

THE POTENTIAL IMPACT OF CRITICAL RAW MATERIALS ON BUSINESS CONTINUITY AND OPTIONS TO MINIMISE RISKS:

LATEST FINDINGS FROM STAKEHOLDER ENGAGEMENT ACTIVITIES



THE SCRREEN PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAM UNDER GRANT AGREEMENT 730227.



INTRODUCTION

Critical Raw Materials (CRMs) are crucial to Europe's economy and essential to maintaining and improving our quality of life. Securing reliable and unhindered access to these CRMs is a growing concern within the EU and across the globe. The European Commission defines 27 raw materials as CRMs based on their economic importance to the EU and the risk associated with their supply. Some examples of CRMs include rare earth elements, cobalt and niobium but the latest list can be found [here](#).

In this report we share a summary of the perceived potential impact on business continuity as a result of CRM supply chain disruption, based on the feedback collected through a series of stakeholder engagement activities. We also share feedback on strategies being employed by business to manage these risks. A range of different stakeholders have been consulted (including global businesses, SMEs and academics) to provide a broad viewpoint.

We have also taken this opportunity to raise awareness of the role that substitution of materials can play in alleviating these supply chain risks. In the context of this work, substitution has four different meanings:



SUBSTANCE FOR SUBSTANCE

A replacement of one material for another with, nominally, the same or similar functionality.



SERVICE FOR PRODUCT

When a function that uses a product containing critical raw materials is replaced with a service that no longer requires the use of that product.



PROCESS FOR PROCESS

A specific process that uses a critical material is replaced by another process that delivers the same or similar function, but using different materials.



NEW TECHNOLOGY FOR SUBSTANCE

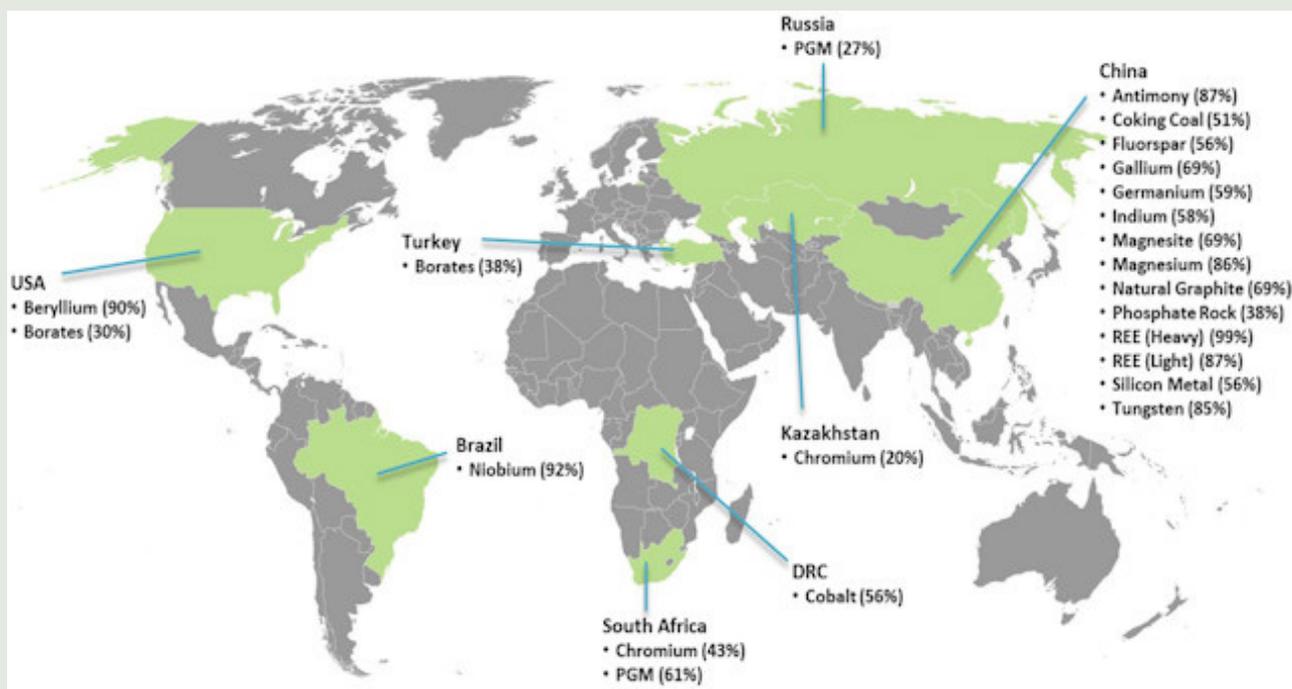
A new product or technology is developed that no longer requires the use of the critical material under consideration.

These activities have been undertaken as part of a series of engagement and educational activities associated with deliverables under Work Package 5 of Project SCRREEN.

SCRREEN is coordinated by the French Alternative Energies and Atomic Energy Commission (CEA). The consortium comprises 30 partners from 15 countries.

SCRREEN aims to become the reference adviser in Europe for CRM strategy. It will become an umbrella network bringing a single voice to the highest level. With the project's multidisciplinary consortium, it embraces all the existing networks, associations and initiatives that are willing to play a role in the European CRM strategy.

More detail on SCRREEN can be found on the website www.scrreen.eu.



METHODOLOGY

A range of different stakeholders, including global businesses, SMEs and academics have been consulted through these engagement activities to provide a broad viewpoint. The results from these activities are presented here.

The results have been collated from a series of engagement activities:

- 1 Online survey - sent out in January 2019 to +500 individuals, 24 responses received
- 2 Short interactive survey - held at the Materials Research Exchange Event in London 2018, completed by 20 individuals
- 3 One-to-one interviews – Eight interviews have been undertaken with representatives from large multi-nationals, SMEs and expert consultants

Type of organisation engaged with and type of materials used

The on-line survey was completed by a range of organisations.

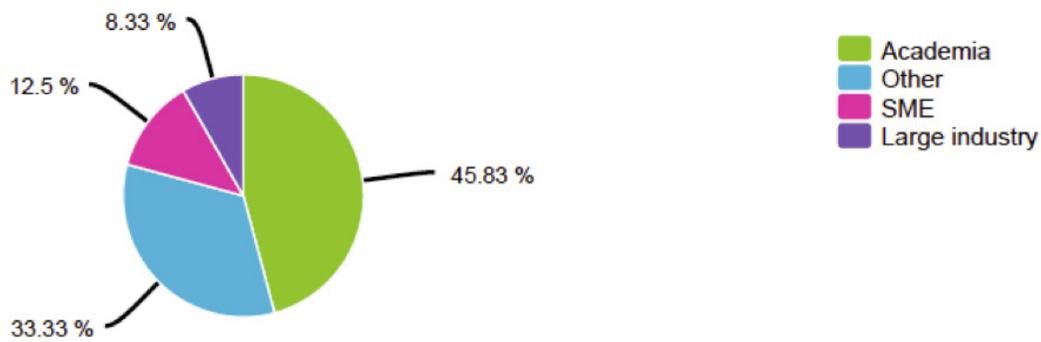


Figure 1: Type of organisation participating in on-line survey

SUMMARY OF FEEDBACK FROM STAKEHOLDERS

These respondents were subsequently asked to identify which CRMs they used in their business or research. Refer to Figure 2.

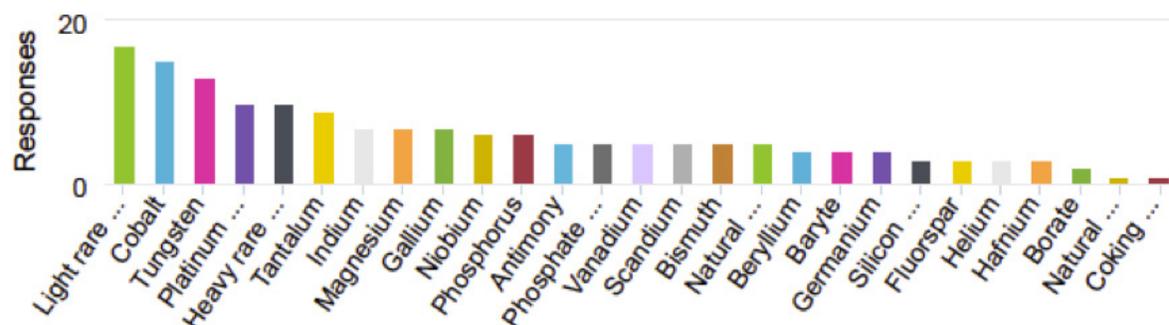


Figure 2: Summary of CRMs respondents use within their business

We provided an option for additional information to be gathered on materials that are not on the European Union Critical Raw Material list but were considered to be critical by the respondent. The list of materials that were deemed to be critical but are not on the European Union Critical Raw Material list include: lithium, silver, potash, copper, tin, nickel, tellurium, helium, titanium, gold, potassium, and construction materials (such as sand limestone, gravel, crushed rock and clay). Supplementary feedback collected during interviews tells us some businesses will deem certain chemicals (rather than specific elements) as 'critical' due to the current or projected-future regulatory pressures to find a replacement. Examples include: NMP (a solvent used in coatings); chromic acid and other chemicals containing Chromium VI; and isocyanates.

Of the CRMs listed, respondents were then asked which are the top three materials that can cause issues with business continuity. A range of answers were given, but the most common answers were:

- **Heavy and light rare earths**
- **Platinum Group Metals (PGMs) / Platinum**
- **Cobalt**
- **Indium**

Type of risk related to supply of CRM

In the next question we asked respondents to identify the most common type of supply chain risk or issue they faced. This was asked as part of the on-line and interactive survey, and the information below is a summary of all responses.

Figure 4 shows the results when multiple answers could be given, and Figure 5 shows the results when the question asked respondents to choose their top priority.

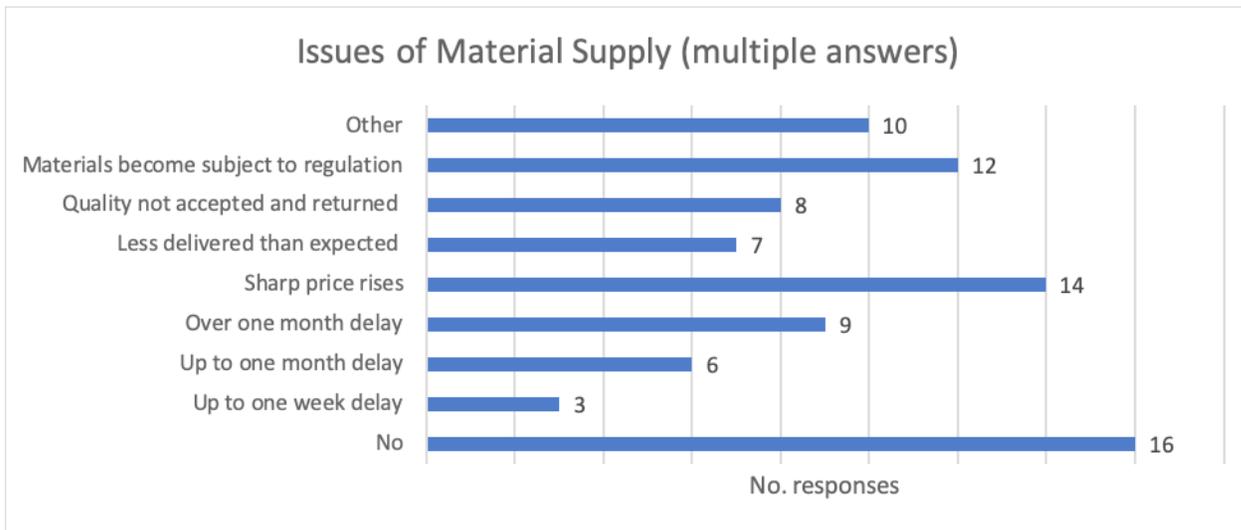


Figure 3: The business issue respondents identified with in relation to CRMs (multiple answers possible)

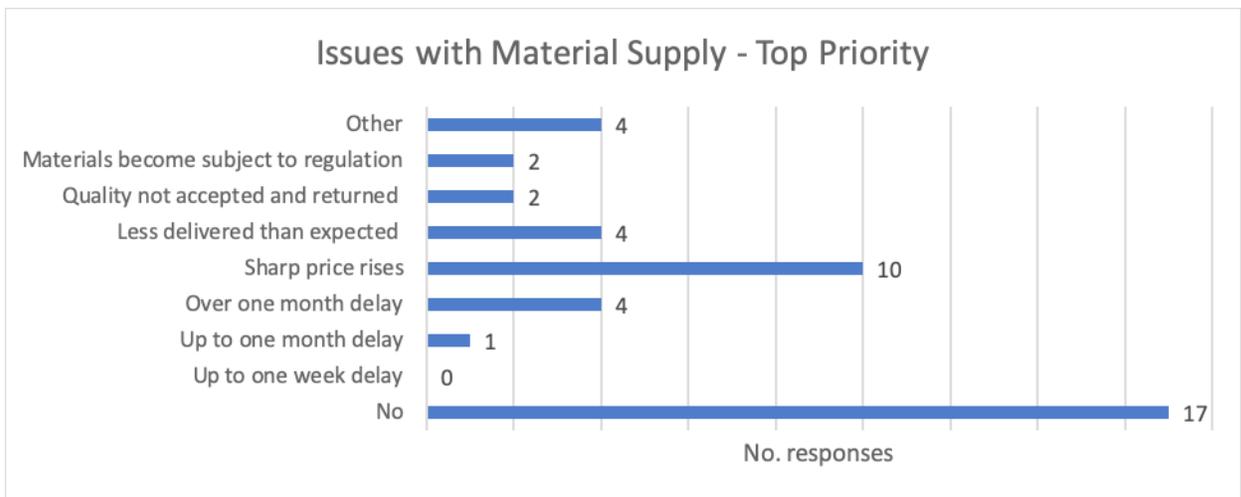


Figure 4: The business issue respondents identified with as highest priority in relation to CRMs (only single answer possible)

Of the responses for “Other” only a few examples were given, and these included: the issue of working with waste; issues around regulation of material from conflict regions of the world; and that some materials are priced according to completely free market drivers (i.e. no London Metal Exchange listing to provide a guide).

The most common type of supply risk/ issue identified during our one-to-one interviews was sharp price increases, consistent with the Survey findings. This is an issue for all companies, from small R&D focused companies up to large multi-nationals. One of the SMEs interviewed - who is developing new technology in batteries - told us they purchase their CRMs well in advance in order to minimise disruption and to allow time for budgeting. They are concerned about the increased supply chain risks as they move from R&D into full production. All companies big and small find it difficult to obtain reliable forecasting data from their suppliers around pricing of CRMs. The majority of interviewees also cited concerns regarding the regulation of CRMs which could impact their business, in particular Environmental and Health and Safety regulations and regulations relating to the import/ export of certain CRMs.

Action taken to mitigate risk

Respondents were asked if there were any steps that their organisation has taken, or might take in the future, in order to mitigate the risk(s) identified. Again, multiple answers were allowed first (refer to Figure 5), followed by identifying the single most important mitigation action (refer to Figure 6).

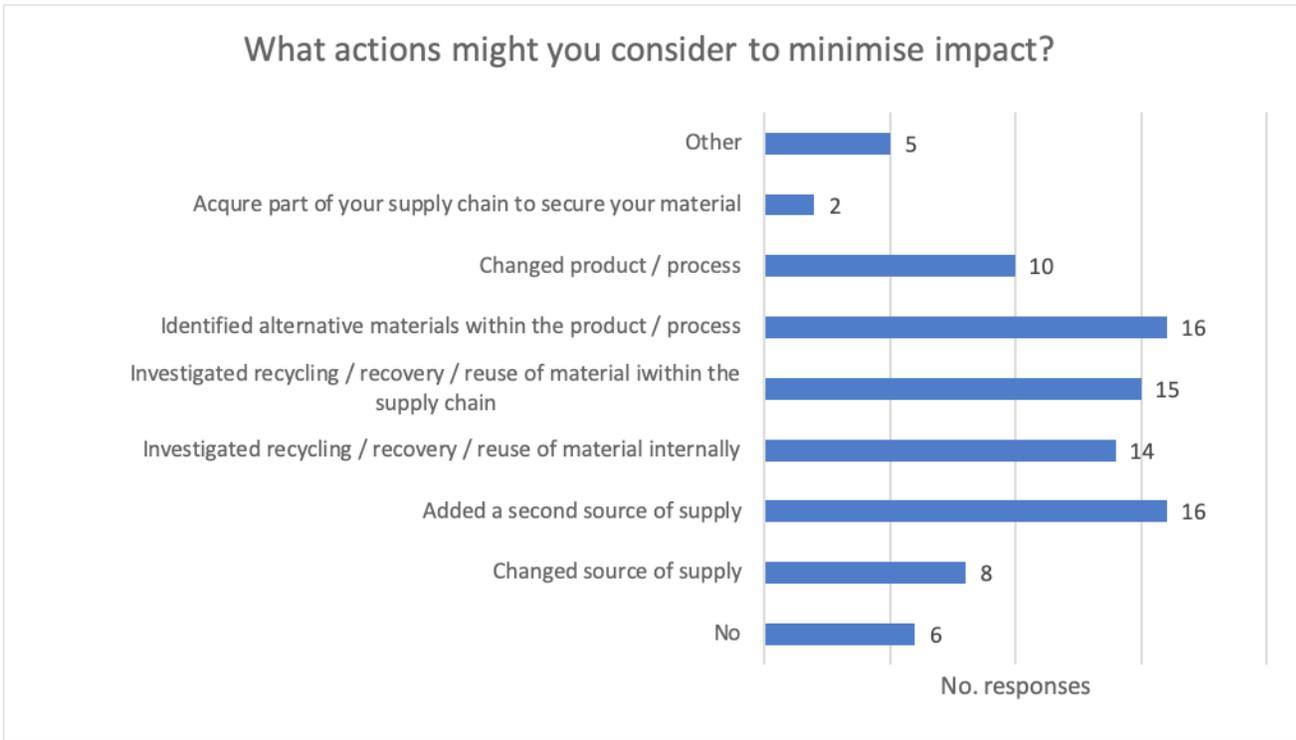


Figure 5: The actions respondents would consider taking to minimise supply chain disruption from CRMs (multiple answers possible)

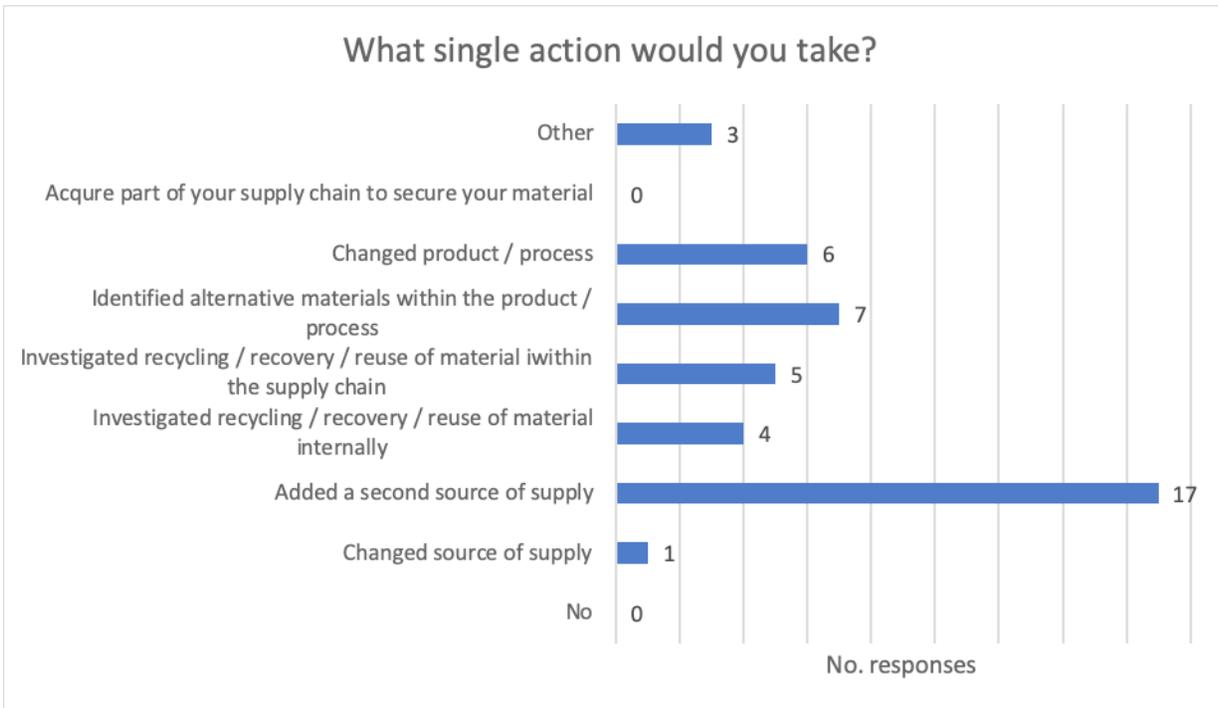


Figure 6: The single action respondents would consider taking to minimise supply chain disruption from CRMs (single answer only) possible

The survey findings are broadly consistent with the feedback from interviews. We didn't find anyone who was looking at acquiring part of their supply chain (vertical integration) as a means to mitigate supply chain risk, however most companies told us they were working closely with their suppliers and other supply chain partners to identify alternative sources of supply to help spread the risk. Some companies are looking at more local primary sources of CRMs and some are considering CRMs that are extracted/produced as a by-product of another activity. All companies interviewed are very active in R&D to mitigate supply chain risk. Those working in more established markets (e.g. catalysts) have a big focus on thrifting.

Some of these companies have well developed business models and recycling technologies. These have helped them to create a circular economy through material recovery and recycling activities within their business and through the supply chain to help close the loop. Companies developing products in emerging and high-growth markets (e.g. batteries) are active in R&D projects looking at substitution but agree that current trends will result in using more CRMs and using them in more complex mixtures. Therefore, an increased focus on R&D in recycling & recovery technologies will be required to help mitigate CRM supply risks.

Comparison of CRM risk with other business risks

For the on-line survey, and with some interviews, respondents were asked how the issue of CRM risks were prioritised with in comparison with other business continuity risks to the organisation.

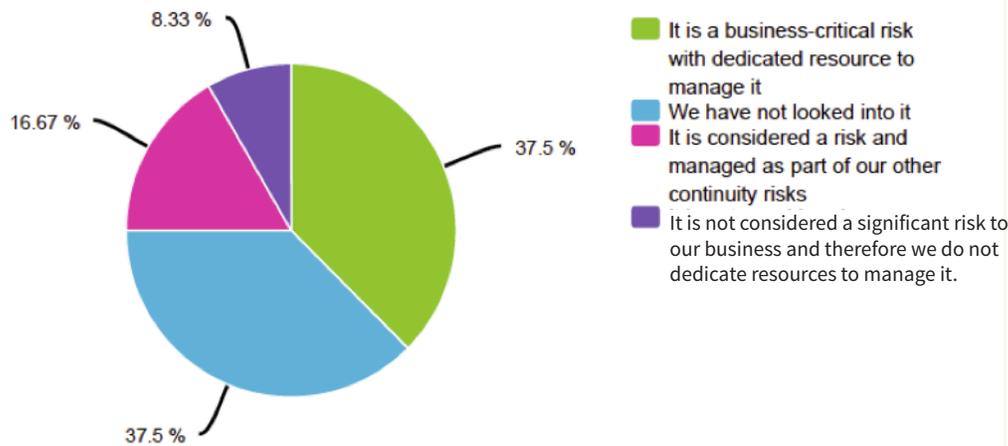


Figure 7: How do risks related to CRMs compare with other business continuity risks?

As can be seen from the diagram, there is an equal split between those organisations that have a separate group looking into the issue, and those that have not considered the issue of CRM at all. The next most popular response was those organisations that do consider it, but as part of their overall strategy for business risk mitigation. The experience from our interviews is that the answer to this question will very much be linked to the size of the organisation, although even in the large organisations that we interviewed we found that the people responsible for considering these CRM supply chain risks were also responsible for other business areas e.g. sustainability or compliance, in addition to CRMs.

Collective action

A final question was also asked during the interactive survey on what collective action could be taken that would support organisations to reduce the likely impact of CRMs on their operations. The results shows that the. Two most popular actions to take are:

- (1) Develop greater and more secure recycling and recovery route for key materials; and
- (2) Fund research and innovation into new products and materials. The results of the survey are consistent with the interviews conducted so far in that all of the companies interviewed are involved in activities associated with recycling/recovery and/or R&D in substitution.

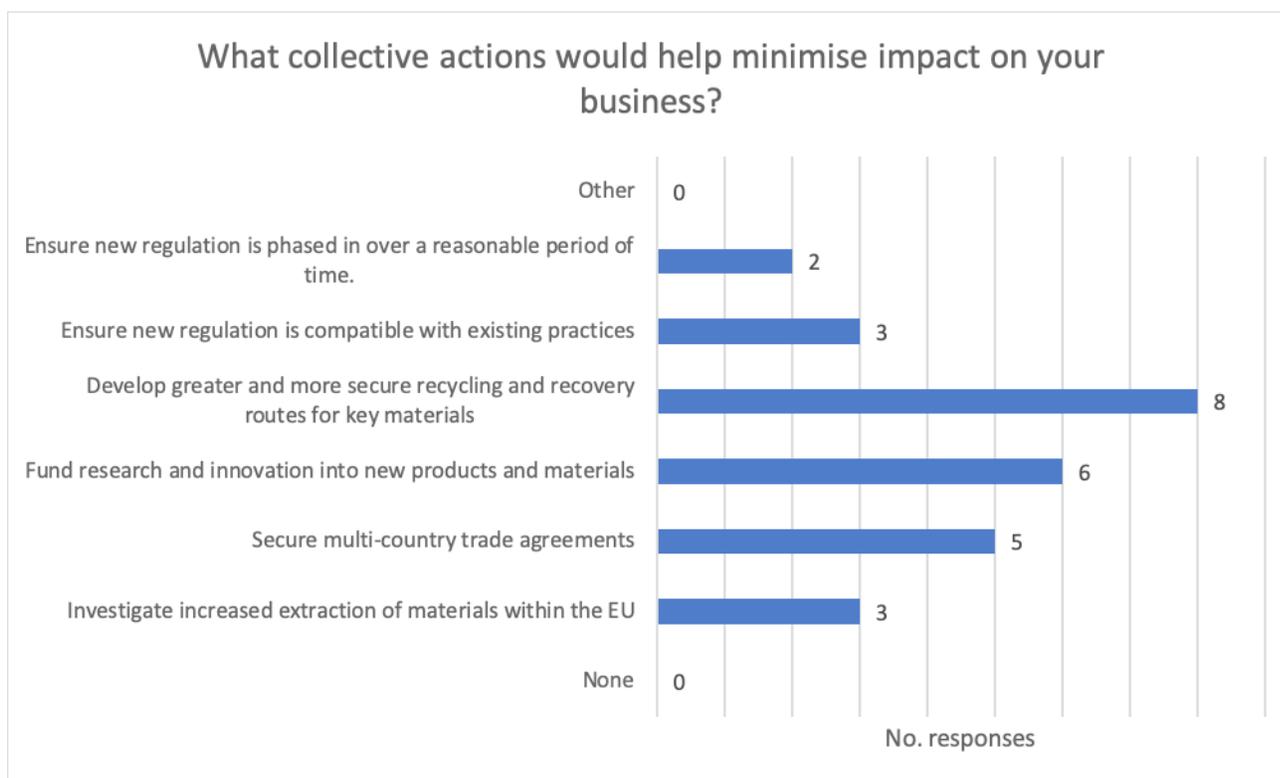


Figure 8: What collective actions would help minimise impact on your business?

Summary

In Summary, the data from Surveys and feedback from the interviews tell us:

- The most common CRMs that organisations have experienced supply chain disruption in obtaining are: Heavy and light rare earths; PGM / Platinum; Cobalt; Indium.
- The most common type of supply chain risk that organisations experience is sharp price rises. Many companies are also concerned by changes in export/import and EHS regulations.
- In order to mitigate supply chain risk, companies are working closely with suppliers and other partners to add a second source of supply. They are also active in R&D associated with recovery and recycling. Many companies, particularly those in emerging markets, are active in R&D associated with substitution.



THIS REPORT AS WELL AS A SERIES OF RELATED DOCUMENTS ON CRITICAL RAW MATERIALS (CRMS) WILL BE PRODUCED DURING THE COURSE OF THE PROJECT. ALL OF THESE REPORTS ARE PUBLICLY AND FREELY AVAILABLE ON THE SCREEN WEBSITE.

FOR MORE INFORMATION ON THE PROJECT, CRMS, OR TO DOWNLOAD THE REPORTS, VISIT:

WWW.SCREEN.EU