

# INFACT

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INNOVATIVE NON-INVASIVE & FULLY  
ACCEPTABLE EXPLORATION TECHNOLOGIES

## INFACT EXPERT STAKEHOLDER SURVEY THE BARRIERS TO MINERAL EXPLORATION IN EUROPE

*Summary:*

This report gives the findings and implications of an expert stakeholder survey exploring the barriers to mineral exploration in Europe. These findings will help inform further INFACT deliverables in Work Programmes 3 and 6.

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## EXECUTIVE SUMMARY

The INFACT project aims to reinvigorate exploration in Europe by engaging society and using new technology and research to improve mineral exploration practice. To help achieve these goals this element of the work programme sought to identify expert stakeholder networks across Europe and to invite them to participate in a survey to determine existing barriers to mineral exploration and mining in their respective countries. Expert stakeholders were defined as individuals working in sectors related to mining and or mineral exploration.

SRK, in collaboration with project partners European Federation of Geologists (EFG), prepared and distributed an online survey which reached over 20 countries across Europe and was completed by 124 respondents working in the fields of mining and exploration across Europe. A broad mix of sectors were represented by the respondents. With 31% from academia and 31% mining consultancies with the rest made up of private companies, government / civil service representatives and Non-Governmental Organisations (NGOs).

The results of this survey indicate that technological advances and availability of geological data present potential for the mineral exploration sector to grow. Against these the survey identified five potential barriers that will need to be considered and addressed:

1. Existing land use: The current use of land was one of the most significant barriers to exploration from the survey results and was mentioned by respondents from all of the different countries. Some respondents perceived existing land use as a potential cause of conflict for exploration. Further understanding of this complex area is required.
2. The cost of mineral exploration: Cost was seen as a barrier in all the countries. It was however unclear if the perceived high cost was attributed to the technical practice of exploration and/or the costs associated with gaining permission to explore.
3. Public perceptions and negative attitudes toward the exploration and mining industry: Survey respondents indicated that the public were often misinformed regarding mineral exploration activities and that this contributed to negative attitudes towards the sector. This was attributed to a lack of early strategic stakeholder engagement and effective communication of information.
4. Sustainability and the environment: Respondents felt that exploration companies need to make better use of non-invasive technologies to limit the impact of explorative activity. Respondents also recognised the need for mining to limit its environmental impact to achieve responsible practice.
5. Governance and regulatory structures and processes: The importance of politics and regulations was a potential barrier emerging from the survey. Governments as gatekeepers to minerals in most European countries, require engagement in relation to permitting and planning approvals. It was also indicated that many of the processes were unnecessarily complex with a lack of transparency, that made them difficult to navigate.

These messages are very timely and will help to refine the research being undertaken in WP3 and WP6 which will be looking at the issues of legislation, stakeholder engagement, production of a “discovery roadmap” for exploration in the EU, and the long-term business case for the INFACT reference sites.

## 1 INTRODUCTION

### 1.1 Objectives of this document

This document presents the results and interpretations of the expert stakeholder survey. The main objective of the survey was to determine and analyse the technical, environmental, social, governance and financial barriers to exploration from the perspective of respondents undertaking work in these areas. This has been completed as part of Task 2.4 (Expert Stakeholder Engagement) in WP2.

In order to achieve this SRK conducted a survey which reached over 20 countries across Europe and was completed by 124 respondents working in the fields of mining and exploration. SRK, in collaboration with the European Federation of Geologists (EFG) identified expert stakeholders and associated networks through EFG linked third parties across Europe. For the most part these were member organisations of the EFG. The survey was also distributed across all of the INFACETS project partners and the advisory group. A snowballing sampling approach was also adopted, through which respondents were encouraged to share the survey with other interested parties. The results of this survey will identify areas for further research as well as refining the work plan for work programme three.

## EXPERT STAKEHOLDER SURVEY

### 1.2 An overview

The survey sought to answer four questions, outlined in the project. These were:

- What do respondents consider to be the main barriers to exploration in the countries they are operating in?
- How important are social, environmental, political and economic factors to exploration in the countries respondents are operating in?
- How do respondents define responsible practice in exploration?
- What are the opportunities for the sector arising from responsible practice?

The survey questions were planned through a consultative process.

SRK UK's 150 technical consultants in the fields of geology, mine engineering, geotechnical services and geo-environmental sciences were invited to respond to the following question: What do you perceive to be the three key barriers to mineral exploration across Europe?

Information received was collated into a mind map, distinguishing between technical, environmental, economic and social barriers. This formed the basis of the questionnaire.

The first draft of the questionnaire was prepared using an online survey tool and distributed to the INFACETS partnership. Comments on structure and content were received and the questions amended accordingly by SRK.

EFG coordinated translation of the final draft questionnaire of 23 open and closed questions into 17 languages and the survey was piloted across their network of linked third parties. On receipt of feedback the survey was finalised.

In parallel to this process, EFG and their linked third parties compiled a distribution list of expert stakeholders and associated networks in their respective countries. An expert stakeholder was defined as an individual or network that worked with or provided services related to mineral exploration and mining.

A full version of the survey can be found in Appendix A.



## 2 SURVEY FINDINGS

### 2.1 Demographic structure of respondents

Respondents were asked which country their responses related to as well as the country they were from or lived in. This ensured that we obtained the most accurate information about the country that the respondents were most familiar with, rather than where they were from. There was a total of 124 responses relating to over 20 different countries across Europe (Figure 2-1). The largest number of responses was from the UK with Bulgaria and Germany the second and third most represented respectively. 20% of respondents indicated ‘other’ countries than those listed and these included: Bosnia and Herzegovina, Croatia, France, Ireland, Lithuania, Norway, Poland, Russian Federation, Serbia, Slovakia, Sweden, Turkey and the Ukraine. Almost 70% of the respondents were male, and just over 25% female. 5% did not stipulate.

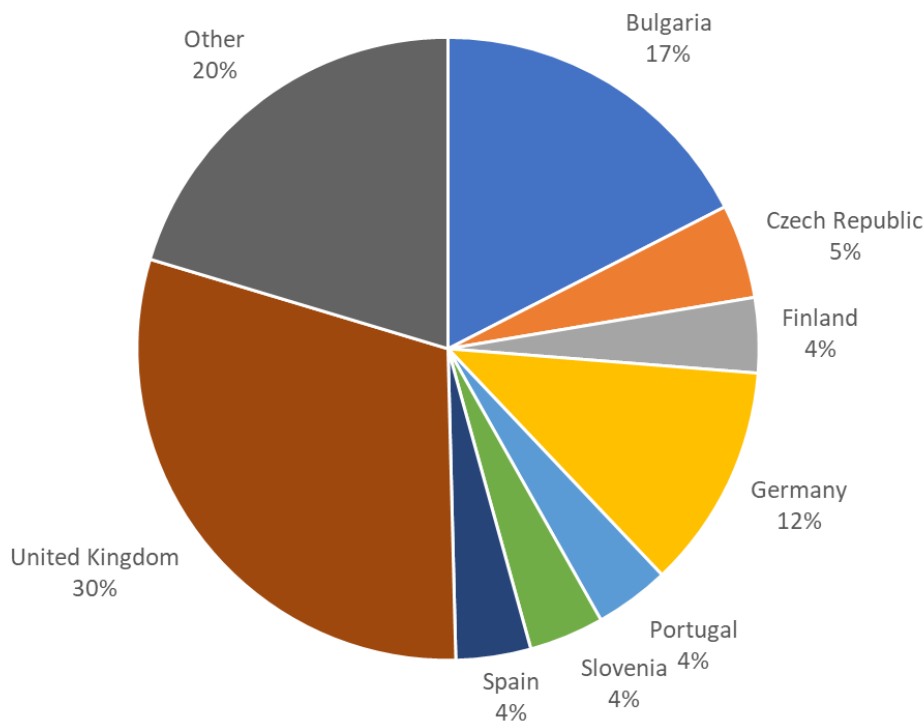


Figure 2-1. Country to which responses related.

A broad mix of sectors were represented by the respondents (Figure 2-2). 31% were from academia and 31% worked in consultancy with the rest made up of private companies, government / civil service representatives and NGOs. Almost all of the respondents relating to Bulgaria and Finland were academics as were half of the responses relating to Germany. Over two thirds of responses relating to the UK were from consultancies. Some of the ‘other’ sectors represented include geologists, mineral exploration companies, public research organisations, environmental software designers and mining companies.

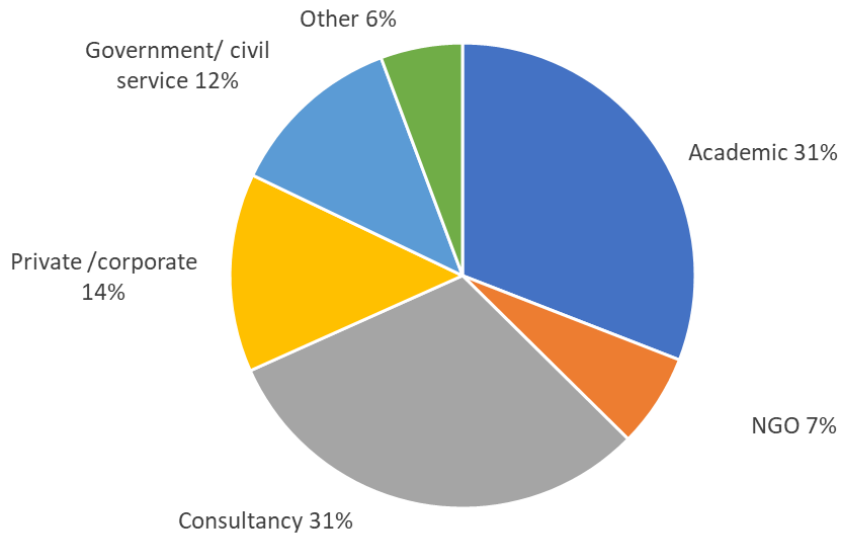


Figure 2-2. Sector that best describes the area respondents work in.

Over two thirds of the respondents specialised in Geosciences (which comprises geology, geophysics and related earth sciences) with mine engineering and environmental science being the next most prevalent (Figure 2-3). Other specialisms listed related to hydrology, mining and economists.

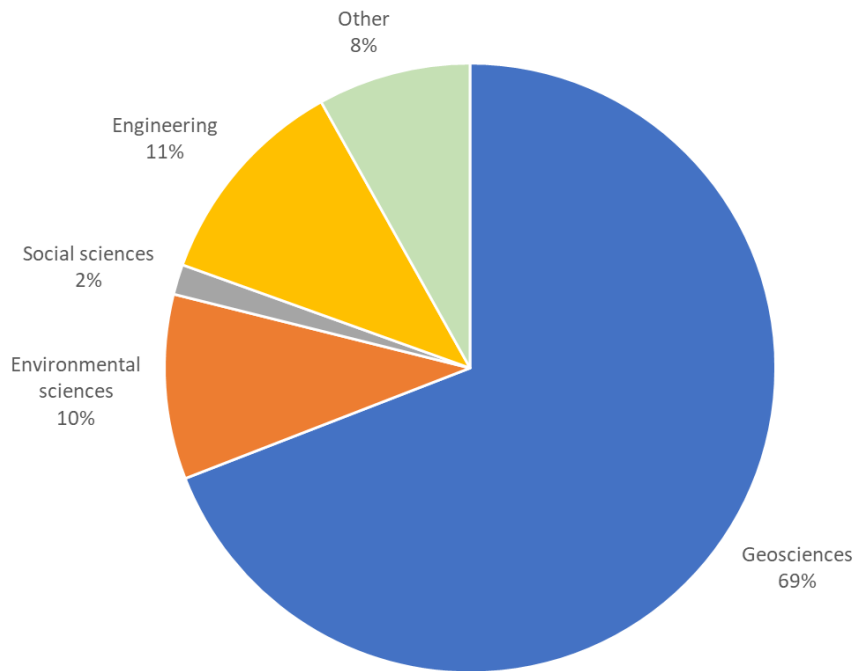


Figure 2-3. Respondents area of specialism.

## 2.2 Country context

This section examined the political context of the countries respondents were operating in<sup>1</sup>, whether the sector was developed in their country, data availability and levels of education and training relating to the sector.

### 2.2.1 Development of the sector

Respondents indicated that mineral exploration was developed in all of the countries that were being considered. Over 70% of the respondents indicated that their country had a developed mineral exploration sector, though some respondents from the UK, Germany, Portugal and France felt their country did not. Of those who did believe their country has a developed mineral exploration sector, nearly 85% also had an established mining sector. Again, some of the representatives from the UK felt that their country did not (Figure 2 4, Figure 2 5).

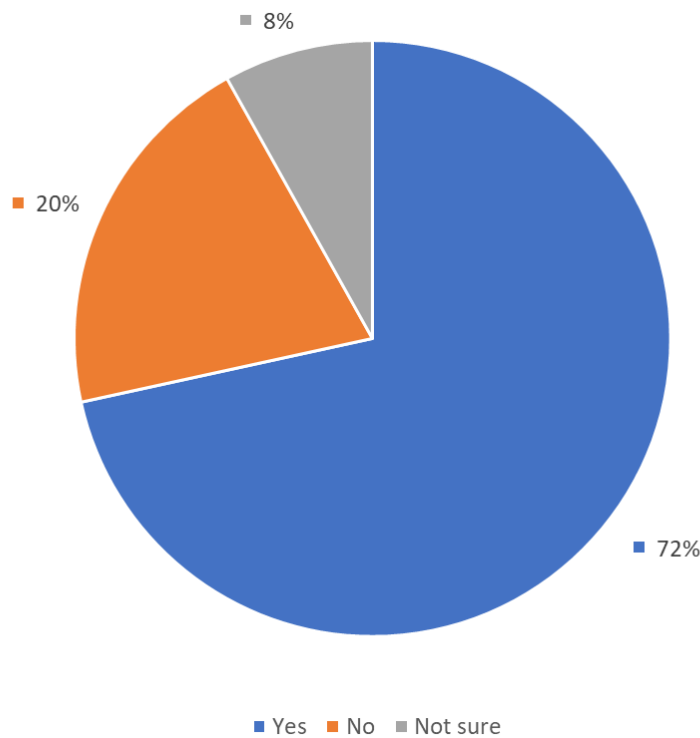


Figure 2-4. Perception of whether there an established mineral exploration sector

<sup>1</sup> The question exploring the political situation allowed respondents to indicate as many relevant descriptors that they felt were necessary. As such the totals for each of the factors exceed 100%.

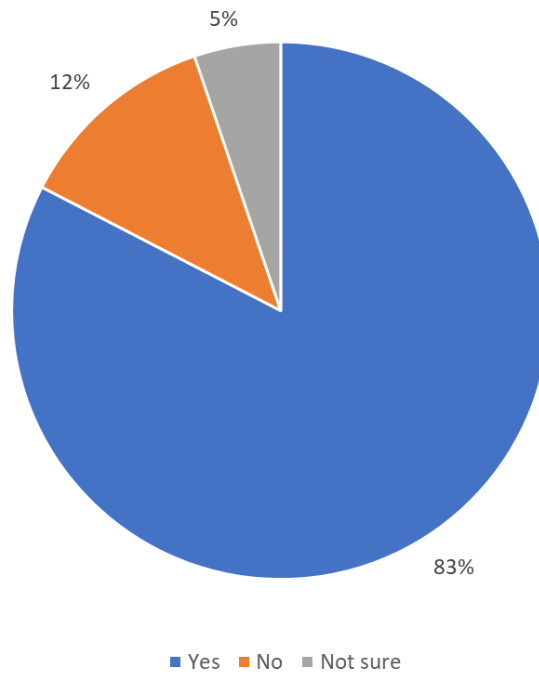


Figure 2-5. Perception of whether there is also an established mining sector

### 2.2.2 Political context

The majority of respondents (86%) indicated that their host countries were either members of the EU or aligned with the EU and nearly 60% indicated that their country was democratic (Figure 2-6). Existence of a complex administration was indicated by 37% of respondents and 17% felt that there was widespread corruption in their country. Two thirds of those respondents who indicated widespread corruption were from Bulgaria and all of these respondents also felt their country had complex administration.

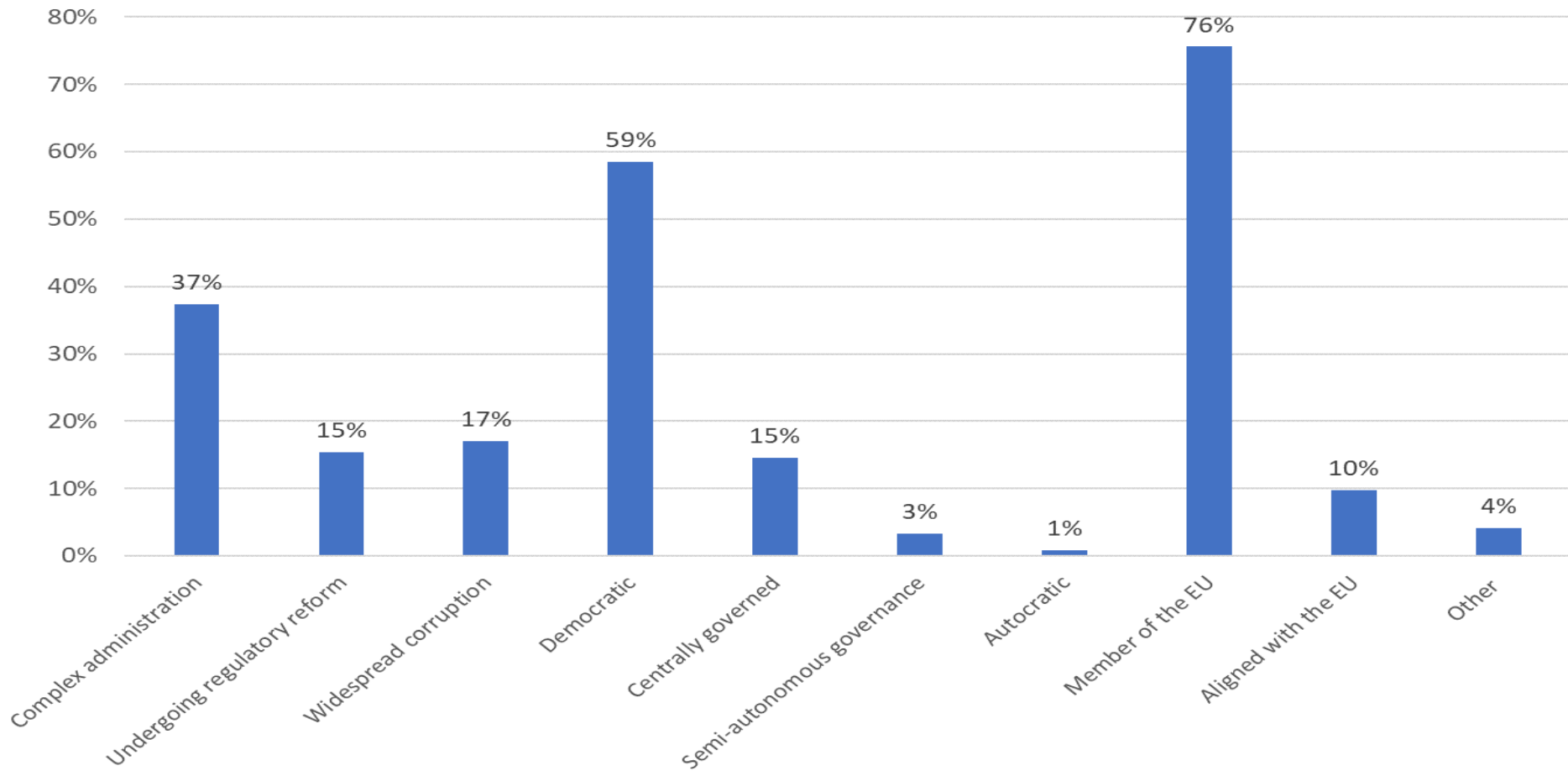


Figure 2-6. Perception of the political situation and context in host countries

### 2.2.3 Mineral Ownership

Just over half of the respondents (55%) indicated that the Government alone owned the mineral rights in their country which included all the responses from Finland, France, Portugal, Slovenia, Spain and Turkey (Figure 2-7). Most responses from Bulgaria also said that the Government alone owned the mineral rights in their country. 26% of responses indicated that the rights were owned by a combination of stakeholders and a small number of responses from the UK said the royal family owned the mineral rights exclusively.

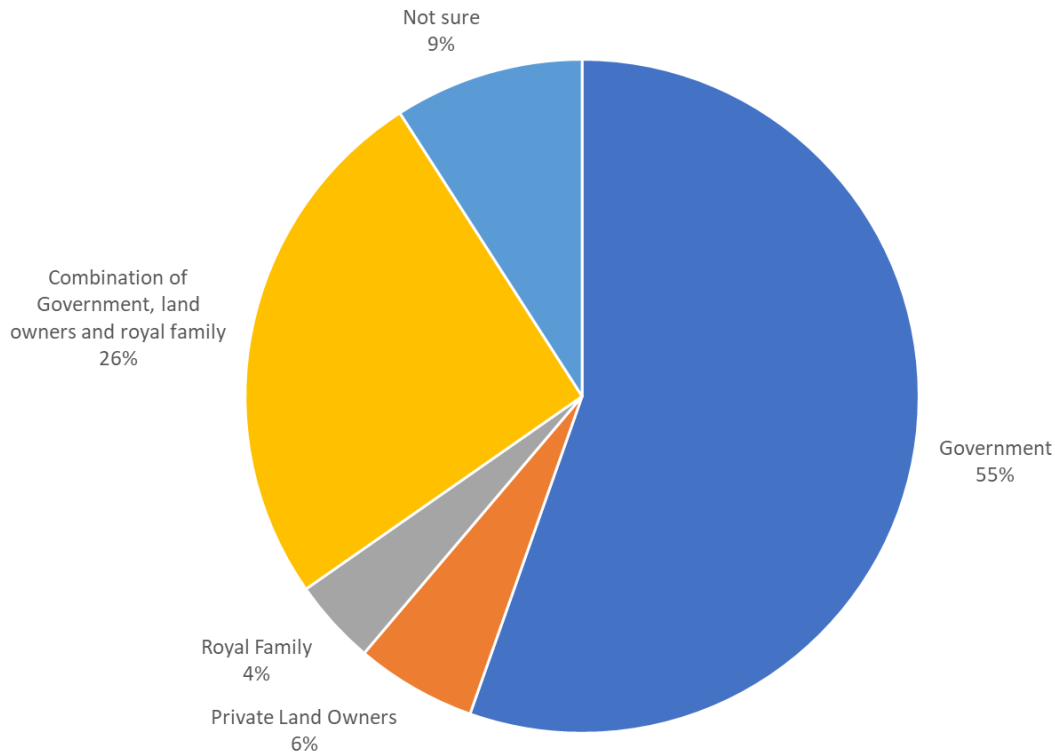


Figure 2-6. Perceived mineral ownership across Europe

### 2.2.4 Data Availability

The number of respondents who indicated that data was available for mineral occurrence, geological exploration and mining operations in their country was high. Geophysical data, geological maps and geochemical data sets were slightly less prevalent but nearly 85% of respondents indicated that they were available in their country (Figure 2-8). Very few respondents indicated that there was not any data for these areas and 8% were unsure.

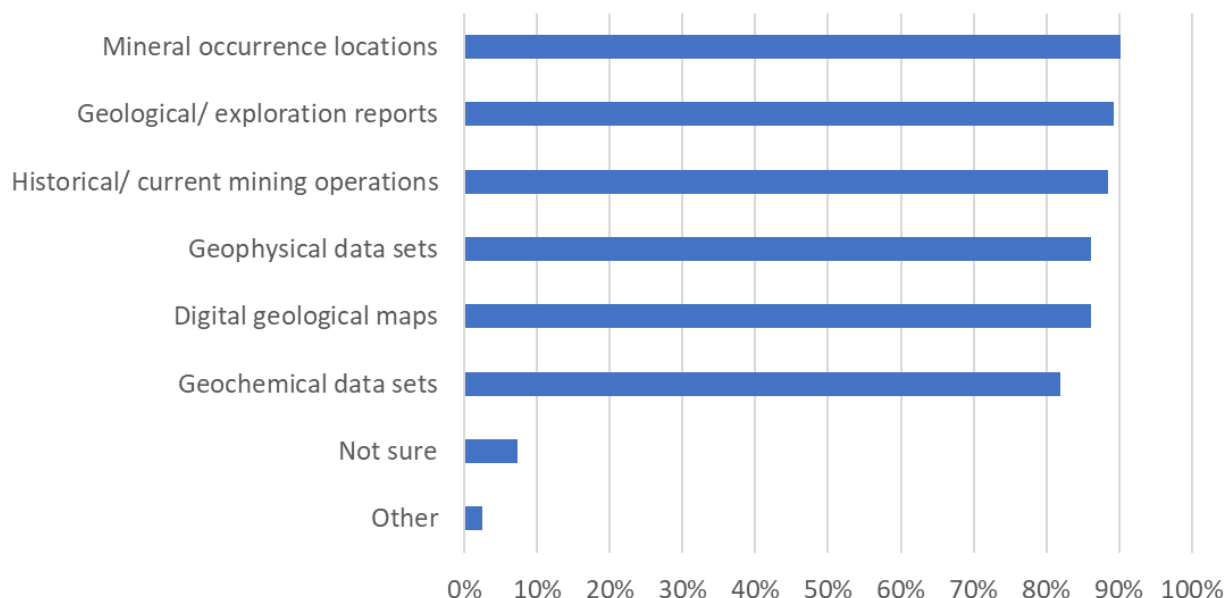


Figure 2-7. Perception of availability of mineral data by type

### 2.2.5 Levels of education

Levels of education relating to mining and mineral exploration were very similar across the different subject areas. Around 75% of respondents indicated that degree level or post graduate degrees were available in all the subject areas listed. However, nearly 10% of respondents were unsure regarding the level of social science education available and 2% said there were no social science qualifications available at all in their country (these respondents came from Bulgaria, Croatia and Portugal) (Figure 2-9).

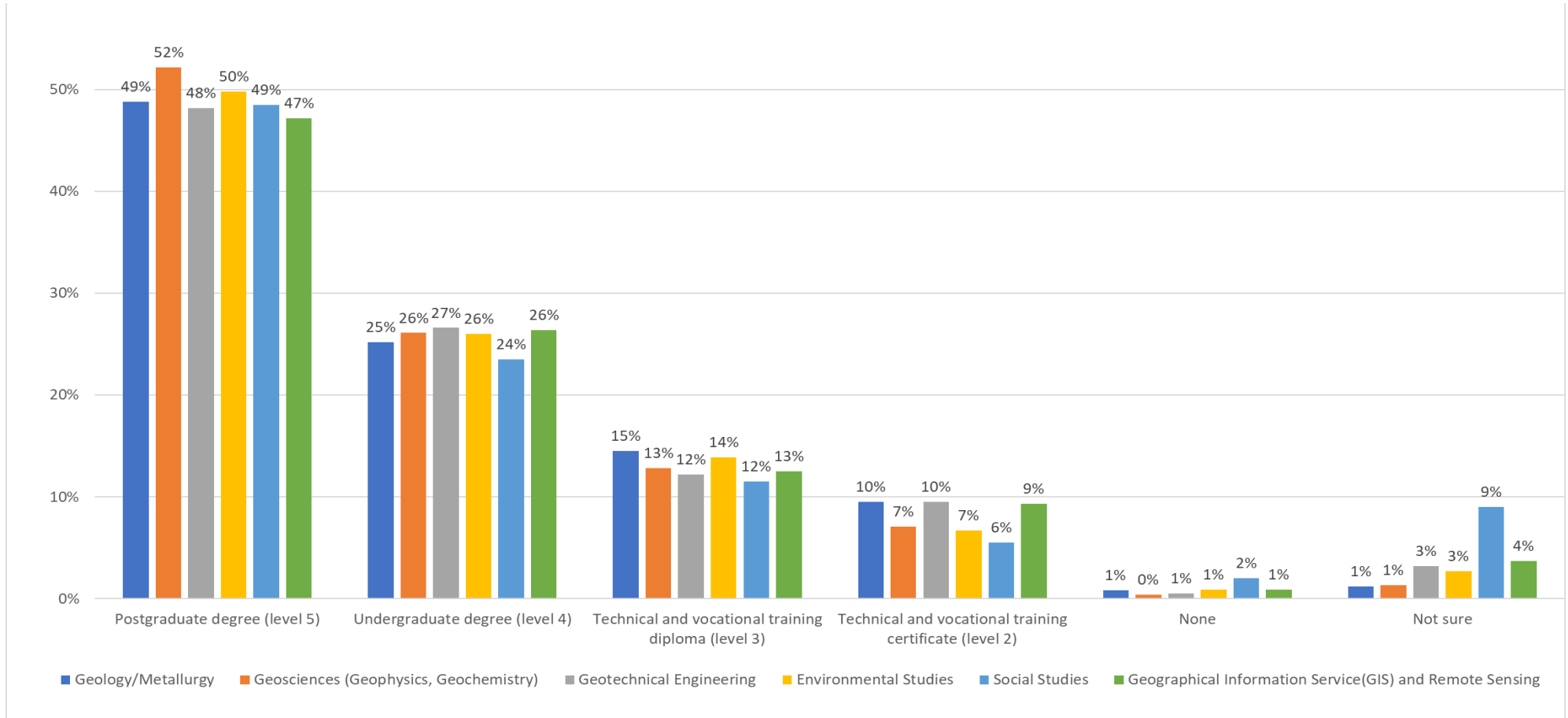


Figure 2-8. Perception of education levels and disciplines in host countries



### 2.3 Public perceptions and attitudes to exploration

Public perceptions and attitudes towards mineral exploration are an area receiving significant attention globally and are of importance in a European context, where public opinion is influenced by what is reported in the media. This section explores the experts' views on the level of public awareness relating to mineral exploration, the perception of mineral exploration as well as the importance of public perceptions in the country they were working in.

Most of the respondents felt that people in their country were not very informed about mineral exploration and what it involves. 58% gave a very low rating of either 0 or 1 and over 80% giving a rating of either 0, 1 or 2. All of the respondents from Slovenia gave a rating of 0 (Figure 2-10). One participant from Sweden gave a rating of 5 and individual respondents from Serbia, Germany, Finland and the Czech Republic gave ratings of 4.

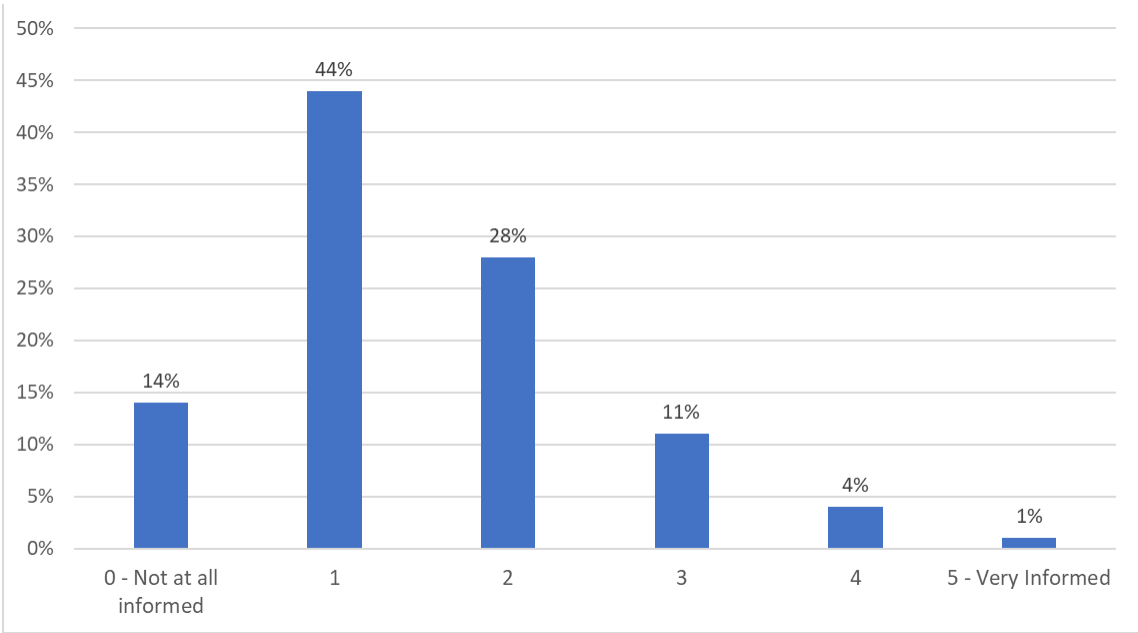


Figure 2-9. Public perceptions and information availability related to mineral exploration

This perception of the low level of public awareness was reinforced with the responses to the following question which examined whether the perception of mineral exploration is confused with other activities that have had negative publicity such as fracking (Figure 2-10). Almost 90% felt that mineral exploration activities had previously been confused either 'sometimes' or 'all the time'. This indicates that there is a perception problem for exploration in Europe and that people need to be more informed about what mineral exploration is and what it involves.

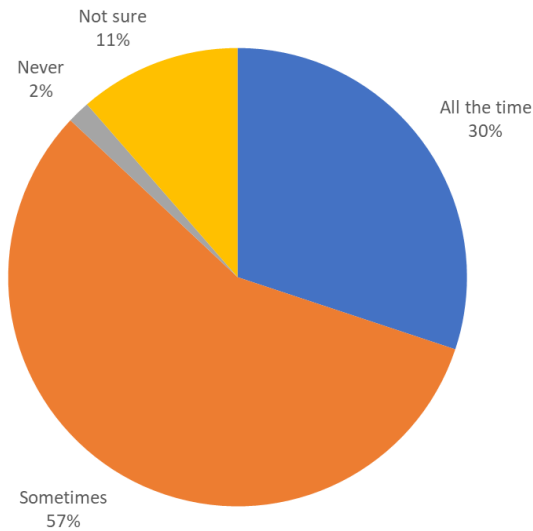


Figure 2-10. Public perceptions and misinformation related to exploration

The need for better informing of the public was reinforced by the responses to the following question exploring the way that exploration is perceived (Figure 2-12). These responses indicated that there was significant opposition to exploration as nearly 80% of respondents felt there was either ‘some’ (50%) or ‘strong’ (27%) opposition within their country (Figure 2-12). Only 8% felt the public were quite supportive and nobody felt the public was very supportive. Interestingly, those who indicated that the public were quite supportive had also given higher ratings to how informed people were in relation to exploration.

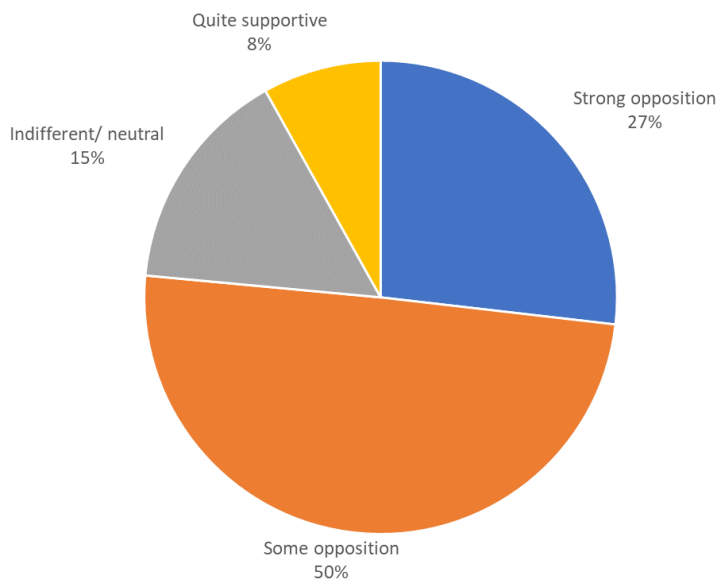


Figure 2-11. National ratings of attitudes and perceptions related to mineral exploration

Most respondents indicated that there are negative perceptions around exploration which is potentially fuelled by confusion and / or a lack of information. The significance of trying to address this opposition was highlighted in responses to the next question that examined the importance of social acceptability and community relations in allowing mineral exploration to take place. This asked the respondents to rate the importance from 0 – 5 with 0 being not important at all and 5 being very important.

Nearly three quarters of respondents indicated that social acceptability and good community relations were a 4 or 5 on the importance scale with only one participant from Portugal rating it a 0 (Figure 2-13). Those respondents giving a lower rating of 1 or 2 were from a variety of countries including Bulgaria, Poland, Portugal, Turkey and the United Kingdom.

Despite this small minority, most of the respondents indicated that social acceptability and good community relations were important for mining and exploration to take place. However, the results from this section show that respondents felt the public have little information about the sector and tend to hold negative perceptions towards mining and exploration.

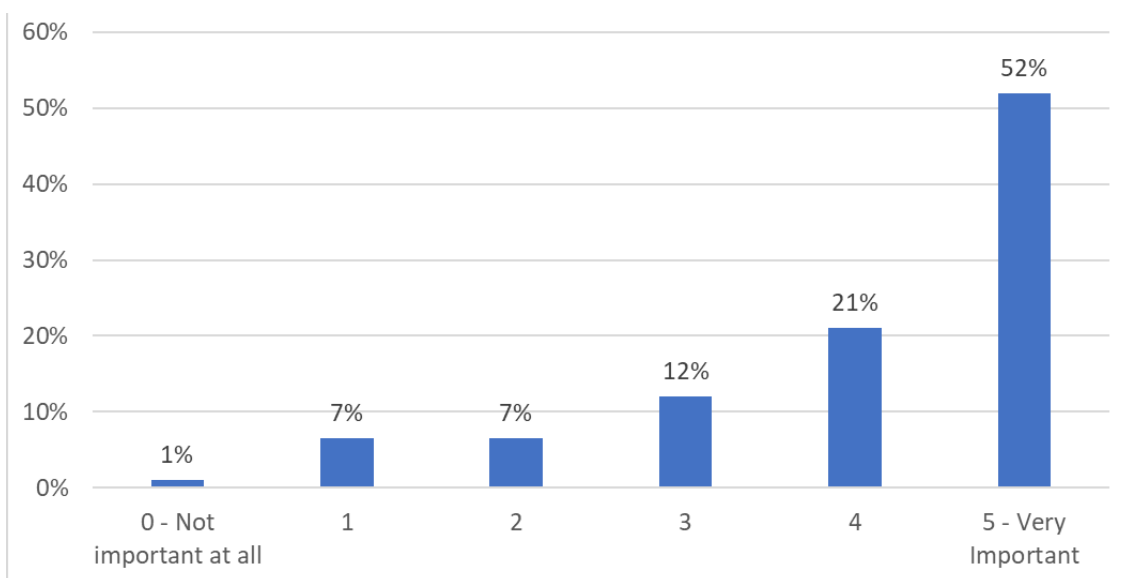


Figure 2-12. Perceived importance of social acceptability

## 2.4 Social, environmental and economic barriers

While public perceptions, awareness and attitudes are important factors relating to mineral exploration in Europe, there are also several other issues which have considerable impact upon the sector. This section explores the roles of different social, environmental and economic barriers and the impact that respondents felt they have on the industry. Respondents were asked to prioritise a range of different factors in response to a question.

The order in which these options were prioritised, as well as the number of respondents who indicated them provided an overall rating score or star rating that was then used to rank the different factor responses. Respondents were also asked which socio-economic / socio-cultural factors presented a barrier to mineral exploration in their country and were able to indicate any of the list that they felt were applicable.

### 2.4.1 Existing land use

One of the most important issues that was consistently rated as a barrier to mineral exploration was the existing use of land. This was the most significant geographical barrier identified (Figure 2-14) as well as being the number one factor identified in the question exploring social cultural barriers (Figure 2-17).

Which of the following geographical factors are barriers to mineral exploration in your country?

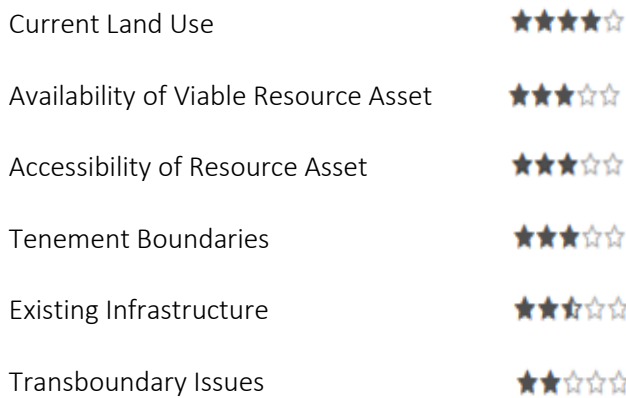


Figure 2-14. Ranking of land use conflicts

Land use was also rated the second most important barrier with regards to environmental issues (Figure 2-) and mentioned in some of the open-ended responses regarding barriers responsible practice. The issue of protected habitats was the biggest environmental barrier identified and this issue could also be interpreted as a restriction on the existing land use.

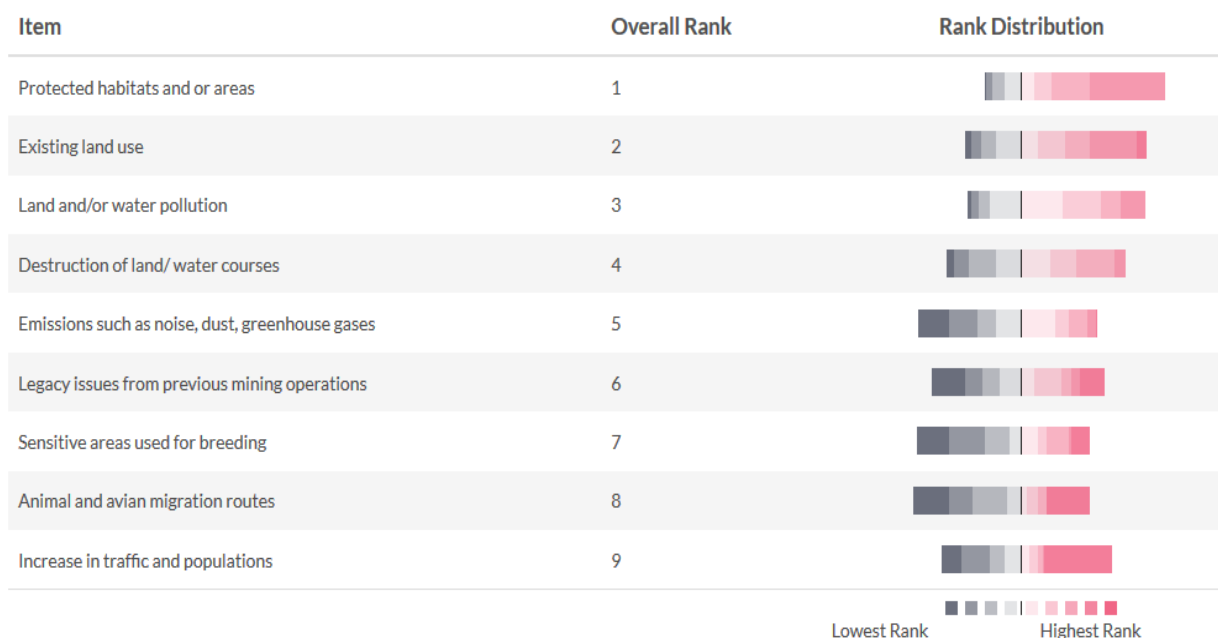


Figure 2-15. Perception of environmental barriers

2.4.2 Environmental barriers

Pollution and destruction of land/water courses were the third and fourth most prioritised environmental barriers and pollution was also mentioned several times in the open-ended question exploring barriers to responsible practice.

An increase in traffic and populations was the lowest priority in relation to environmental barriers. However, the use of vehicles and transportation of equipment were two of the most important active disturbances during mineral exploration behind the presence of drilling rigs (Figure 2-16). Therefore,

whilst traffic and vehicles undoubtedly have an impact during exploration activities they do not appear to be a barrier to work being undertaken.

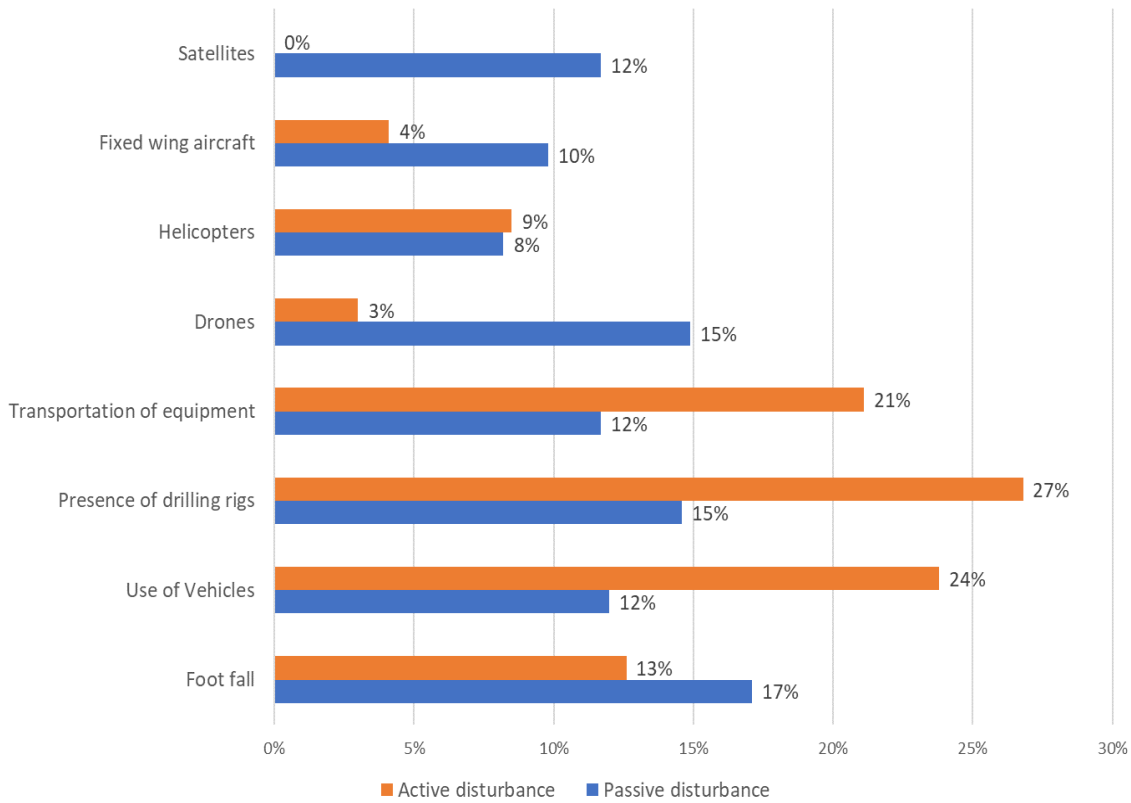
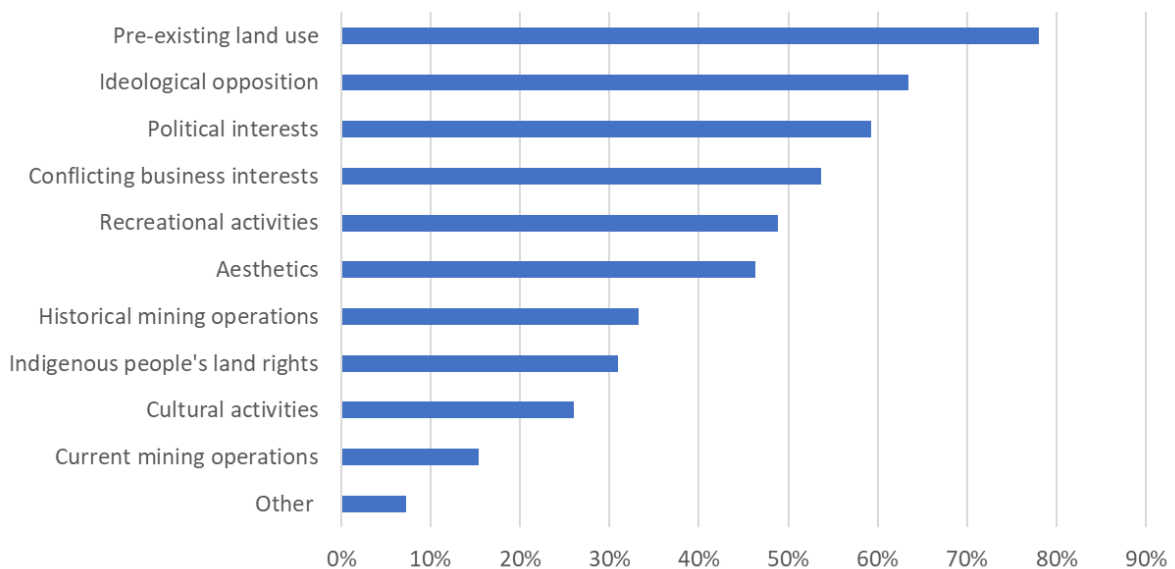


Figure 2-16. Perception of active and passive disturbances

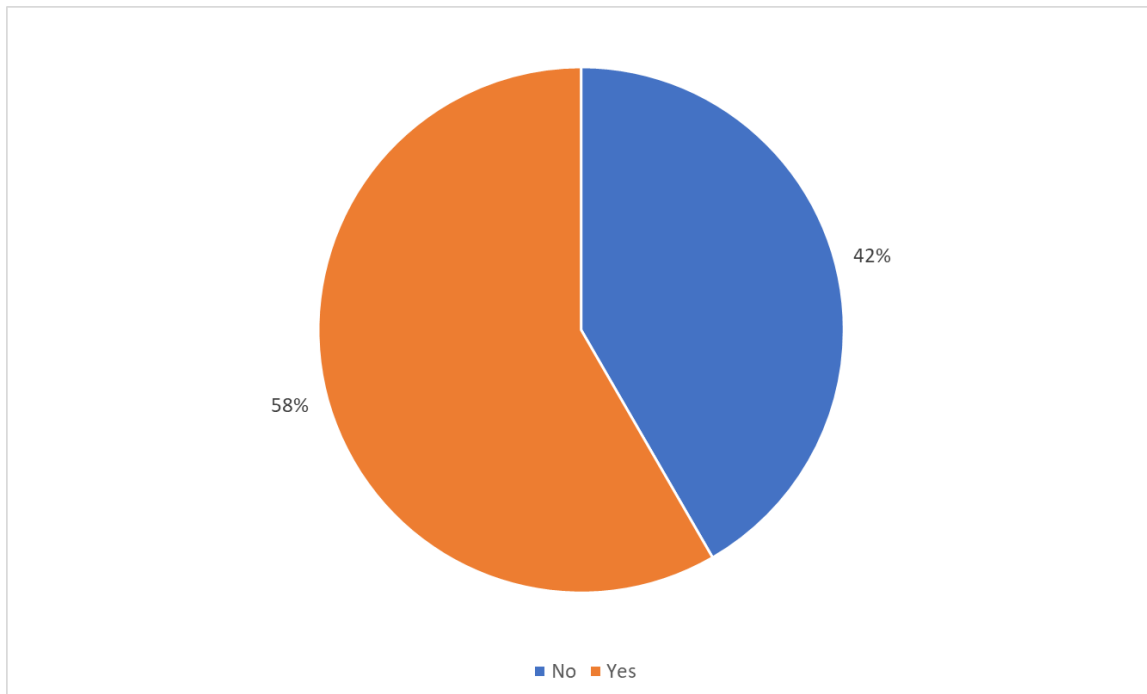
### 2.4.3 Socio Cultural barriers

Ideological opposition and political interests were the second and third highest rated socio / cultural barriers to exploration (Figure 2-). These issues also emerged in the comments relating to barriers to responsible practice. Several respondents highlighted the strength of environmental opposition groups and lobbyists as a barrier to responsible practice. Corruption in politics and politicians themselves were also mentioned in the open-ended responses.



**Figure 2-17. Perception of socio-economic and socio-cultural barriers.**

Conflicting business interests were quite prominent amongst the socio-economic / cultural barriers with 54% of respondents indicating they were an issue for exploration in their country (Figure 2-17). However, when asked specifically if different business interests present a barrier to mining exploration in your country, only 38% of respondents said that they were (Figure 2-18). Those respondents who did indicate that conflicting business interests were an issue identified the most problematic areas as tourism and agricultural activities. This again links to the issue of existing land use as it is likely that current agricultural and tourism sites are hindering further exploration activities in these countries.



**Figure 2-18. Responses to whether competing interests pose a barrier to exploration**

The land rights of Indigenous people were only indicated as a barrier by 31% of respondents. This issue was however more problematic for some countries in comparison to others. All of the respondents from Finland, Turkey, Sweden, Lithuania and Norway as well as two thirds of those from Bulgaria felt this was a barrier.

#### 2.4.4 Economic barriers

The highest scoring economic barrier to mineral exploration was the cost of operations and labour (Figure 2-19). This problem was also highlighted in the barriers to responsible practice later in the survey and is undoubtedly one of the most significant issues for development in the sector.

Managing community expectations was the second highest priority economic factor preventing mineral exploration, with almost the same number of priority points as cost. This reinforces the earlier findings regarding the importance of public perceptions in the exploration sector. However, as this factor is in relation to economic / financial barriers it could be that respondents were emphasising the perceived high cost implications of managing community expectations rather than necessarily their importance to the process.



Figure 2-19. Perceived financial and economic barriers

Commodity price fluctuation was also a considerable barrier as this has an undoubted influence on potential profits and whether exploration is worth the cost, but this applies all over the world. The socio-political situation as well as state requirements also scored quite highly and stress the importance of the political and administrative situation to mineral exploration.

#### 2.4.5 Conflict and security issues

The survey also explored whether there were any conflict or security issues that were preventing exploration activities. This was not the case for most of the respondents but 18% did say that conflict in their country could affect mineral exploration (Figure 2-20). Some of these respondents were from Bulgaria, but this issue was also brought up by respondents from Turkey, Germany, Portugal, Slovenia, Ireland and the UK. When asked to provide details on the types of conflict, land use was once again mentioned as well as problems with environmental activists, rather than conflict in the sense of unrest or war. Corruption was also discussed as was the previous legacy of mining in an area.

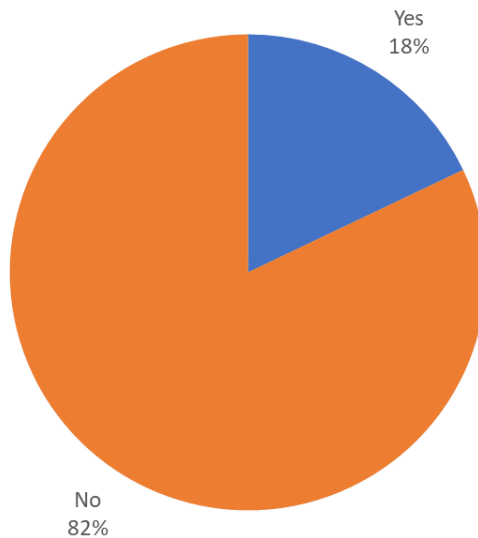


Figure 2-20. Conflict and security issues

## 2.5 Responsible practice

The final part of the survey focussed on the issue of responsible practice and explored how respondents defined the concept of this in mining and exploration as well as the opportunities and threats that responsible practice presents. Respondents were firstly asked to define responsible practice in mining and exploration in an open-ended question. The responses were then analysed thematically and this revealed three key elements in the respondents' definitions:

- Environmentally sustainable
- Socially responsible
- Compliant

These are also the key themes which emerged as the opportunities and barriers that responsible practice present which are explored in more detail in the following sections.

### 2.5.1 Environmentally sustainable

This was the concept that was mentioned in almost all respondents' definitions of responsible practice. The environmental impacts from exploration and mining activity can be considerable and many of the respondents wanted to ensure that any form of responsible practice did its utmost to avoid or mitigate these impacts.

Many of the responses were simply short references to the terms *“environmentally friendly”*, *“ecologically sustainable”* or *“ensuring sustainable development”*. However, a number were more descriptive about the way that exploration and mining needs to consider the environment in order to act responsibly:

“Explore and extract the least possible influence on nature. Avoid, repair or reimburse environmental damages with surrogate projects like renaturation or financial reimbursement.”

“non-invasive, environmentally friendly exploration methods”

“A practice that causes no pollution, consume only reasonable amount of water and energy, does not use toxic reagents in mineral processing and has a good dialogue with local communities”

“Leaving the site as close to what it was when the exploration company arrived”

“Undertaking exploration activities in an environmentally and socially aware and responsible manner. Utilizing passive exploration techniques as far as possible.”

Respondents regarded environmental sustainability as an important part of responsible practice, both in terms of general environmentally sustainable action, as well as specific practices relating to non-invasive exploration and sustainable water and energy use. Some of the opportunities for this were expanded upon in Section 2.6, but there were not many details provided. What exactly environmentally sustainable exploration and mining means, or more importantly how it can be achieved, are therefore areas for further research that could be helpful to both respondents and the wider public alike.



### 2.5.2 Socially responsible

While environmental sustainability was the most common descriptor for defining responsible practice, the importance of social responsibility was also cited in most of the responses.

Respondents referred to the requirement for a “*social license to operate*”, that “*negative social impacts should be minimised*”, and there should be “*consideration of local communities*” in project developments. However, some responses went into more detail and emphasised the need for more effective engagement, early in the development process that was both meaningful and of a high standard.

Some respondents also highlighted the importance of transparency in planning and the need to provide accurate information to local communities to avoid misinformation and scare mongering. One respondent summarised several similar responses in saying that communities should be informed and educated about any potential exploration or development and that by “*providing a balanced view of the risks and opportunities, that expectations and opposition could be managed more effectively*”.

These comments and the focus on social factors in responsible practice reiterate the findings from the public perceptions and attitudes to exploration (Section 2.3) of the importance of public attitudes to the sector. However, both the definition and opportunities for responsible practice (Section 2.5.5) provide some potential solutions as to how the issues can be addressed and demonstrate how respondents feel that this agenda needs to be progressed for responsible practice to be achieved.

### 2.5.3 Compliance

The third descriptor of responsible practice that appeared in most of the respondents’ definitions was the need for compliance with legislation and regulations. Once again many of the responses only mentioned the terms “*legislative compliance*” or “*regulatory compliance*” though some did provide some more sector-specific details:

*“implementation of OHSAS standards, compliance methodologies and methods in the research process, continuity from obtaining investigative right to the Mineral Resources Reserve”*

*“fully comply with legal regulations in the fields of geology, mining and environmental protection as well as occupational health and safety”*

As compliance was mentioned by so many of the respondents it would seem to indicate that legislation and regulations are currently not being fully adhered to across Europe. This could be attributed to range of different factors but the complexity of some legislative regimes was mentioned in the potential barriers to responsible practice (Section 2.5.6). Some respondents stated that legislation was complicated, bureaucratic and inflexible which led one expert to comment that regulation was stifling innovation.

More details about the opportunities and barriers to responsible practice are provided in the following sections.

### 2.5.4 Opportunities and barriers that responsible practice present.

After defining responsible practice, respondents were asked to identify three opportunities and three barriers that responsible practice present. As these were open ended questions, the responses were coded thematically to identify the main opportunities and barriers raised by the respondents.

### 2.5.5 Opportunities for responsible practice

The most significant theme that emerged from the opportunities identified was the potential economic benefits of responsible practice. Respondents highlighted the possibility of more jobs, regional growth, wealth generation and greater prosperity. It was therefore clear that the respondents linked responsible practice with better economic prospects for the industry. Some responses also emphasised the opportunities for more 'local' jobs through responsible practice, as well as highlighting the skilled work and high pay that often accompanies exploration and mining developments.

Sustainability and the environment were also mentioned as potential opportunities but with a focus on sustainable mining practices and the potential of less-invasive extraction techniques. There were several references to more environmentally friendly exploration and mining techniques which maximise the use of new technologies to minimise pollution and damage to the environment.

Social responsibility was mentioned as often as environmental sustainability; several respondents indicated the potential to create greater public acceptance and build good relationships through responsible practice. Respondents suggested that this could be achieved by consulting with stakeholders at all levels and improving communication and information provided to the public.

Some respondents also indicated that responsible exploration and mining needs to engage with affected communities, educate people about what exploration involves and raise awareness of both the positive and negative aspects of exploration and mining. This would help to create an 'informed debate regarding potential development' which some respondents felt could help forge greater acceptance by local populations and build trust in the exploration and mining sector.

Some of the respondents expected responsible practice to result in better legislation and regulations as they mentioned the political opportunities that would arise from responsible practice. There were references to changing legislation, EU directives and more frequent granting of permits. However, none of the responses provided any detail as to whether these were opportunities that were happening now or would only be opportunities if responsible mining practice was in place.

### 2.5.6 Barriers to responsible practice

Much like the opportunities arising from responsible practice, the perceived barriers included similar themes around cost, environmental and social factors as well as politics, legislation and regulations. Cost was again seen as the main barrier and most responses just stated "cost" as a one-word response. Some did go into a little more detail and argued that there would be a greater cost to responsible practice due to the specialised support requirements and the additional time it could take. There were also references to the limitations on financing as well as potential additional costs from marketing.

Politics, politicians and legal frameworks were also raised as barriers to responsible practice. Some respondents described the uncertainty or variability in policy as an issue which came from continual changes in political parties or political priorities. Other responses focused the issue on specific anti-mining policies and there were also a small number of references to political corruption.

While politics was an issue, respondents also saw bureaucratic procedures as a barrier to responsible practice. There were complaints of the long bureaucratic procedures that exist in some countries as well as issues around "self-interested bureaucrats". The legal situation was seen as problematic by respondents, with complicated legislation, strict environmental legislation and complex government regulations all being cited as barriers.

The main issue highlighted as a social barrier to responsible practice related to a lack of knowledge and information for local communities. Respondents stated that poorly informed communities, and a lack of transparent information and inefficient education were barriers to responsible practice. This echoed the findings relating to social issues from earlier questions and reiterates the importance of community engagement, greater transparency and education to implement responsible practice.

Environmental factors were also seen as a potential barrier to responsible practice. The issues relating to the environment did vary but there was mention of environmental pressures, deterioration, pollution, climate change, and wildlife. Some respondents were also wary of the role of environmental groups with one person stating that:

‘responsible practice implies transparency which alerts opposition to mining, in particular anti mining NGO’s and environmental groups.’

The issue of existing land use was mentioned as a barrier to responsible practice but by a limited number of respondents.

### 3 CONCLUSION

#### 3.1 Implications for INFACT and the exploration and mining sector

The results of this survey demonstrate that experts feel there are significant barriers to mineral exploration in Europe which fall under five main themes.

##### 3.1.1 Existing land use

One of the fundamental barriers identified by respondents is the existing use of land and this emerged as a priority from responses to multiple questions. The survey results suggest that existing land uses relate to a range of factors including environmental protection (such as protected areas or habitats); existing residential or farmland or areas used for recreation activity such as hiking and or mountain biking. It was also not possible to explore whether the land use barriers vary by country or even within countries.

The issues associated with land use are an area that should be further explored and incorporated as a consideration in the reference sites in the first instance, but also considered as a Europe-wide issue that requires further attention.

##### 3.1.2 Cost

The cost of exploration and mining activities was another important barrier to exploration highlighted by respondents. In particular, labour and social commitments were cited as contributing costs. This is another area that would benefit from further research to gain a more detailed European perspective and whether it is genuinely more costly than in other parts of the world.

##### 3.1.3 Public perceptions

A lack of public awareness and negative attitudes towards the exploration and mining industry were another issue identified by respondents. There was a general perception of an ill-informed public regarding exploration activities and an association of any such activity with negative forms of extraction, such as fracking. Responses also showed that social acceptability is vital to the industry and yet public opposition remains high. If exploration is to progress in Europe then an understanding of the drivers of such opposition should be prioritised so that they can be addressed.

Nearly half of the respondents indicated that responsible practice should include effective social actions which might help to address this negative perception. Respondents suggested that this could be achieved through more effective early public engagement, transparent and accessible information, and honest discussions which outline both the potential positive and negative impacts of developments and provide opportunities for constructive feedback.

### 3.1.4 The environment and sustainability

Negative environmental impacts and sustainability were also seen as barriers to exploration and mining. Respondents felt that exploration activities need to make better use of non-invasive technologies to limit their impacts. Respondents also recognised the need for exploration and mining groups to limit their environmental impact to achieve responsible practice. However, this is a difficult task and the sector needs to explore the role of technology and look for innovative ways to limit the impact the industry has on the environment (one of the key aims of INFACT).

### 3.1.5 Governance structures and regulatory processes

Politics and regulations were the other major theme emerging from this research. The challenge from politics and politicians is particularly important in Europe as over 55% of respondents believed that the Government owned the mineral rights in their countries. Politicians are therefore important gatekeepers of access to minerals and need to be properly engaged in discussions.

The issues pertaining to legislation concerned the variation and inconsistency of regulations and the belief that they have little or no flexibility. However, as the EU provides legislation and guidance on so many areas of the environment it would seem possible for regulations to be overseen by the EU to provide consistency and clarity across Europe. This might also help address the issues of politics, corruption and bureaucracy as barriers if the laws across Europe were standardised and overseen by an independent body. However, there are already numerous complaints about the additional bureaucracy that EU legislation can bring so this may not be a popular solution and would not necessarily apply to all countries across Europe.

## 4 APPENDIX A

INFACIT is a Horizon2020 Project funded by the EU to determine and address the barriers to mineral exploration in Europe. Completing this short questionnaire should take less than 10 minutes and will provide the project partners with a broad understanding of the technical, environmental, social, governance and financial barriers at a country and a European level.

To begin with we would like to gather some information about you.

1. Which country do your responses relate to? \*

2. Which of the following best describes the sector you work and or are involved in? \*

Comments

3. What is your area of specialism?

Comments

4. What is your gender?

5. Which of the following describe the political situation in your country?

*please select all that apply*

\*

- Complex administration
- Undergoing regulatory reform
- Widespread corruption
- Democratic
- Centrally governed
- Semi-autonomous governance
- Autocratic
- Member of the EU
- Aligned with the EU
- Other - please describe

6. Does your country have a developed mineral exploration sector? \*

- Yes
- No
- Not sure

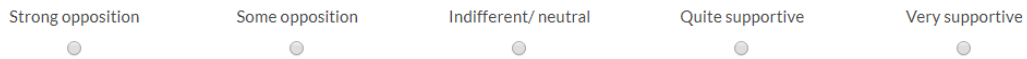
7. If yes, is there an established mining sector?

- Yes
- No
- Not sure

8. How informed are people in your country about mineral exploration and what it involves? \*



9. How would you rate public attitudes and perceptions towards mineral exploration in your country? \*



10. In your country, how important are **social acceptability and good community relations** for mineral exploration to take place? \*



11. How frequently does mineral exploration get confused with operations that have received negative publicity such as fracking? \*



12. Which of the following cause active or passive disturbance during mineral exploration activities? \*

	Foot fall	Use of Vehicles	Presence of drilling rigs	Transportation of equipment	Drones	Helicopters	Fixed wing aircraft	Satellites
Passive disturbance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Active disturbance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Which of the following geographical factors are barriers to mineral exploration in your country? \*

please provide a star rating according to perceived importance

	Availability of viable resource asset	Accessibility of resource asset	Transboundary issues	Existing infrastructure	Tenement boundaries	Current land use
Star rating	✘ ★★★★★	✘ ★★★★★	✘ ★★★★★	✘ ★★★★★	✘ ★★★★★	✘ ★★★★★

14. Which of the following environmental barriers are relevant to mineral exploration in your country/ region? Please rank in order of priority?\*

Drag items from the left-hand list into the right-hand list to order them.

Protected habitats and or areas	
Existing land use	
Sensitive areas used for breeding	
Animal and avian migration routes	
Destruction of land/ water courses	
Legacy issues from previous mining operations	
Land and/or water pollution	
Emissions such as noise, dust, greenhouse gases	
Increase in traffic and populations	

15. Which of the following social ( socio-economic and socio-cultural) factors could present a barrier to mineral exploration in resource rich areas in your country?

please select all that apply

- Indigenous people's land rights
- Pre-existing land use
- Conflicting business interests
- Recreational activities
- Cultural activities
- Ideological opposition
- Political interests
- Current mining operations
- Historical mining operations
- Aesthetics
- Other - please define

16. What levels of education and training in topics, related to mining and mineral exploration, are available in your country?  
please select all that apply

	Postgraduate degree (level 5)	Undergraduate degree (level 4)	Technical and vocational training diploma (level 3)	Technical and vocational training certificate (level 2)	None	Not sure
Geology/Metallurgy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geosciences (Geophysics, Geochemistry)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical Engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geographical Information Service(GIS) and Remote Sensing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Which of the following mineral exploration data types are available in your country?

- Digital geological maps
- Geophysical data sets
- Geochemical data sets
- Mineral occurrence locations
- Geological/ exploration reports
- Historical/ current mining operations
- Other - please state:
- Not sure

18. Who owns the mineral rights in your country?

- Government
- Head of State
- Private Land Owners
- Royal Family
- Combination of the above
- Not sure

19.

**Are there any conflict/ security issues in your country and or region that could affect mineral exploration?**

\*

- Yes
- No
- If yes, please provide details



22. How would you define **responsible practice** in mineral exploration and mining? \*

23. Please identify up to three barriers and three opportunities responsible practice presents. \*

	Barriers	Opportunities
1		
2		
3		

20. Which of the following are financial/ economic barriers to mineral exploration in your country, please rank in order of priority?

Drag items from the left-hand list into the right-hand list to order them.

- Cost of operation and labour ↶
- Royalties ↶
- Commodity price fluctuation ↶
- Socio-political situation ↶
- Government (State) expectations and requirements ↶
- Managing community expectations ↶

1

21. In your country, do different business sector interests present a barrier for mineral exploration? \*

Yes

No

If yes, which sector(s)