining industry. People acknowledge (even from within Boliden) that the company does not do as much for the community, in terms of voluntary CSR, as it used to do, but there is this sense of acceptance of this from in-depth conversations during interviews with local community members, although this is not reflected in respondents saying the company is meeting public expectations (Figure 17). Trying to interpret these contrasting responses that infer very different things is difficult, although what could be suggested is that by doing even a little bit more for the community and by undertaking some additional consultation events, that this would be readily acknowledged by the community. It is evident that there are variations in what people expect and that from an overall perspective most people at this site do not hold a mining company should not be held accountable for solving problems that they have ultimately contributed to albeit a long time ago.

There are some environmental issues in the area. Hornträsk Lake is one of the major causes for concern that was mentioned in numerous interviews. The lake is allegedly devoid of life and the cause of the acidification of the lake remains quite a contentious issue in the area. The concern about Hornträsk Lake is reflected in ‘water contamination’ being identified as the environmental issue of highest concern to the majority of respondents (Table 18). There are further environmental issues that can be observed around the site, such as rubbish dumped in abandoned pits and the general aesthetic appearance of the site. Most respondents felt positively about mining (Figure

16), although when asked to comment on whether they thought mining companies were meeting public expectations, it is clear that most people perceived that mining companies in the region are not doing this. There are some areas where the perception is that the industry is improving in how it is performing, for example: workplace health and safety and education and training opportunities (Table 20). It is clear that when people were asked about whether they felt sufficiently engaged regarding potential new or existing developments (Figure 19) that the local companies could do a lot more to engage local people and create more open dialogue between stakeholders.

One of the most insightful interviews carried out in Sweden was one undertaken with three members of Malå Sami community. In this interview the three Sami community members discussed how they felt they had good relations with Boliden and other mining companies in the areal and how their reindeer husbandry practices were more affected by changes to infrastructure by wind turbine companies putting in new roads to erect and service wind farms they were putting up in the area. In their opinion, this was done with very little consultation to them and the local and national governments, and they felt it gave the green light to installing any future wind farms despite the implications it had on their reindeer stocks. In effect, they had good relations with mining companies that had been built up over many years but this was yet to filter down to them having good relations with new and emerging industries. There may be lessons to be learnt from an example like this, where new industries can look at how good relations have been formed by existing industries to learn about how best to successfully engage stakeholders in their operations. There were interesting reflections made from other interviewees, such as from a forestry worker who perceived that the Sami people would be the stakeholder group affected most by the mining industry. This is evidently not the case. Furthermore, during some of the other interviews people discussed the environmental implications of other industries apart from mining, viewing them as having far more damaging impacts on certain aspects of the overall ecology and biodiversity in the area. For example, changes in forestry practices during recent times, where logging is carried out in a shorter period of time than was traditionally used, has been perceived by some people as to have adversely affected the local wildlife.

4.5 UK, Cornwall

Few people in Cornwall have entirely negative views on mining (Figure 16) and the majority of people gave a positive response on how they felt about mining. People also felt very connected to the mining industry, with a very high percentage of survey respondents considering it was important (Figure 18). Despite these connections, the numbers of people feeling sufficiently engaged by mining companies is very low (Figure 19) and few people felt local mining companies in the area were improving in their performance (Figure 17), although conversely, few people believe they are deteriorating (Table 23). Cornwall still has an active china clay industry although the last metal mine, South Crofty, closed in 1998. There is exploration work being carried out at present to reopen this mine and it is evident from the interviews carried out, in addition to the survey responses, that there is a high level of support for any future mine developments in the region (Figure 13). Potentially connected to the reopening of South Crofty, respondents consider that mining will of be of much greater significance in the future

than it is at the present time (Table 22). Interviews carried out from residents in villages around South Crofty show a divergence in opinions as to whether people want to be involved in decisions that involve their local community. Based on interviews undertaken with a retired lady and a younger resident of Brea, one of the local villages, it was interesting that the retired lady insinuated that local people were not satisfied with the level of engagement and consultation about the reopening of South Crofty mine, whilst the younger resident perceived that nowadays people in a community don't care and have enthusiasm for making decisions. In Roşia Montană, the younger people who partook in interviews were generally very passionate and well informed about the mining project and its potential impacts, whether they perceive them to be positive and negative. The chief operating officer of WUM, when questioned about whether they had received any negative comments, responded saying "not really" which contrasts with comments made in the interview with the lady. Further issues raised in this interview suggest that residents are concerned about the impact of the mine reopening on the value of their houses. Despite some level of concern regarding certain elements of the proposed project, the lady in the same interview, along with many other survey respondents and people interviewed, had overall very positive views of the mine reopening regardless of their areas for concern. It was interesting that one of the interviewees felt that there would be more community again if the mine reopened. This emphasises the importance in Cornwall of mining in defining communities, beyond even the purpose of their contribution in defining their existence.

It is apparent that people have concerns about whether local people are being employed in mining operations in the region (Table 23) as this was where people perceived the industry to be deteriorating most relating to different aspects of their performance. There were, however, key areas where respondents felt the industry was performing, namely in workplace health and safety, restoring vegetation and community health and safety. Relating to restoring vegetation, Imerys who operate china clay quarries pits in the region, have undertaken extensive landscape restoration programmes in the area, despite some opposition from local people who want to keep the conical waste-tips locally referred to as the 'Cornish Alps' (this was identified in survey responses from people). Restoration programmes in the area have included the China Clay Woodland Project and Heathland restoration schemes. The interview with an employee from Imerys raised the issues that communities nowadays have higher expectations of how they operate as a company and how effectively, people have lower tolerances of environmental issues that may arise because of the china clay industry. During this interview, the senior manager for Imerys, said the expectations of stakeholders on the community are growing at an increasing rate. One of the interviews undertaken with a Cornwall Council cabinet member highlighted the importance of the role of local government in working with mining companies to solve any potential issues as a mining project progresses. This connects the importance of having input and dialogue between multiple stakeholders, or in 'tri-sector partnerships as was suggested by Warhurst (2001). Warhurst (2001) also recommended the need for tri-sector partnerships in industries like mining, to agree partnership goals, monitor and use appropriate reporting systems and to develop collaborative activities. This approach is the only way the needs and goals of multiple stakeholders are going to be appropriately

and consecutively addressed, thus creating a symbiotic relationship relating to the level of understanding amongst stakeholders of what their goals and expectations are throughout the entire lifespan of a mine and into the post-mining phase. The complexities of post-mining developments, and the need to safeguard remaining mineral resources, were discussed in interviews with one of the mineral planners from Cornwall Council, during an interview with the WUM and in an interview with the CPR regeneration. It is clear that there are challenges in addressing how to develop a former mine site whilst maintaining any potential use of mineral deposits in the future. All stakeholders involved in regeneration projects, in the CPR region, had to consider different perspectives, different stakeholder goals and relevant legislation involved in any future developments. After a mine closes there is a need for the land to have an ongoing benefit of the local community, so they can obtain a future use of the site. The complexity developing the CPR site was reflected in the interview with CPR Regeneration, where the importance of open dialogue and communication was emphasised throughout the interview in order to reach an appropriate conclusion for all parties involved. There are further complications in developing new mines of former mine sites in Cornwall, due to the World Heritage Status that was granted here in 2006, where comments made in the interview suggest that the WHS that was granted for the 'unique mining landscape' then produces challenges to any future mine developments in the area due to their different objectives such as: commercial viability of a business and heritage preservation. The suggestion made in the interview by CPR regeneration again suggested the importance of working through problems and creating solutions through negotiations and that through this process the needs of different partners involved can be addressed.

The connection and significance people place on mining in the past and with their mining heritage (Figure 18) is apparent from responses given in the survey in Cornwall. Cornwall received World Heritage Status (WHS) for its mining history back in 2006. Compared to all the other impactMin sites, Cornwall is the only site that has really capitalised to any extent on using its mining heritage to attract tourists. Cornwall and mining are synonymous, and this extends beyond local people. This is reflected in the area being granted 75 % of respondents consider job dependency issues to be rated high impact (Table 21), however, respondents are less concerned about environmental issues (Table 21) and the majority of people are not concerned about having more information on the environmental impacts of mining (Figure 14). This most likely relates to the lack of significance placed on mining compared to how significant most people perceive it was in the past (Table 22).

Reviewing how people feel about the eco-town being given the go ahead, where over 5000 new homes are planned across multiple sites that have previously been used by the china clay industry (Cornwall Council, 2010), it is evident that whilst only a small percentage of people think it will have a negative impact on the local area (12 %), only a slightly higher percentage of people (21 %) believe it will have a positive impact (Figure 15). There are a lot of people who responded saying they did not know what impact it would have and respondents who thought it would have no impact or both positive and negative impacts. It will be important that in order to maximise the potential benefits of

the project, that people working on the project engage sufficiently with local people from a very early stage. Whilst they are already engaging and holding some consultation events with local people, a project on the scale will have wider socio-economic impacts and the people delivering the project need to do wider consultation in Cornwall to win over the 'hearts and minds' of people and to maximise the full potential of the project. An open ended question asking people what they thought would be the impact of the eco-town being built, shows the more people suggest they believe the project will be a negative use of land compared to those who believe it will be a positive land-use (Table 24). The project aims to provide 30 % affordable housing (Cornwall Council, 2010), but although there are people who recognise the potential benefits of this, there were many people who responded to the survey questioning the impact the project will have on local housing stock, the 'affordability' of 'affordable housing' given that the mean wage in Cornwall in below the UK average £20,950 – compared to UK mean of £25,490) (Nomis, 2009).

4.6 Discussions - comparison of the results across the seven demo sites

Only a relatively small percentage of people across all of the demo sites had entirely negative perceptions of mining in general. This is quite a revelation given the general consideration that mining and minerals processing is often regarded as one of the most potentially damaging industries from a social and environmental perspective (Jenkins and Yakovleva, 2006). Trebeck (2004) cited in Solomon *et al*. (2008), discusses the tendency for the literature to portray the mining industry as homogenous, with Solomon et al. (2008) suggesting from their own findings that the industry itself is so diverse relating to materials, processes, places and social contexts, that generalisations cannot be made. When assessing the perceptions of people across sites it is therefore important to consider that their responses relate to a range of factors and issues. For example, the reasons why more people have a negative perception of mining at Karabash and Vihovici could be based on: Karabash having the most a visible and widespread environmental impact across all of the sites, and Vihovici having not operated since 1991. Vihovici is located on the northern periphery of the city of Mostar, which has undergone massive population changes since war hit the region and has the lowest level of respondents feeling sufficiently engaged regarding mine developments. This will have implications on residents' perceptions of mining in the region. Mostar has also had much less of a reliance on mining for jobs compared to Karabash, which has predominantly grown as a town because of mining and related industries.

At Roşia Montană, where they are trying to reopen a mine in a region with connections to mining stretching back a few thousand years, most people have a positive view of mining and all respondents felt that mining was an important part of their identity / heritage / tradition. This is compared to only 50 % of people in Vihovici. Similar to Roşia Montană, Cornwall also has a long history of mining, and most people here consider that mining is an important part of their identity/heritage/tradition. This is despite the fact that the mining industry has contracted considerably in Cornwall, with hard rock mining ceasing in 1998 and only china clay mining ongoing.

Apart from in Roşia Montană (Figure 19), the majority of people did not feel sufficiently engaged by their local mining companies and government regarding existing and new mine developments. Roşia Montană, where over 79 % of people felt they were sufficiently engaged, contrasts starkly with Karabash, where no respondents felt they were sufficiently engaged. Both of these sites are located in ex-communist countries. Based on observations of the willingness of people to be interviewed or complete a survey during field visits, Roşia Montană felt like a very open society, however, this could also reflect a difference in present day cultural expectations of engagement and level of engagement by companies operating in the area. 90 % of respondents in Karabash felt they were not sufficiently engaged by the mining company / local government, but there were other factors influencing people's perceptions, such as the scale of the widespread environmental damage created from the industry.

Despite discrepancies identified in whether people felt mining companies were meeting public expectations, there is massive potential and an obvious need for companies to assess and continually work at meeting people's expectations (Figure 17). In the case of Roşia Montană, for example, the efforts made by RMGC to engage with the local community are readily acknowledged by people and this is reflected by the high percentage of people, compared to other sites, who felt sufficiently engaged by RMGC and the local government regarding the proposed development (Figure 19). Despite findings suggesting that people consider there is a high level of community engagement in Roşia Montană, only just over 26 % of respondents in Roşia Montană felt that RMGC were improving in their performance in meeting people's expectations, which suggests that although people most people feel they are being sufficiently engaged by RMGC and the local government, that this does not necessarily equate to the mining company meeting their expectations.

Respondents were asked across the demo sites how they would like to be consulted by a mining company working / planning any work in the area. Table 25 shows there are variations across sites in terms of what people consider to be the most and least useful forms of consultation. Consultation methods need to be specifically tailored to what the local community want. This may reflect cultural and general differences in societal 'norms'. Across all of the sites, however, the two most frequently identified useful methods of consultation were public meetings and public display boards. Exactly how a company should engage with stakeholders, and try to meet their needs, requires careful consideration, as every project is different and what works in one location is not necessarily going to meet the needs of stakeholders at another site.

Tables 30 – 36 show the perceived attractiveness (or lack of attractiveness) of mines compared to other types of developments across the demo sites. It is clear that people's perception of living next to a mine varies across all of the demo sites, with certain types of development being more appealing than others and the overall pattern varying across sites. In Roşia Montană, for example, mines are very popular developments (Table 31) compared to Vihovici (Table 31), where people would prefer to live next to most of the other types of developments compared to a mine. In Gay and Cornwall, mines also appeared to be more popular types of development. Hospitals, schools and eco-towns /

towns are the most preferable developments overall across the sites and prisons are the least preferred development alongside waste incinerators and landfill sites.

Warhurst and Mitchell (2000) refer to technological advances that have reduced community employment benefits from a mining project and that inadvertently mean that local people have a reduced tolerance of any negative environmental and social impacts from the project. This was identified in the present study, where despite a significant divergence in opinions regarding mining projects across and even within a community, most people expect that in some way they / the community should benefit from a project. Issues of companies employing local people, and this being a major benefit from mining, were raised in some way by people across all of the sites. The term NIMBY (not in my back yard) has been used to suggest how people might want or need a development, but not want it near where they are living. Ultimately, these results show how 'NIMBISM' relating to developments, varies from country to country, and in the case of some developments, may actually be 'IMBY' (in my backyard).

Conclusions for opening a mine:

How a mining company can 'gain' and maintain their 'social license to operate' relates to specific conditions and contexts of a site. A company planning work in an area should initially assess whether there is mining in the region/country already or if there has been any in the past. The general socio-economic climate also needs analysing, with work undertaken to identify who the stakeholders are, what their expectations and goals are, and importantly how they wish to be consulted. Stakeholders must be consulted from the earliest possible stage in a proposed project, with consultation and participation methods being tailored specifically to the needs of stakeholders. What people expect from a project will be based on their previous experiences. Possible short term benefits of a project to a community need balancing with longer term and / or post-mining needs. Roşia Montană, Cornwall, Kristineberg and Karabash all provide examples of how job dependency and reliance on one industry can have major social consequences on an area when that industry either closes down or vastly reduces in size. Capacity building programmes therefore need to ensure they add value to a community in the long term.

In Roşia Montană, most people interviewed for the purpose of this study wanted the mine to reopen, and although it is evident that not everyone shares this opinion, observations made are that much of the opposition against the mine reopening comes from outside of the community and even outside of Romania. Many people interviewed for this study commented on how the community needed to use the life-span of the proposed mine to formulate longer term plans for a post-mining sustainable community. Initiatives established by mining companies have a proven ability to do this, e.g. Richards Bay Minerals, a Rio Tinto subsidiary in South Africa, where they are using a range of CSR initiatives to meet the needs of the community in the long term, such as through education and training opportunities and health care programs (Kapelus, 2002). If RMGC do reopen the mines they need to use initiatives, like their micro-credit finance scheme, to help the community shape their own future. CSR must drive long term changes to be purposeful. Whilst every community will always have specific issues to deal with, based on their socio-economic circumstances, the company should be

accountable for ensuring they add value, where possible, to the community who is being impacted by their project. This is not to say that a mining company should be held responsible for alleviating or solving existing socio-economic issues.

The case studies used in this study have highlighted a number of other potential problems that have occurred and these can provide lessons to inform future mining projects and how, for example, information should be given to residents on the environmental impacts of mining. For example, mine projects that involve large numbers of people being relocated (like in Roşia Montană) need to carefully consider how they go about purchasing houses and land, with the aim being to standardise prices and create a system that alleviates not creates conflict amongst the community. Furthermore, as was the case at Roşia Montană, the environmental impact boundary for a proposed mine project may be relatively straightforward to define, but the 'social boundary' of a project, however, is much more complex. As suggested by Solomon et al. 2008, 'social' is often interpreted to refer to issues relating to just the local communities, although in reality the range of social issues must ensure that the impacts on the wider community are also considered. Kristineberg in Sweden, provides another example of where progress can be made through lessons learned. The longer-term needs of the community were forgotten amongst the shorter-term needs of providing housing for employees of the mine. In the future, the consequences of constructing a purpose-built 'mining community' needs considering with a view of the anticipated long-term repercussions on a post-mining community.

4.7 Conclusions

General conclusions:

- Each site has very different issues.
- There is a significant divergence in opinions regarding mining projects across and even within a community, however, most people expect that in some way they / the community should benefit from a project.
- The majority of people questioned in this study felt positive about mining in general.
- Very few people across the sites think that their local mining companies are meeting their / public expectations.
- Apart from in Roşia Montană, there are also issues with local mine companies and governments engaging stakeholders adequately.
- Gaps exist between expectations and the reality for stakeholders.
- Consultation methods need to be specific to what people prefer in each community. Public meetings are most popular
- Companies need to think longer-term e.g. RMGC using micro-credit initiatives.
- The environmental boundary of a project is much easier to define than the social boundary, which is much wider.
- In some of the demo sites mines are regarded as more preferable than many other types of developments. In Roşia Montană, for example, people would rather have the mine working than any other type of development listed, including

a wind farm, hospital or school. Hospitals, schools and eco-towns / towns are the most preferable developments. Prisons are the least preferred development followed by waster incinerators and landfill sites.

Site specific conclusions:

- Relocation of people in order for projects to proceed is complex and has potentially been one of the most difficult issues e.g. Roşia Montană.
- In Roşia Montană, it appears that a lot of the opposition comes from outside of the community. Governments need to be aware of this and listen to the views of people who are actually being impacted whilst considering the bigger picture and in particular, the long term needs at a site.
- Developing purpose built mining towns like Kristineberg creates particular issues post mining.
- Karabash, in particular, and Mednogorsk to a lesser degree, are examples of why smelters should not be built right next to towns and cities and why the location of smelters needs appropriate consideration relating to chimney stack height and nearby settlements.
- Rehabilitating and solving all the environmental issues at a site like Karabash will be difficult and the cost of carrying out rehabilitation to today's western standards means extensive rehabilitation is unlikely to happen. Ensuring particle emissions from the smelter are not impacting the health of local people should be the first priority at Karabash. The other priorities need assessing via the level of hazard they pose to local people and the potential risk of exposure to these hazards.

Conclusions for mining companies:

- CSR is fluid. Mining companies need to be flexible, adaptable and willing to work with stakeholders.
- Early engagement with the community using appropriate methods of consultation is essential.
- Respect the community and learn how it prefers to interact with the community.
- Assess potential opposition NGO groups and case studies of what has happened in previous projects.
- Assess socio-economic background – current / past mining in area.
- Be honest and open about the anticipated social and environmental impacts of the project and transparency throughout operations.
- Listen to the views of stakeholders and respond to their concerns.
- Balance / manage community expectations.
- Integrity – making CSR purposeful in the long-term.
- Being realistic is pivotal to the success of CSR in general.
- It is difficult to have firm guidelines on interacting with communities as each community is unique (based on their socio-economic background, culture and past experiences with companies).
- How a company engages with stakeholders requires careful consideration. What works in one location is not necessarily going to meet the needs of stakeholders in another project.

- The mining company is not resonsible for solving every problem – this must be made clear. They must, however, ,add value to a community.
- Ensure CSR extends beyond the time-frame of the anticipated mining project to be purposeful and add value.
- CSR initiatives need to help educate people within the community to select the long-term gains rather than short-term offerings.

Chapter 5 Future outlook

5.1 Future work - WP 3 report 3.3

WP 3.2 will report on best practice within the mining industry for reducing carbon emissions. This report will include sections on: legislation and regulations governing carbon emissions, promising minerals in Europe, lowest carbon footprint options, demand reducing solutions, mining and minerals processing techniques, use of low carbon energy, carbon offsetting and carbon trading, and case studies documenting best practice in how mining can reduce its carbon emissions.

5.2 Applications of remote sensing data around mine sites

5.2.1 Planning / development tool to promote responsible land-use away from contaminated mine sites

Remote sensing data has the potential to monitor the environmental impacts of mining and enable management and the development of land around active or inactive mine sites. This could be used as a planning tool to help inform decisions made and guide land uses in areas around potential and active/inactive sites. In this sense, remote sensing data could help inform town planners and other government officials about the best places to develop land around a mine site / potential site. In effect, this application of remote sensing is a mitigative measure to help reduce the impacts of mines on people, given the vast health implications of people based on the environment within which they reside. This use of remote sensing also applies to the metal processing industries, such as in Karabash around the smelter. For example, In Karabash, if the most environmentally damaged areas could be pinpointed, any new housing developments could be made away from areas that are highly contaminated and potentially harmful to human health. Similarly, these applications could also be used to guide other land-uses in an area, such as for growing crops and keeping animals as doing either of these activities on contaminated land will inadvertently impact human health. This application would help inform planners around a large mine, such as Kiruna in Northern Sweden, to forecast where they can relocate people to and ensure they live in the best possible environment. Düzgün et al. (2011) noted the ability of using remote sensing techniques alongside GIS to monitor coal fires, mine subsidence and the environmental impacts of coal-mine closure and reclamation. By monitoring certain factors such as: vegetation health, the chemical and physical stability of the environment around the mine, for example, mine waters, and the degree of subsidence, that managers then have ways alongside remote sensing to help inform management

decisions (Düzgün et al., 2011). Düzgün et al. (2011) suggest that Landsat or Aster sensors with spatial resolutions of between 15-90 m have the ability to aid geologic mapping, assess coal fire related hot spots, provide information on the composition and potential problems with contaminated mine waters and offer information on other environmental issues such as dust pollution. The higher the resolution of the data, the more detailed information it provides and therefore it increases the capacity for the data to provide further information on any environmental issues created by mining.

5.2.2 Ongoing monitoring of the environmental impacts around mine sites – tool to assess how the mining companies are performing over time

To monitor the development of and impacts of a mine on the surrounding environment. This can then be used as a tool to observe whether the mining company are fulfilling their commitment to minimise their impacts on the environment. This application of remote sensing could be used alongside various standards such as the ISO 14000 environmental management series. Integration of remote sensing as an environmental management tool has multiple implications (and capabilities) for many different stakeholder groups, including: the mining company, local and national government, the local community, NGOs and other land users in the area. Applications like this have the potential to inform environmental managers and to be integrated within environmental management policy.

5.2.3 Remote sensing as a 'predictive' tool to forecast different climate change scenarios and the implications of these changes

Remote sensing can be used to examine environmental change over time and this application provides opportunities for it to be used as a way of looking at how mines sites can be adapted to mitigate against any impacts of climate change (and the different scenarios that could occur). This could be important when considering the implications of scenarios where we may experience prolonged periods of increased summer temperatures and increased periods of rainfall. For example,

5.2.4 Management of freshwater resources

Mining can contaminate water. With increasing global pressures on freshwater resources, remote sensing can be used as a way of monitoring the environment around mine sites and the potential for water courses to become contaminated. This information can then be used to ensure any management decisions regarding fresh water resources are taken using the best possible advice.

5.3 Difficulties encountered within the project work.

At some of the sites we encountered difficulties getting people to complete questionnaires or partake in interviews. In Russia, for example, many people were reluctant to talk explaining it was difficult given their connections to the mining or metal processing industry.

A further difficulty in carrying out the work in five different languages involved translating things accurately and ensuring all the questionnaires made sense in whatever language they were being carried out in.

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