

Version 1: December 2024

RAW MATERIALS OUTLOOK USER GUIDE



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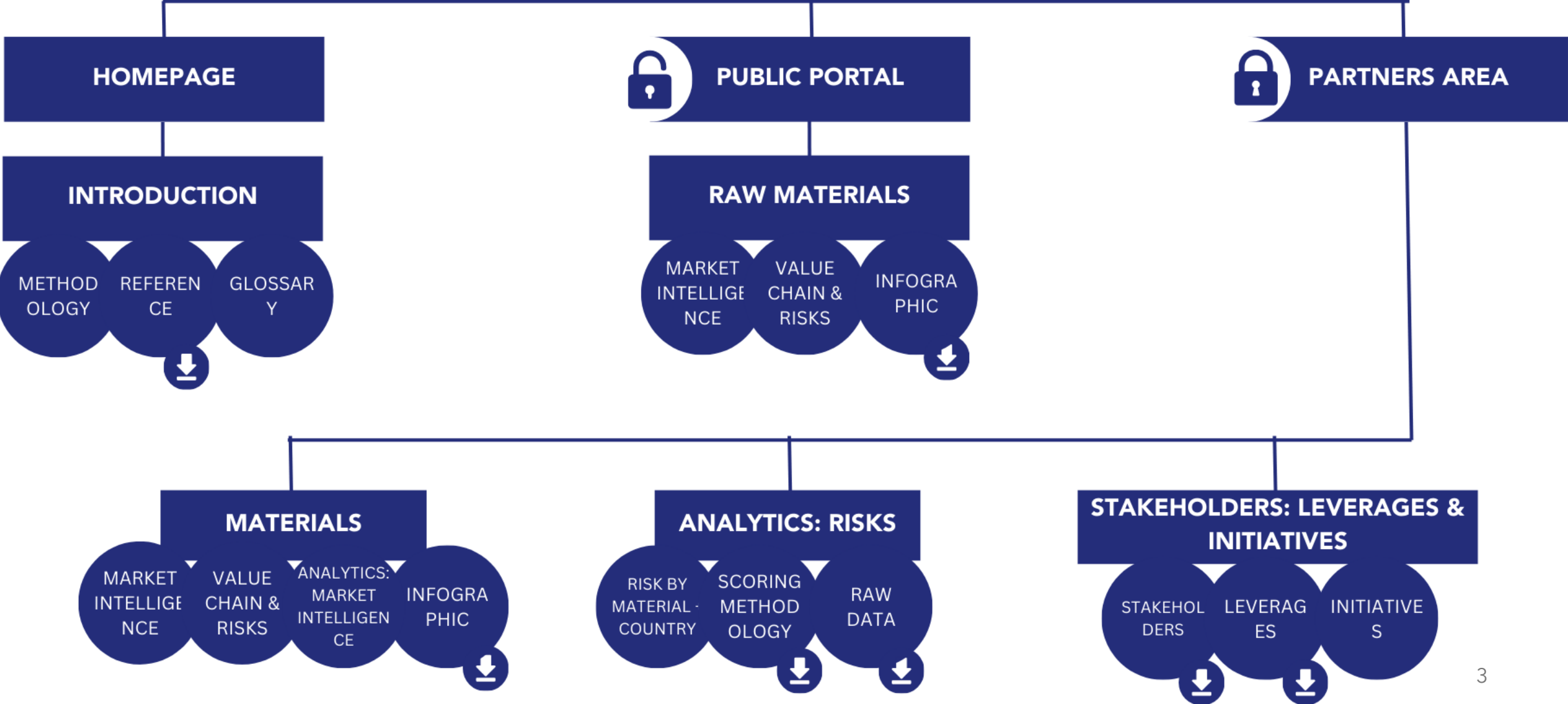
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Click to jump to the relevant section

RAW MATERIAL OUTLOOK PLATFORM SITE MAP



MAP OF CONTENTS & DEFINITIONS

	DEFINITION	FIND IT IN...
B		
BY-PRODUCTS	Secondary materials extracted as a result of processing the primary ore.	Public portal or Partners area, Market intelligence tab
I		
INDUSTRY INITIATIVE	A combination of voluntary activities, including tools and mechanisms to achieve certain goals or visions.	Partners area, stakeholders, leverages and initiatives tab
INTRINSIC RISKS	Those risks that are linked to the methodologies, processes, chemicals and other materials used in a particular value chain stage, and those risks that are commonly linked to a geographical area	Public portal or Partners area, value chain and risks tab
L		
LEVERAGE	Leverage is an advantage that gives power to influence. In the context of the Guiding Principles, it refers to the ability of a business enterprise to effect change in the wrongful practices of another party that is causing or contributing to an adverse human rights impact	Partners area, stakeholders, leverages and initiatives tab.
M		
MARKET INTELLIGENCE	In the context of the Raw Materials Outlook, we define market intelligence as all the data on production, and key producer companies at each stage of the value chain, and market prices of each raw material	Public portal or Partners area, market intelligence tab

	DEFINITION	FIND IT IN...
R		
RISK CATEGORY	In the context of the Raw Materials Outlook, we have defined 5 broader categories of risk including worker’s and human rights, societal welfare, use of natural resources, emissions and land reclamation, and company governance	Public portal or Partners area, value chain and risks tab
RISK EVIDENCES	In the context of the Raw Material Outlook, risk evidences are the collected instances / references where a risk has materialised	Public portal or Partners area, value chain and risks tab
RISK ISSUES	In the context of the Raw Material Outlook, each risk category has between 2 and 4 different issues, for example the risk category of workers and human rights has 3 issues: serious human rights abuses, terms of employment and occupational health and safety. In total there are 14 risk issues.	Public portal or Partners area, value chain and risks tab
RISK MATRIX HEAT MAP	A visual representation of salient risks scored by likelihood and severity	Partners area, analytics risks tab
RISK SUB-ISSUES	In the context of the Raw Material Outlook, each risk issue is further divided into risk sub-issues, there are many risk sub-issues for each risk issue.	Public portal or Partners area, value chain and risks tab
RISK SUMMARIES	In the context of the Raw Material Outlook, risk summaries describe and analyse the risk at hand	Public portal or Partners area, value chain and risks tab
V		
VALUE CHAIN	A business enterprise’s value chain encompasses the activities that convert input into output by adding value. It includes entities with which it has a direct or indirect business relationship and which either (a) supply products or services that contribute to the enterprise’s own products or services, or (b) receive products or services from the enterprise	Public portal or Partners area, value chain and risks tab



1

CHAPTER 1

Introducing the Raw Materials Outlook Platform



The Raw Materials Outlook (RMO) Platform is a self-service portal that allows you to access information on environmental, social and governance (ESG) risks and the impacts of raw materials at each stage of the value chain.

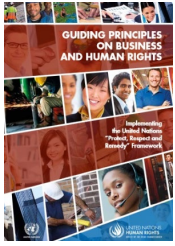
- Access to this information can **support your due diligence practice to advance the responsible sourcing of raw materials.**
- The Platform enables the **identification of individual and collective leverage points** and action for automotive downstream companies.
- **The target audience is automotive companies**, but it can be used by other downstream or midstream companies, researchers, public entities, and civil society organisations.



This document guides you on **how to use the Raw Materials Outlook Platform to advance responsible sourcing endeavours.**



PLEASE NOTE: For the best user experience, access the Platform on desktop rather than on a mobile device. Supported browsers include Safari, Internet Explorer/Edge and Chrome.



The United Nations Guiding Principles (UNGPs) on Business and Human Rights were the main reference framework for risk identification, analysis and prioritization. The identification of risks and impacts along the value chain was based on:

- Analysing the operating context
- Assessing intrinsic risks to business operations
- Collecting evidence and reports on materialised impacts and potential risks and blindspots



The analysis and prioritization of risks is based on saliency (= the risks' severity and likelihood).

Risk identification, analysis and prioritization are based on research.



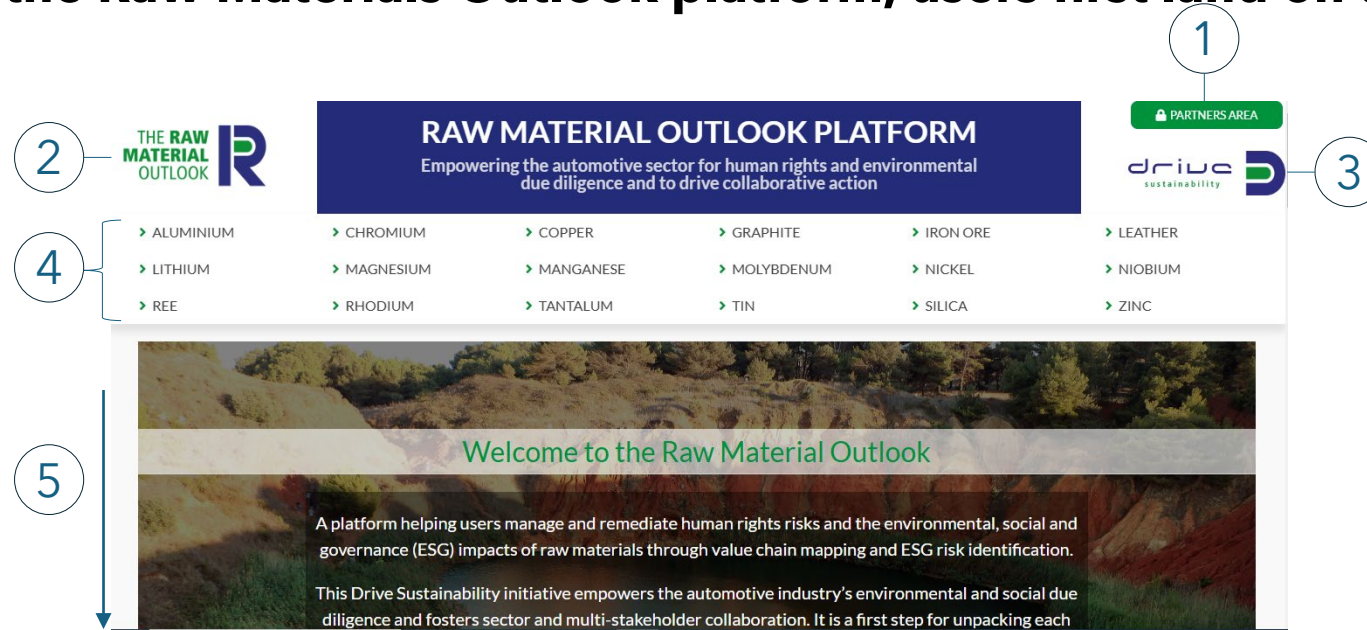
The RMO is updated periodically, by adding new raw materials or updating existing profiles.



2

CHAPTER 2 **How to use the** **Homepage**

When visiting the Raw Materials Outlook platform, users first land on the homepage



Click on this to...

1	Partners area	Log in to the Partners Area
2	Homepage Link	Takes you back to the homepage no matter which page you're on
3	Drive Sustainability	Direct access to Drive Sustainability website
4	Raw Materials Data	Access market intelligence and ESG data for each raw material by clicking on each material
5	Homepage Information	Scroll down to access content of the homepage

To access the information provided on the Homepage, scroll down.

For the sections that include interactive plug-ins, select your preferences to access the information.

These interactive sections are:

a) How does the RMO support and enable action?



Click on phases 3 and 4 to retrieve relevant information

Click on phase 2

Specific information on phase 2 appears instead of phase 1 data

b) How to access the information?

Example:

How to access the information?

Select a raw material below, then choose among the following information:

Market Intelligence
Learn more about the raw materials, relevance for the automotive sector, prices and production data at each stage of the value chain.

Value chain and risks
Discover which actual and potential ESG risks are linked to each stage of the raw material value chain to assess how they might impact the OEM.

Infographic
Get a brief snapshot of the raw material value chain, ESG risks and market intelligence.

To find out more about the value chain of materials covered by the RMO, select from the below:

Al Aluminium	Co Copper	Chr Chromium	C Graphite	Fe Iron ore	Lea Leather	Li Lithium	Mg Magnesium	Mn Manganese
Mo Molybdenum	Ni Nickel	Nb Niobium	Ree REE	Rho Rhodium	Ta Tantalum	Sn Tin	Si Silica	Zn Zinc

Click on Lithium to access market intelligence and value chain data on lithium

Click on other raw materials to access data for each of them

LITHIUM

MARKET INTELLIGENCE | VALUE CHAIN & RISKS

Infographic

Automotive sector relevance

Introduction

Deposit types

Typical by-products & associated minerals

Automotive sector relevance

Battery grade lithium chemicals are used in the manufacture of various cathodes for use in lithium ion batteries (LIB). LIB batteries are used in electrical vehicles and also for electronic, industrial and energy storage uses. The US Geological Survey estimated that in 2010 the percentage of global lithium used in the manufacture of lithium batteries was 31%. This rose to 46% in 2018 and 71% in 2021.

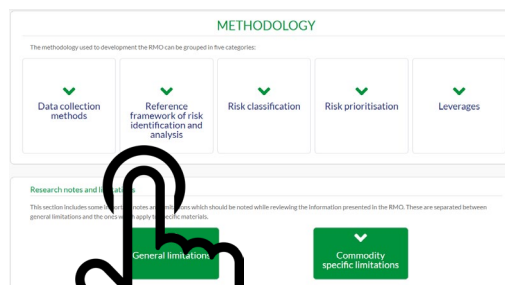
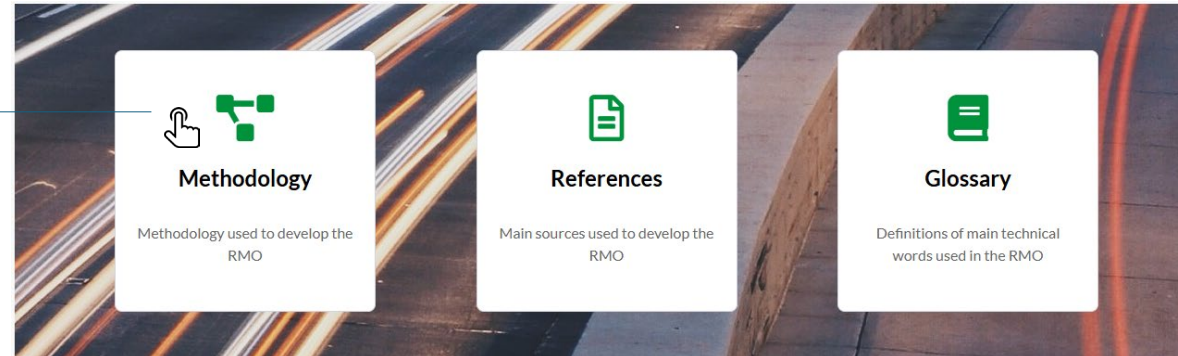
Production overview



c) Methodology, References and Glossary

Example:

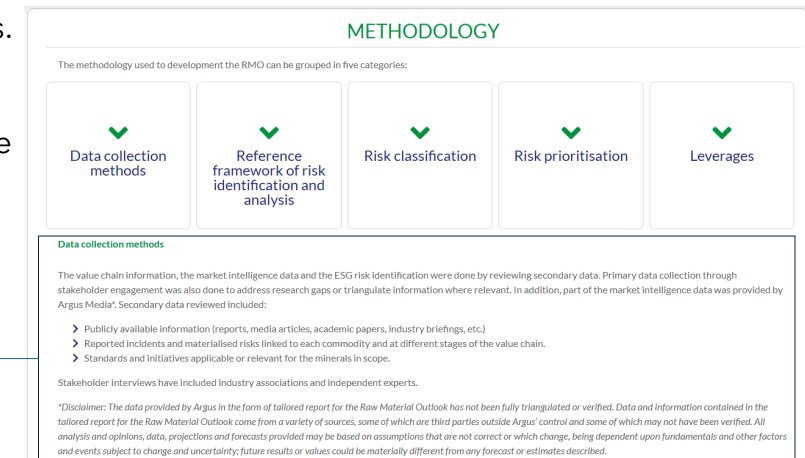
Click on METHODOLOGY to access the methodology used to develop the RMO.



The METHODOLOGY landing page uses interactive plug-ins. Click on your preferences to retrieve the data.

For example, click on DATA COLLECTION METHODS to see information on data collection:

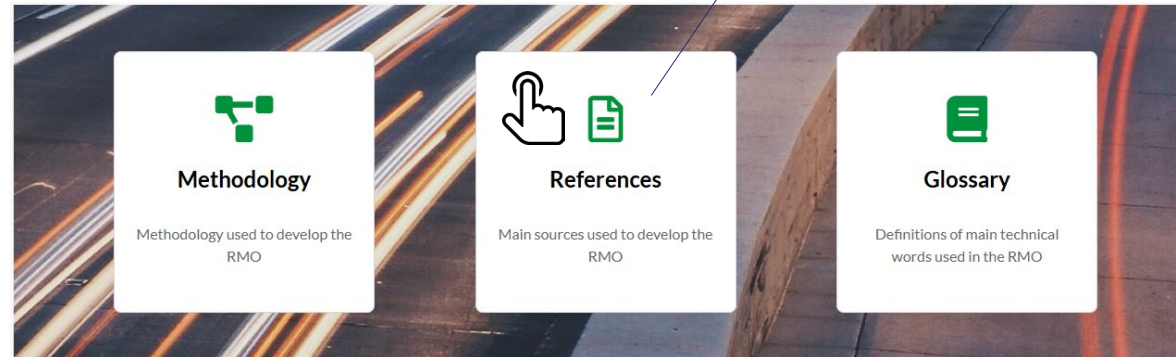
Information on DATA COLLECTION METHODS appears. Scroll down to see other items



c) Methodology, References and Glossary

Example:

Click on REFERENCES to download a document with the sources used to develop the RMO



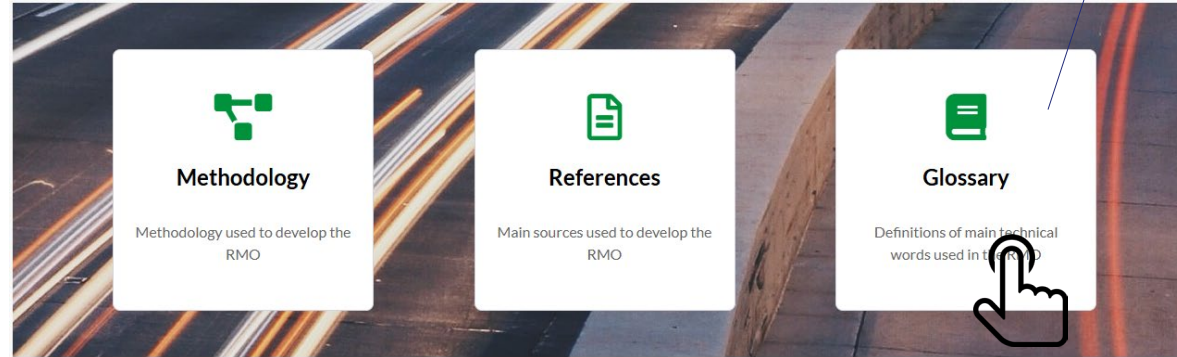
The image shows the cover page of a document titled 'References Raw Materials Outlook Portal'. It features the 'drived sustainability' logo at the top. Below the title, there is a table of contents listing various materials and their corresponding page numbers.

References Raw Materials Outlook Portal	
This document compiles the different sources used to compile information on the materials for the Raw Materials Outlook Portal	
Contents	
Bauxite / Aluminium	2
Chromium	6
Copper	9
Graphite	13
Iron ore / Steel	15
Leather	19
Lithium	23
Magnesium	30
Manganese	33
Nickel	36
Niobium	39
Niobium	44
REE	46
Rhodium	48
Silica	53
Tantalum	56
Tin	58
Zinc	61

c) Methodology, References and Glossary

Example:

Click GLOSSARY to access the definitions of the main technical words



Click on any letter to access definitions beginning with that letter

Scroll down to read all definitions

GLOSSARY

0-9 - A - B - C - D - E - F - G - H - I - J - K - L - M - N - O - P - Q - R - S - T - U - V - W - X - Z

2C	As cobalt is a major by-product from copper production and the two are often mined and traded in the same region by the same companies, the two minerals are often referred to as 2C.
Acid mine drainage	Acid mine drainage (AMD) is the runoff produced when water comes in contact with exposed rocks containing sulphur-bearing minerals that react with water and air to form sulfuric acid and dissolved iron. This acidic run-off dissolves heavy metals including copper, lead, and mercury which pollute ground and surface water. Acid mine drainage is a major cause of polluted water and can have significant impacts for water biodiversity.
Alloy	A metal that is made by mixing two or more metals, or a metal and another substance.
Anode	An Anode is the negative or reducing electrode that releases electrons into an external circuit and oxidizes during and electrochemical reaction. It forms part of the wet battery system used for automatisation batteries used in electric vehicles.
Artisanal and small-scale mining (ASM)	Formal or informal mining operations with predominantly simplified forms of exploration, extraction, processing, and transportation. ASM is normally low capital intensive and uses high labour-intensive technology. "ASM" can include men and women working on an individual basis as well as those working in family groups, in partnership, or as members of cooperatives or other types of legal associations and enterprises involving hundreds or even thousands of miners. For example, it is common for work groups of 4-10 individuals, sometimes in family units, to share tasks at one single point of mineral extraction (e.g., excavating one tunnel). At the organisational level, groups of 30-300 miners are common, extracting jointly one mineral deposit (e.g., working in different tunnels), and sometimes sharing processing facilities.
Asbestos	A soft, greyish-white material that does not burn, used especially in the past in buildings, clothing, etc. as a protection against fire and as a form of insulation (= a way of stopping heat from escaping).
Belt conveyor	A continuous moving strip or surface that is used for transporting objects from one place to another.



3

CHAPTER 3 **How to access** **information**



3

How to access information



On the public portal



- **The public portal is available to all**, including users who don't have an account.
- The public portal is **organised by raw material**.
- To access the information, select your chosen material

Example: manganese

THE RAW MATERIAL OUTLOOK R

RAW MATERIAL OUTLOOK PLATFORM
Empowering the automotive sector for human rights and environmental due diligence and to drive collaborative action

PARTNERS AREA

drive sustainability

> ALUMINIUM	> CHROMIUM	> COPPER	> GRAPHITE	> IRON ORE	> LEATHER
> LITHIUM	> MAGNESIUM	> MANGANESE	> MOLYBDENUM	> NICKEL	> NIOBIUM
> REE	> RHODIUM	> TANTALUM	> TIN	> SILICA	> ZINC



Each raw material includes the following content:

1	Market intelligence	Learn more about each raw materials' relevance for the automotive sector, prices and production data at each stage of the value chain.
2	Value chain and risks	Discover which actual and potential ESG risks are linked to each stage of the raw material value chain
3	Infographic	Download a brief snapshot infographic of the raw material value chain, ESG risks and market intelligence

Example: manganese profile





Retrieve data on the relevance of a raw material to the automotive sector, typical by-products and associated minerals to that raw material, and top producing countries and companies at each stage of the value chain.

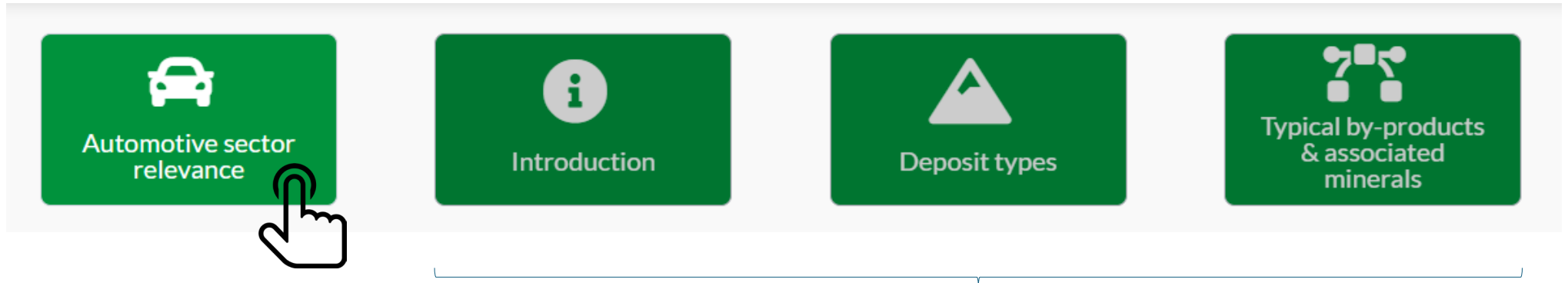
This information is useful to:

- a) Understand the relevance of raw materials** to the automotive sector.
- b) Understand potential supply disruptions** due to geographical distribution or dependency on associated minerals.
- c) Map key actors in the supply chain.**
 - *For instance, if 90% of the processing of a given material comes from a single country or company, it is likely that the country or company is involved in the supply chain of that raw material for a downstream company.*
 - *Tailored investigations can help further understand how a specific downstream company can map its value chain.*



To access market intelligence data, click on the relevant elements and scroll down.

Example: manganese profile



Click on AUTOMOTIVE SECTOR RELEVANCE to access information on the raw material relevance to the sector



Click on the other sections and scroll down to see data

Automotive sector relevance

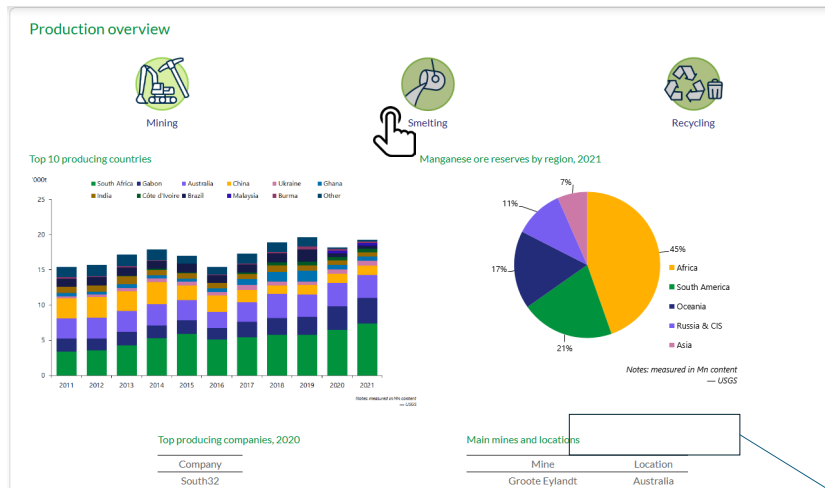
Manganese is an irreplaceable element used in steel production, and the automotive sector accounts for almost a quarter of the end use of steel. The World Steel Association calculated that, on average, a vehicle uses 900 kg of steel. This equates to approximately 4 – 8 kg of manganese contained in the steel present in a typical car.

Although 90% of manganese is used for steel production, manganese finds other uses in electric and hybrid vehicles as an essential element in nickel-metal hydride (NiMH) electric vehicle batteries and lithium-ion (Li-ion) batteries. Manganese also underpins a new battery technology based on lithiated manganese dioxide (LMD), which contains 61% manganese.



- Find the **PRODUCTION OVERVIEW** section under the information on automotive sector relevance, deposit types and by-products.
- Production data at the mining stage appears as default
- Click on other stages to see specific information for those stages.

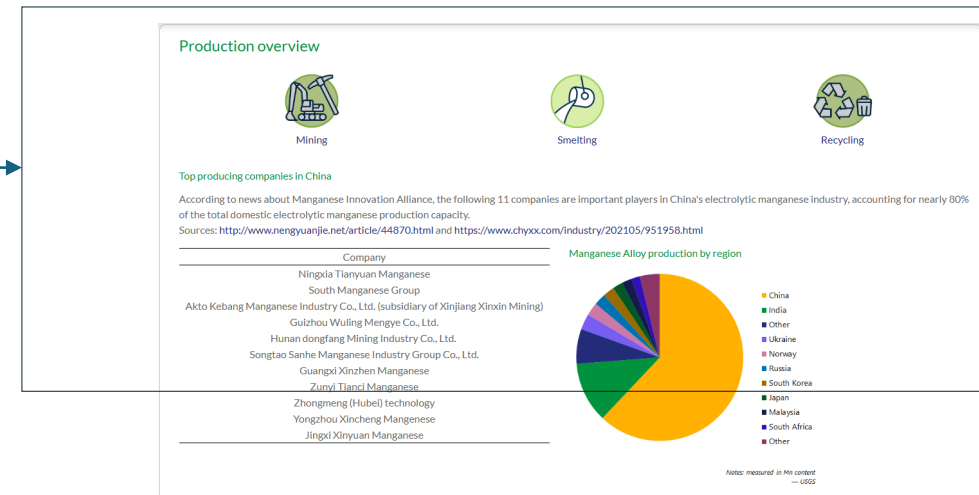
Example: manganese profile



Click on the SMELTING icon

Information on smelting appears

Each graph has the reference below

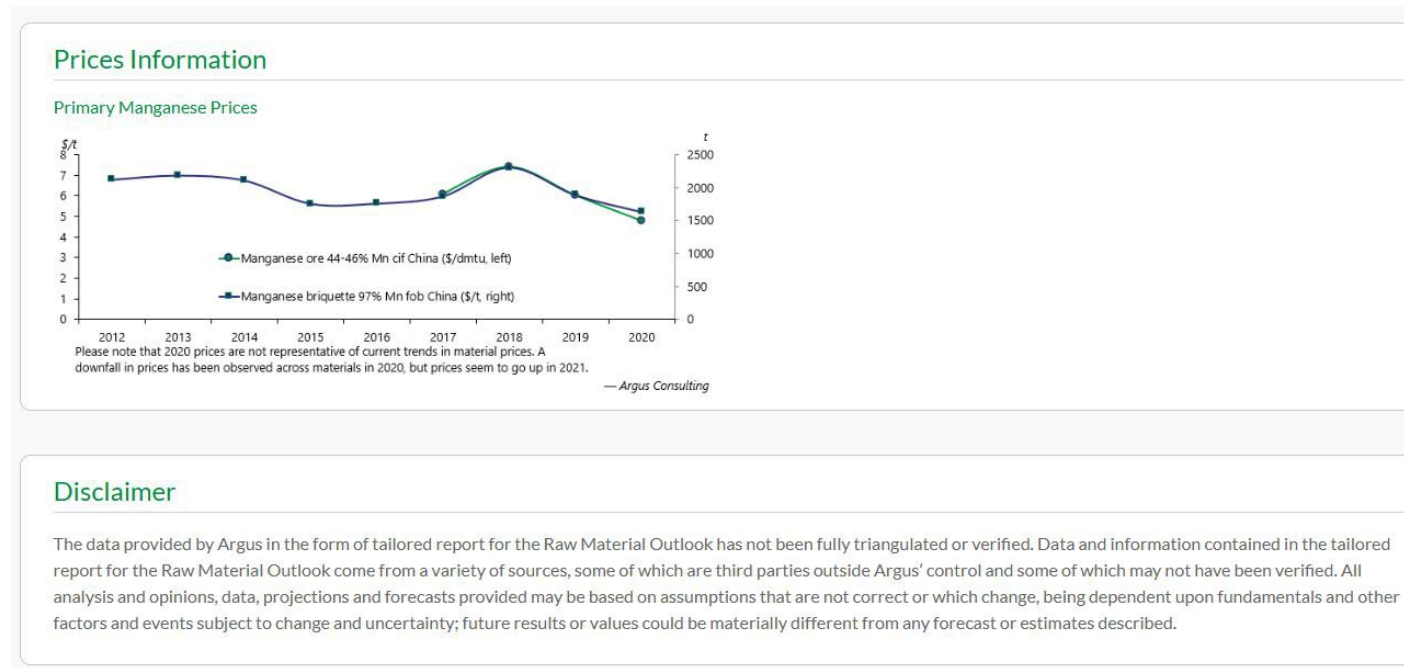


PRICES INFORMATION

Under the production overview section, access information on prices and general disclaimer on market intelligence data collection.

These two sections are static: you do not need to click to retrieve data.

Example: manganese profile





Access information on

- **key production methods and processes used at each stage of the value chain,**
- **ESG risks**
- **impacts at each value chain stage.**

This information is useful to:

- Understand potential risks associated to the raw materials methods, processes, chemicals and other materials** used to process the raw material at each stage of the chain. This is important to understand which might be the most prominent risks that need to be mitigated.
- Understand existing material impacts at each stage of the chain.** This helps understand the most prominent or recurrent risks found at each stage, which can inform tailored due diligence processes on up- and mid-stream suppliers by asking them on specific risk mitigation measures implemented on the risks materialised that appear in the RMO.
- Get insight into potential blind spot risks.** This is very important to understand where there is no concrete publicly available information on an ESG impact materialising, but where we know that there are high chances of the impact materialising. *For instance, cases where there are no recorded cases of labour abuse, but we know that most of processing takes place in a country with poor labour laws and general labour issues in other sectors.*

- **To access value chain and risks data**, click on the relevant elements and scroll down.
- The mining stage is shown as default.
- To retrieve data on the other stages, click on them.

Example: manganese profile



Click on
BENEFICIATION to
get information on
that stage

Click on the other sections and scroll down to see data

BENEFICIATION

[Download infographic](#)

Most manganese (in the form of manganese ore and manganese alloys) is used in metallurgical processes. Manganese ore is the primary source of manganese used in the manufacture of manganese ferroalloys. To be used in this way, as-mined manganese ores normally undergo beneficiation to increase the manganese content and remove impurities (collectively known as gangue, which in this case are the minerals present in the ore that do not contain manganese). The target manganese content for the concentrate produced by beneficiation is normally in the range of approximately 38-55%, if destined for use in metallurgical processes.

During beneficiation, the mined ore is crushed and milled (to physically liberate valuable and gangue minerals), gravity methods (to recover denser manganese-bearing minerals from less dense gangue minerals) and flotation (using chemicals to selectively float and recover the valuable manganese minerals). The sequence, combination and operating parameters of the beneficiation methods depends on the physical, chemical and mineralogical characteristics of the mined ore. Following crushing, milling and subsequent beneficiation processes, the manganese concentrate is in a fine powder form. This cannot be used directly in subsequent metallurgical processes and is sintered to produce pellets.



Below the information on the value chain stage methods and processes used, there is information on ESG risks and blindspots.

Example of the manganese profile. Content:

RISKS

1 **Workers' & Human Rights**

Issue Serious Human Rights Abuses — 2

3 **Sub-Issues** Women's rights Forced labour

Risk overview and analysis + 4

Issue Occupational Health & Safety

Sub-Issues Hazardous substances OHS management Workplace hazards & machinery Personal Protective equipment

Risk overview and analysis +

Issue Terms of Employment

Sub-Issues Work contract and rights

Risk overview and analysis +

Societal Welfare

Scroll down to see all risks identified

1	Risk category	Explore a risk category. There are five risk categories: worker's and human rights, societal welfare, use of natural resources, emissions and land reclamation, and company governance.
2	Risk issue	Explore the risk issue. Each risk category has between 2 to 4 different issues. In total there are 14 risk issues. <i>For example, the risk category of workers and human rights has 3 issues: serious human rights abuses, terms of employment and occupational health and safety.</i>
3	Risk sub-issue	Explore the risk sub-issue. Each risk issue is further divided into risk sub-issues. There are multiple risk sub-issues for each risk issue.
4	Risk overview & analysis	Access a summary and analysis of the risk at hand.



Example: manganese profile - how to access the risk overview and analysis.

Scroll down to see all ESG risks identified

Click on RISK OVERVIEW AND ANALYSIS to get a summary of the risk

RISKS

Workers' & Human Rights

Issue Serious Human Rights Abuses

Sub-Issues Women's rights Forced labour

Risk overview and analysis +

Issue Occupational Health & Safety

Sub-Issues Hazardous substances OHS management Workplace hazards & machinery Personal Protective equipment

Risk overview and analysis +

Issue Terms of Employment

Sub-Issues Work contract and rights

Risk overview and analysis +

Societal Welfare

Workers' & Human Rights

Issue Serious Human Rights Abuses

Sub-Issues Women's rights Forced labour

Risk overview and analysis -

Since manganese mining and beneficiation mostly happens at the same mine site, it can be assumed that issues around human rights abuses in manganese mining also apply to beneficiation. Refer to manganese mining to see major issues around human rights abuses.

You can click again on RISK OVERVIEW AND ANALYSIS to hide the summary

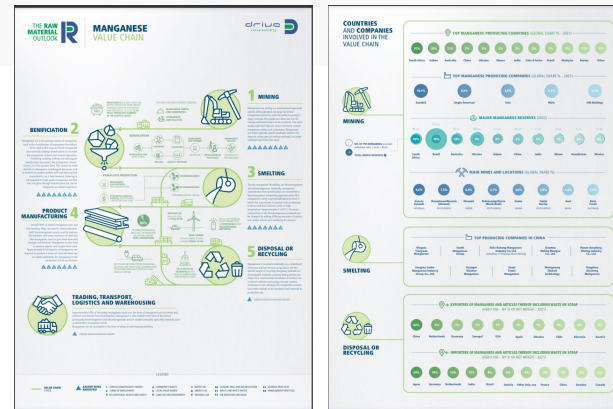


Download a snapshot infographic of the raw material value chain, ESG risks and market intelligence.

MANGANESE

MARKET INTELLIGENCE

VALUE CHAIN & RISKS



Infographic

Click on INFOGRAPHIC to download it



3

How to access information



In the Partners Area



RAW MATERIAL OUTLOOK PLATFORM

Empowering the automotive sector for human rights and environmental due diligence and to drive collaborative action



> ALUMINIUM	> CHROMIUM	> COPPER	> GRAPHITE	> IRON ORE	> LEATHER
> LITHIUM	> MAGNESIUM	> MANGANESE	> MOLYBDENUM	> NICKEL	> NIOBIUM
> REE	> RHODIUM	> TANTALUM	> TIN	> SILICA	> ZINC

Content in the Partners Area includes

- additional tools for ESG risk analysis,
- raw data on risk evidences,
- relevant stakeholders and initiatives, and
- recommended collective actions to exert leverage.

To access the information, click on the green Partners Area button.

Data in the Partners Area is **only available for Drive Sustainability members** who have a log in.

A screenshot of a login form. At the top, the text "LOG IN" is displayed in blue. Below it is a horizontal line. There are two input fields: the first is a light gray box with the placeholder text "Enter Username"; the second is a light blue box containing a series of dots, representing a password field. At the bottom center of the form is a green button with the text "Log in" in white.

Use your email and password to log in.

If you don't have log in information, contact Drive Sustainability.



The Partners Area includes:

1	Materials: Market intelligence Analytics – by raw material	Analyse production data of each raw material in detail, including raw production data and values
2	Analytics: Risks – Cross cutting	Analyse the saliency of risks in a cross-cutting manner, by selecting several materials and specific countries
3	Stakeholders, leverages and initiatives – Cross cutting	See relevant stakeholders and initiatives identified and recommended collective actions to exert leverage

THE RAW MATERIAL OUTLOOK R

RAW MATERIAL OUTLOOK PLATFORM
Empowering the automotive sector for human rights and environmental due diligence and to drive collaborative action

LOG OUT

drive sustainability

> MATERIALS (1) > ANALYTICS: RISKS (2) > STAKEHOLDERS, LEVERAGES AND INITIATIVES (3)



Click on a raw material to retrieve analytical market intelligence

Example: aluminium.

> MATERIALS > ANALYTICS: RISKS > STAKEHOLDERS, LEVERAGES AND INITIATIVES

> ALUMINIUM
 > CHROMIUM
 > COPPER
 > GRAPHITE
 > IRON ORE
 > LEATHER
 > LITHIUM
 > MAGNESIUM
 > MANGANESE
 > MOLYBDENUM

After clicking, a similar landing page to the public market intelligence section of the public area appears, with a new section

ALUMINIUM

MARKET INTELLIGENCE

VALUE CHAIN & RISKS

ANALYTICS: MARKET INTELLIGENCE

[Infographic](#)

NEW addition - Market intelligence analytical tool

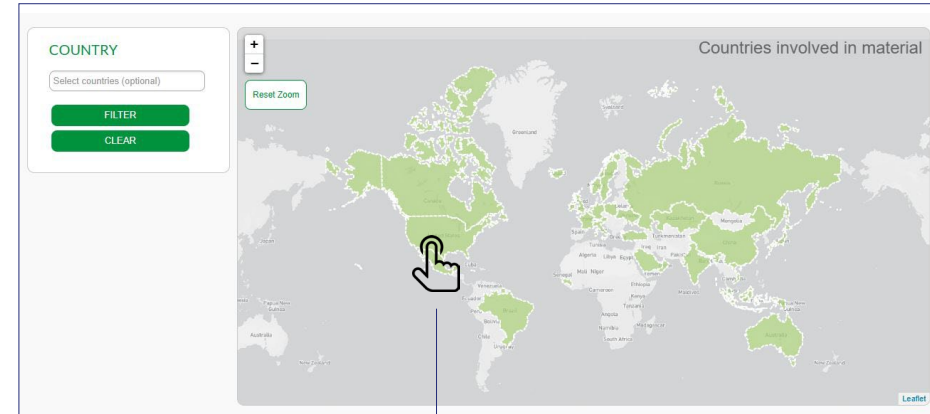


Click on the relevant elements and scroll down.



Same as in the public portal

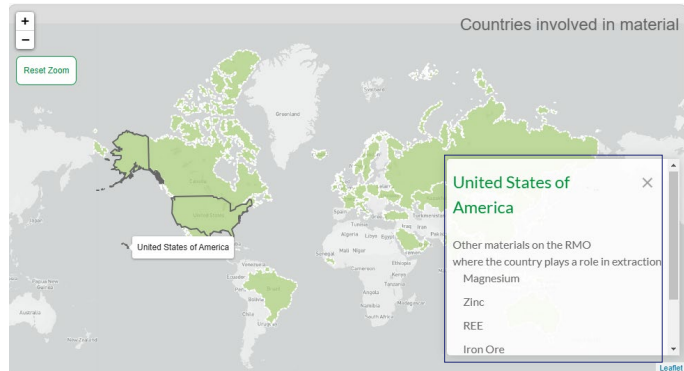
Click on Analytics:
Market
intelligence



A map with all the countries
involved in the extraction of that
material appear

A pop-up box shows the list of
raw materials extracted in the
United States. Scroll down to see
the full list.

Click on a country to
see the other raw
materials of the RMO
that the country also
extracts.
*For example, the
United States*

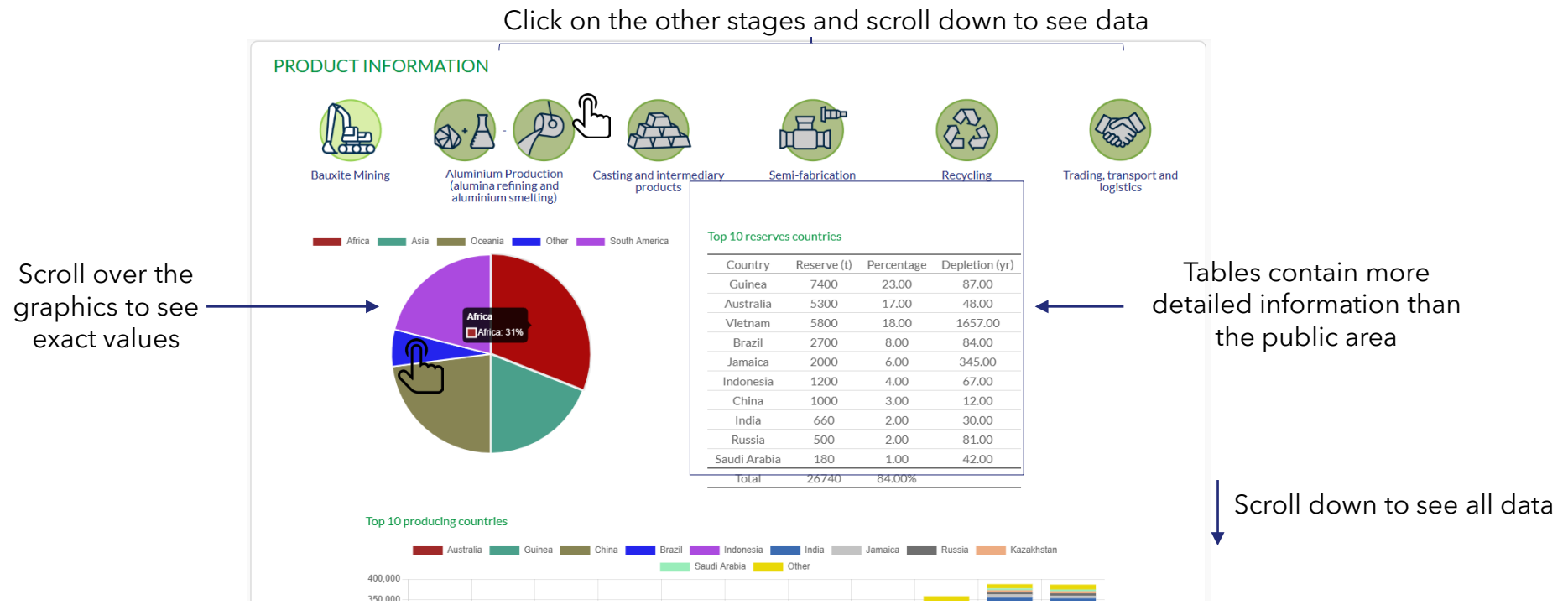




Below the map, find detailed production information at each stage of the value chain.

- Data at the mining stage appears as default
- Click on other stages to see information for those stages.
- Compared with the public area, you can access data on the availability of raw production and values to support a more detailed analysis.

Example of the aluminium profile





Analyse the saliency of risks and impacts in a cross-cutting manner, by selecting several materials and specific countries at the same time, and retrieving raw data on risk evidence.

This information is useful to:

- a) **Understand the saliency (= severity + likelihood) of existing risks, impacts and blindspots at all stages of the value chain.**
 - a) This is important to establish priorities.
 - b) More risk issues on the heat map does not necessarily mean more risks at a given value chain stage or material. It can be because more public reporting on impacts was available. Therefore, less risk issues found might mean that further research is needed in specific areas.
- b) **Understand existing material impacts for specific countries and materials where you have known suppliers.** This can support due diligence efforts on up- and mid-stream suppliers.



Content overview

> MATERIALS

> ANALYTICS: RISKS

> STAKEHOLDERS, LEVERAGES AND INITIATIVES

ANALYTICS: RISKS

The screenshot shows the 'ANALYTICS: RISKS' interface. At the top, there are three navigation links: '> MATERIALS', '> ANALYTICS: RISKS' (highlighted with a hand cursor), and '> STAKEHOLDERS, LEVERAGES AND INITIATIVES'. Below these is a large white box containing the search form. The form has two input fields: 'MATERIAL' (labeled 1) and 'COUNTRY' (labeled 2). Below the 'MATERIAL' field is a 'Search' button and a 'Clear' button. Below the 'COUNTRY' field is a 'Scoring methodology' button (labeled 3) and a 'Raw Data' button (labeled 4). The 'Scoring methodology' and 'Raw Data' buttons have download icons.

1	Select materials	Select materials to analyse risks
2	Select countries	Select countries to analyse risks
3	Scoring methodology	Download the methodology for risks assessment
4	Raw data	Download raw data on the risk analysis



To analyse risks across raw materials and countries.

1. Select the materials by selecting from the dropdown list that appears when you right click on the material box, you can type the material to quick search the name in the list.
2. Once raw materials have been selected, you have two options:

OPTION 1

ANALYTICS: RISKS

MATERIAL

Aluminium × Graphite × Lithium ×

COUNTRY

Select countries (optional)

Search

Clear



Click on the search button without selecting any country.
The risk analysis will be done for all countries automatically.



OPTION 2

ANALYTICS: RISKS

MATERIAL

Aluminium x Graphite x Lithium x

COUNTRY

Bolivia x Chile x China x

Search

Clear

**Tailor the research by only looking at risks in specific countries.**

Select countries of interest from the dropdown list. You can quick search countries by typing.

- If you type a country that does not appear in the list, it means that there are no risks for the materials selected in that given country.
- If you select a country and a material that you selected disappears from the box, it means that there are no risks for that material in the country selected. If you then select another country where risks exist for that material, the material will automatically show again.



- After selecting either just the raw materials (option 1), or
 - The raw material alongside countries (option 2),
- scroll down to access an interactive risk matrix heat map. All risks identified for selected materials and countries are plotted based on severity and likelihood to easily visualise low, medium and high risks.

Interact with the risk matrix to extract data.

Example for the selection of Al, C and Li, in Bolivia, Chile and China:

You can scroll over the question mark (?) to get in situ guidance on how to use the risk matrix

RISK MATRIX HEAT MAP ? **RISK ISSUES** ?

SEVERITY	5	1	1	2	2	
4			8	4	2	
3				3	3	
2				1	3	
1						
0	1	2	3	4	5	

LIKELIHOOD

GROUP SELECTION

LOW MEDIUM HIGH

Option 1

Click on individual red dots of the risk matrix to retrieve the list of risks in that cell

Option 2

Click on Low or Medium to retrieve low and medium scored risks

The list of risk issues appear

Click on HIGH to retrieve all the risks scored as high in the risk matrix

THIS OPTION IS RECOMMENDED

RISK ISSUES

- Air Emissions & Noise
- Community Rights
- Land Use & Biodiversity
- Local Value Added
- Management Practices
- Occupational Health & Safety
- Serious Human Rights Abuses
- Waste & Waste Water
- Water Use



Once you have selected the risks from the matrix heat map, select the risk issue.

Example for the selection of Al, C and Li, in Bolivia, Chile and China, for all risks scored as High in the risk matrix:

3.2.2.2 ANALYTICS: RISKS SECTION

RISK MATRIX HEAT MAP

5	1	1	2	2	
4		8	4	2	
3			3	3	
2			1	3	
1					
0	1	2	3	4	5

LIKELIHOOD

GROUP SELECTION

LOW MEDIUM HIGH

RISK ISSUES

- Air Emissions & Noise Al C
- Community Rights** Li ☞
- Land Use & Biodiversity Li
- Local Value Added Li
- Management Practices Li
- Occupational Health & Safety Li
- Serious Human Rights Abuses Li
- Waste & Waste Water C
- Water Use Li

Equally, you can click on the other risks to get data on those

Click on one risk issue and scroll down to see the results

Showing results for issue "Community Rights" Results found: 33
Displaying page 1 of 4

Societal Welfare

Issue: Community Rights Li Al C

Sub-Issues: Residential & indigenous rights | Community & SH engagement | Security forces | Conflict with communities | Community health and safety

Sub-Issues: Livelihoods | Resettlement & Displacement | Access to water

Risk overview and analysis +

Evidences +

Issue: Community Rights Li C

Sub-Issues: Community health and safety | Community & SH engagement | Livelihoods | Residential & indigenous rights | Resettlement & Displacement

Sub-Issues: Access to water

Risk overview and analysis +

Evidences +

Issue: Community Rights Li Al C

Sub-Issues: Community health and safety | Residential & indigenous rights | FPIC | Cultural Heritage | Community & SH engagement

Sub-Issues: Conflict with communities | Livelihoods | Access to water | Security forces

Risk overview and analysis +

Evidences +

The icon indicates the raw material(s) where risks issues were found.

Detailed information on each risk issue for the selected materials and countries is shown for all value chain stages, you will need to further interact with the platform to get more detailed information

3



Once you have selected the risk issue.



Example for the selection of AI, C and Li, in Bolivia, Chile and China, for all risks scored as High in the risk matrix, and for Community rights issues:

3.2.2.2 ANALYTICS: RISKS SECTION

Showing results for issue "Community Rights" Results found: 33
Displaying page 1 of 4

Reminds the user of the risk issue selected



Societal Welfare

Issue Community Rights  

Sub-Issues Residential & indigenous rights Community & SH engagement Security forces Conflict with communities Community health and safety
Livelihoods Resettlement & Displacement Access to water

Risk overview and analysis +



Evidences +

Issue Community Rights  

Sub-Issues Community health and safety Community & SH engagement Livelihoods Residential & indigenous rights Resettlement & Displacement
Access to water

Risk overview and analysis +

Evidences +

Issue Community Rights  

Number of entries for this risk issue

The first icon indicates the raw material where risk evidences were found.
The second icon indicates the value chain stage of that raw material where risk evidences were found.

Click on the + icons to see the risk overview and analysis summary and the evidences respectively

Click on each Reference to get directed to the reference link

Risk overview and analysis -

Alumina refining activities can lead to resistance from communities, based on actual or perceived environmental impacts (arising from knowledge of impacts elsewhere related to alumina refining or concerns arising from an existing or planned refinery in the vicinity of the communities).

Part of Identifying, assessing and managing social and environmental impacts at the refinery level includes timely and effective engagement with potentially affected communities, indigenous peoples and vulnerable groups. Poor engagement practices or ineffective management of social and environmental impacts can lead to community dissatisfaction and trigger protests and direct actions against the operation.

Community dissatisfaction and protests are most likely to relate to bauxite residue storage when these impacts (or is perceived to impact) human health, land use and capability; access to natural resources and livelihoods, particularly if these impacts are considered to be avoidable outcomes that have resulted from poor management practices

Growing demand for aluminum will inevitably result in greater volumes of bauxite residue being produced and requiring storage, leading to a rising risk of confrontations with communities in areas where alumina refining takes place. There is no indication that bauxite can be replaced as the principal ore of aluminum, and therefore bauxite residue will remain an issue going forward. Finding positive uses for bauxite residue (transforming it from a waste to a by-product) has been heavily researched for several decades, but there is no guarantee that large-scale uses that are technically, economically and environmentally viable will be developed in the future given the lack of progress to date.

Evidences -

Evidence and materialised risk

In 2020 a report indicated that Chinalco's has long standing dust pollution problems. Inspected villages showed presence of alumina dust in houses' courtyards, which is affecting the health of residents. Chinalco admitted to wrongdoing. Chinalco fixed the problem through good maintenance of the plants' ventilators. [A] The dust can cause scarring of the lungs, cough and shortness of breaths, and lead to risk of developing cardiovascular disease and dementia of the Alzheimer's type. [B] In times of Covid, such damages could potentially increase the risks of severe Covid-19. [C]

References [A] Reference
[B] Reference
[B] Reference
[C] Reference



Alternative option to analyse the data on materialised risks:

- Click on the Raw Data button to download it.
- Click on “Scoring methodology” to download it.
- These two buttons are always present in the Analytics: Risks tab, before and after material and country selections.


Example:


The screenshot shows the 'ANALYTICS: RISKS' section of a web application. At the top, there are navigation tabs: 'MATERIALS', 'ANALYTICS: RISKS' (active), and 'STAKEHOLDERS, LEVERAGES AND INITIATIVES'. Below this, there are two filter boxes: 'MATERIAL' with a dropdown menu 'Select materials' and 'COUNTRY' with a dropdown menu 'Select countries (optional)'. Below the filters are 'Search' and 'Clear' buttons. At the bottom of the interface, there are two buttons: 'Scoring methodology' and 'Raw Data'. A hand icon is shown clicking the 'Scoring methodology' button, with an arrow pointing to a document titled 'Risk assessment: Scoring Methodology'. Another hand icon is shown clicking the 'Raw Data' button, with an arrow pointing to an Excel spreadsheet titled 'Master Excel RAW Materials Risks'. A text box above the Excel spreadsheet says 'Click "Raw Data" to download the raw data of all materials and countries in a single Excel document'.

Content overview

1	Stakeholders	Download the list of stakeholders identified during the analysis
2	Leverages	Download recommended collective actions to exert leverage over the analysed raw material value chains
3	Industry Initiatives	See industry initiatives identified during the analysis

STAKEHOLDERS, LEVERAGES AND INITIATIVES

1 
Stakeholders
See here the relevant stakeholders identified during the analysis of the raw materials

2 
Leverages
See here recommended collective actions to exert leverage over the analysed raw materials

3 **INDUSTRY INITIATIVES**

MATERIAL **TYPE** **CONTAINS ?**

STAKEHOLDERS, LEVERAGES AND INITIATIVES



Stakeholders

See here the relevant stakeholders identified during the analysis of the raw materials



Leverages

See here recommended collective actions to exert leverage over the analysed raw materials



Click on Stakeholders to download file with identified stakeholders

Name	Stakeholder group	Material	Location focus
African Minerals	CSO	Manganese	
Action Mines Guinea	CSO	Bauxite / Aluminium	Guinea
Action Mines Guinea	CSO	Aluminium / Bauxite	Guinea
Agartha Reform Corporation (ARC)	CSO	Nickel	Indonesia
Aliansi Masyarakat Adat Nusantara (AMAN)	CSO	Nickel	Indonesia
Alliance for Responsible Mining (ARM)	CSO	Multiple	Africa, South America
Alliance of Indigenous Peoples of the Archipelago (AMAN)	CSO	Nickel	Indonesia
Aluminium Association of Canada	Industry associations	Aluminium / Bauxite	Canada
Aluminium Federation (AFCO)	Industry associations	Aluminium / Bauxite	United Kingdom
Aluminium Federation of South Africa (AFSA)	Industry associations	Aluminium / Bauxite	South Africa
Aluminium Sustainability Initiative	Sustainability and supply chain initiatives	Aluminium / Bauxite	
ALUS Canada	Sustainability and supply chain initiatives	Leather	Canada
Ayuda Laban sa Mina	CSO	Nickel	Philippines
Ayuda Tugil Mina	CSO	Nickel	Philippines
Ayuda Tugil Mina	CSO	Nickel	Philippines
Ayuda Watch	CSO	Multiple	
American Iron and Steel Institute	Sustainability and supply chain initiatives	Iron Ore (Steel)	The United States of America
Amnesty International	CSO	Multiple	Global
AMS - Aluminiumindustriens Miljøsekretariat	Industry associations	Aluminium / Bauxite	Norway, Sweden
Anti-Slavery International	CSO	Multiple	Global
Associação dos Povos Indígenas do Brasil	CSO	Tantalum	Brazil
Asosiasi Sa Mandazaw na Parangakaisa nan mga Tribong Mananawa sa	CSO	Nickel	Philippines
Tanggapang Lalawigan (Anawitimus)	CSO	Nickel	Philippines
Associação Brasileira do Alumínio (ABAL)	Industry associations	Aluminium / Bauxite	Brazil
Associação de Lavadores Rurais da Colônia Santa Rita	CSO	Nickel	Brazil
	CSO	Nickel	Brazil



Click on Leverages to download file with recommended actions



To navigate the industry initiatives, either:

- Scroll down to see the full list, or
- Use the search tool to select the materials you are interested in from the dropdown list of the first box, or the type of initiatives from the dropdown list of the second box. You can also type key words in the third box to tailor the search further.

Example with "aluminium" as material and "industry initiative" as type:

Click on filter and scroll down to see the results

Click on the + icons to see an initiative summary

About the stakeholders -

The Aluminium Stewardship Initiative (ASI) is a global non-profit standard setting and certification organisation which brings together producers, users and stakeholders in the aluminium value chain. The goal is to work collaboratively to foster responsible production, sourcing and stewardship of aluminium. To date, ASI has 160 members.

According to the Theory of Change, ASI wants in the long term to realise a society that makes effective use of aluminium where stakeholders embed sustainability and human rights principles in their production and recycling of aluminium. To achieve this goal, ASI is working towards increasing the uptake of certification by diverse businesses. The assurance mechanism aims at promoting measurable and continual improvements in environmental, social and governance impacts of aluminium



4

CHAPTER 4

Practical Examples

This section provides a series of questions that you may come across when conducting due diligence on your value chain.

It explains how the RMO data and analytical tool can help you answer these questions.

- 1 How can the RMO help map my value chain related to raw materials? [See explanation](#)
- 2 How can I identify environmental, social and governance (ESG) risks and impacts along raw materials value chains by using the RMO? [See explanation](#)
- 3 How should I prioritise action on risks? [See explanation](#)
- 4 How can I exert individual or collective leverage to address risks in the value chain of a given raw material? [See explanation](#)
- 5 Which stakeholders and organisations should I engage with to conduct further due diligence on a particular risk issue or exert leverage with or upon? [See explanation](#)

4

1. How can the RMO help map my value chain related to raw materials?

The market intelligence tool can **help you understand how the raw material supply chain works** (geographies and risks). Each company would need to match the data with information on their own value chain.

To identify your suppliers, first focus on your riskiest suppliers and the critical ones.

- **Risky suppliers:** you know they are (or are likely) sourcing from areas with conflict affected and high-risk areas or areas with high ESG risks.
- **Critical suppliers:** they have more interconnections with other suppliers of yours.

Find more information on how to identify your suppliers on the Due Diligence Ready portal from the European Commission here:

https://single-market-economy.ec.europa.eu/sectors/raw-materials/due-diligence-ready/due-diligence-explained_en

4

1. How can the RMO help map my value chain related to raw materials?

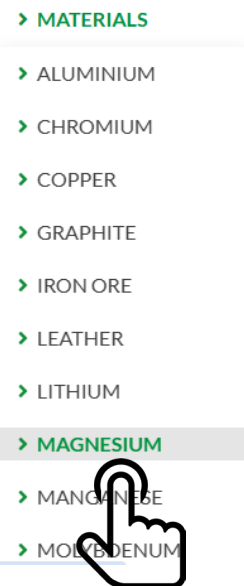


I want to map and trace my magnesium value chain. Where do I start?

- Go to the Partners area, select magnesium, select the value chain tier, and scroll down to see the results.
- You can visit the market intelligence analytics tab to see the exact production values and producing companies' data.
- If you do not want to see the specifics, you can extract the data from the Public portal.

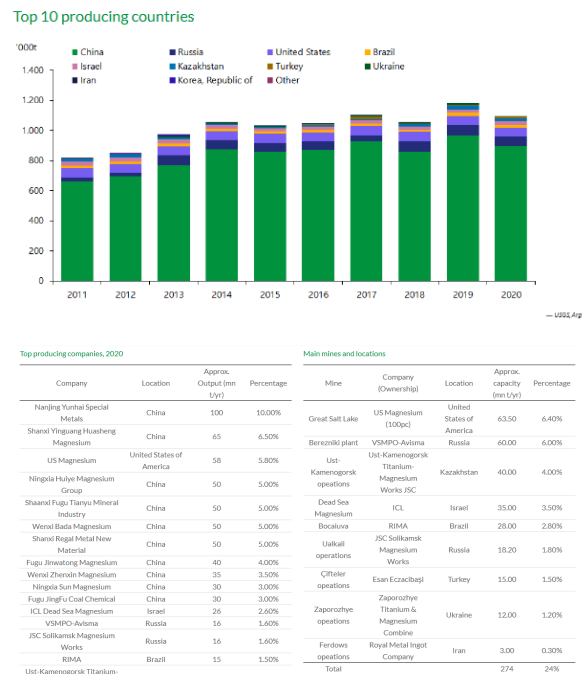
1

Click on "magnesium"



2

Scroll down to see the results



3

Analyse results

Results show that the majority of manganese extraction takes place in China. Therefore, it is highly likely that your upstream suppliers operate in China. This means that you should engage with Chinese stakeholders to better understand your value chain, specific risks and how to exert leverage.

The results also show top companies and mine locations, again, it is likely for one of these to be part of your value chain.

The RMO helps conduct the first layer of due diligence:

- **It helps identify ESG risks and impacts, intrinsic impacts of production methods and areas where detailing potential risks is more difficult** (blindspots). Understanding this helps tailor questions to your suppliers, understand in more detail how they are mitigating intrinsic risks and risks that often materialise in impacts.
- **It helps identify areas where further research is needed** since there isn't enough readily available information, either because of limited access or existing analysis.
- **Check if any of the compiled evidence cases of material impacts has been recorded against one of your suppliers** in the risk analytics tab of the Partners' area and in the raw data excel.



4

2. How can I identify environmental, social and governance (ESG) risks and impacts along raw materials value chains by using the RMO?



How do I identify the risks linked to my nickel smelting and refining suppliers?

- Enter the partners area, select magnesium, select the value chain and risks tab, select the value chain tier, and scroll down to see the results.
- You can also extract this information in the Public portal.

1

Click on "nickel"

- > MATERIALS
- > ALUMINIUM
- > CHROMIUM
- > COPPER
- > GRAPHITE
- > IRON ORE
- > LEATHER
- > LITHIUM
- > MAGNESIUM
- > MANGANESE
- > MOLYBDENUM
- > **NICKEL**

2

Click on "smelting and refining"

3

Intrinsic risks of nickel smelting and refining show at the top, followed by the list of ESG impacts materialised and blindspots. Click on the + icon to get a description of the risk.

To check if any of your known suppliers has been recorded against the evidence cases compiled by the RMO, go to the Analytics risks tab of the Partners area, and download the Raw data file. In the Excel Raw data file click on the "Evidences Ni" tab and check column J "company(ies) involved". Note that there are gaps in the attribution of harm, and therefore the list of companies contributing to a harm is not complete and further research is done.

Scroll down to see the results



3. How should I prioritise action on risks?

Prioritise actions based on the risk saliency (= the severity and likelihood of each risk).

- The ANALYTICS RISK tab of the Partners area of the RMO Platform offers a first insight into risk saliency.
- Although we recommend you develop your own risk matrix with tailored information on your value chain, the RMO Platform should help identify key areas where action is needed to increase the sustainability of value chains.
- **All “high” and “highest” scores should be a priority.** When using the risk matrix heat map, we recommended you check all risks that score “high” instead of only looking at the highest ones.
- The RMO risk matrix offers a preliminary risk analysis based on high-level global research. More research and investigation might be needed, particularly in relation to risks and impacts for the raw material profiles where there is limited available information publicly.
- A tailored risk analysis on specific companies’ value chains is required to complement the outcomes of the RMO saliency risk heat matrix.

Example:

How do I prioritise action on copper and lithium?

Click on Analytics: risks tab in the Partners area

> ANALYTICS: RISKS

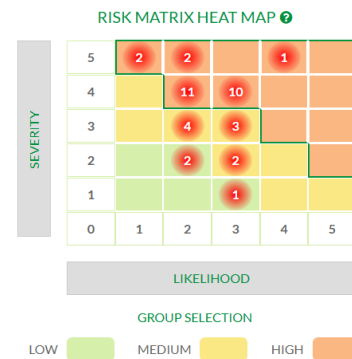
2 Select the relevant materials. You can also select a specific country.

MATERIAL COUNTRY

Copper x Lithium x Select countries (optional)

Clear

3 Scroll down to see the results and click on "high" risks



4 Look at the right to see the results

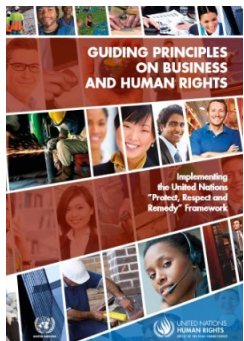
RISK ISSUES

- Air Emissions & Noise
- Business Practices
- Closure & Land Rehabilitation
- Community Rights
- Energy Use
- Land Use & Biodiversity
- Local Value Added
- Management Practices
- Occupational Health & Safety
- Serious Human Rights Abuses
- Terms of Employment
- Waste & Waste Water
- Water Use

From the list of risks rated high, check those crosscutting for copper and lithium. Click on each listed risk to find more information that might help you better understand it.

4

4. How can I exert individual or collective leverage to address risks in the value chain of a given raw material?



The UN Guiding Principles on Business and Human Rights recognise that where *"a business enterprise contributes or may contribute to an adverse human right impact, it should take the necessary steps to cease or prevent its contribution and use its leverage to mitigate any remaining impact to its greatest extent possible."*

"Leverage is considered to exist where the enterprise has the ability to effect change in the wrongful practices of an entity that causes a harm". (Commentary to UNGP 19)

The data in the RMO highlights the responsibility of the automotive industry to collectively or individually exercise leverage.

Working with value chain partners and other stakeholders to reduce harms, irrespective of how far down the value chain they are, is crucial.

The STAKEHOLDERS, LEVERAGES AND INITIATIVES tab of the Partners area lets you download a document with specific avenues and leverages types.

- Suggested avenues and leverages are provided both to tackle harms collectively and individually.
- However, the value chain analysis was completed at a high level looking into the entire automotive industry. It is not specific to individual automotive companies.
- As a result, the recommended leverages for individual companies offer a good starting point to further refine leverage based on their specific value chain.

4



4. How can I exert individual or collective leverage to address risks in the value chain of a given raw material?

Example:

1. Log in the Partners area
2. Click on the STAKEHOLDERS, LEVERAGES AND INITIATIVES tab
3. Click on LEVERAGES to download the leverages document.

1

Click on the stakeholders, leverages and initiatives tab and scroll down to see the results



STAKEHOLDERS, LEVERAGES AND INITIATIVES



2

Click on Leverages to download file with recommended actions



Stakeholders

See here the relevant stakeholders identified during the analysis of the raw materials



Leverages

See here recommended collective actions to exert leverage over the analysed raw materials

3

Read the document that gets downloaded, it contains suggested avenues for individual or collective leverage for each raw material



5. Which stakeholders and organisations should I engage with to conduct further due diligence on a particular risk issue or exert leverage with or upon?

Stakeholders' engagement is crucial to identify risks where public reporting is limited, advocate for social and environmental risk management and identify collaborative actions.

The RMO identifies key stakeholders rather than providing a comprehensive list of all relevant stakeholders. This preliminary list can help you identify relevant stakeholders for each raw material, more tailored research might be needed to identify the other relevant stakeholders, especially based on specific risks and locations of each of your suppliers.

The preliminary list is available in the Partners area **STAKEHOLDERS, LEVERAGES AND INITIATIVES tab.**

There you can:

- a) Download a list of stakeholders** ranging from CSOs, to relevant value chain actors, to regulators, associations or initiatives.
- b) Extract further information from the industry initiatives:** type of initiative, material covering, summary of key activities and Drive Sustainability members connected to it.
- c) Download a leverages document with tailored suggestions on potential avenues and leverages** cross-cutting and by raw material, including suggestions on key stakeholders to engage with.

5. Which stakeholders and organisations should I engage with to conduct further due diligence on a particular risk issue or exert leverage with or upon?

STAKEHOLDERS, LEVERAGES AND INITIATIVES



Stakeholders

See here the relevant stakeholders identified during the analysis of the raw materials

a



Leverages

See here recommended collective actions to exert leverage over the analysed raw materials

b



Click on Leverages to download file with recommended actions

Click on Stakeholders to download file with stakeholders identified



Name	Stakeholder group	Material	Location focus
A Rocha Africa	CSO	Multiple	Global
Acton Mines Guinea	CSO	Bauxite / Aluminium	Guinea
Acton Mines Guinea	CSO	Aluminium / Bauxite	Guinea
Agriplus Reform Consortium (IRA)	CSO	Nickel	Indonesia
Aikani Masyarakat Adat Sumatera (AMAS)	CSO	Nickel	Indonesia
Alliance for Responsible Mining (ARM)	CSO	Multiple	Africa, South America
Alliance of Indigenous Peoples of the Archipelago (AMAN)	CSO	Nickel	Indonesia
Aluminium Association of Canada	Industry associations	Aluminium / Bauxite	Canada
Aluminium Federation (AFED)	Industry associations	Aluminium / Bauxite	United Kingdom
Aluminium Federation of South Africa (AFSA)	Industry associations	Aluminium / Bauxite	South Africa
Aluminium Stewardship Initiative	Sustainability and supply chain initiatives	Aluminium / Bauxite	Global
ALUS Canada	Sustainability and supply chain initiatives	Leather	Canada
Alyssa Lapin sa Mina	CSO	Nickel	Philippines
Alyssa Tagi Mina	CSO	Nickel	Philippines
Alyssa Tagi Mina	CSO	Nickel	Philippines
Amazon Watch	CSO	Multiple	Philippines
American Iron and Steel Institute	Sustainability and supply chain initiatives	Iron Ore (Steel)	The United States of America
Amnesty International	CSO	Multiple	Global
AMS - Aluminiumindustriens Miljøsekretariat	Industry associations	Aluminium / Bauxite	Iceland, Norway, Sweden
Anti-Slavery International	CSO	Multiple	Global
Associação dos Povos Indígenas do Brasil	CSO	Tantalum	Brazil
Asosaporn sa Madzaw na Pangalasinan nga mga Tribong Mananwa sa	CSO	Nickel	Philippines
Tegonin sa Unibersidad (Amanginon)	CSO	Nickel	Philippines
Associação Brasileira do Alumínio (ABAL)	Industry associations	Aluminium / Bauxite	Brazil
Associação de Trabalhadores Rurais da Colônia Santa Rita	CSO	Nickel	Brazil
Associação de Trabalhadores Rurais da Colônia Santa Rita	CSO	Nickel	Brazil



Raw materials value chain leverage for
Drive Sustainability

December 2021,

Updated January 2022

Last update: July 2023

4

5. Which stakeholders and organisations should I engage with to conduct further due diligence on a particular risk issue or exert leverage with or upon?

To navigate the industry initiatives,

- scroll down the page to see the full list, or
- use the search tool to select relevant materials from the dropdown list in the first box, or
- Select the type of initiatives from the dropdown list of the second box.
- You can also type key words in the third box to tailor even further the search. *Example selection of aluminium as material and industry initiative as type:*

C

INDUSTRY INITIATIVES

MATERIAL

TYPE

CONTAINS ?

Filter **Reset**

Click on filter and scroll down to see the results

Aluminium Stewardship Initiative

Materials Aluminium

Type Industry initiative, Standard, Sustainability initiative
Certification scheme (requires audit)

About the stakeholders +

Drive Sustainability's members connected BMW Group

About the stakeholders –

The Aluminium Stewardship Initiative (ASI) is a global non-profit standard setting and certification organisation which brings together producers, users and stakeholders in the aluminium value chain. The goal is to work collaboratively to foster responsible production, sourcing and stewardship of aluminium. To date, ASI has 160 members.

According to the Theory of Change, ASI wants in the long term to realise a society that makes effective use of aluminium where stakeholders embed sustainability and human rights principles in their production and recycling of aluminium. To achieve this goal, ASI is working towards increasing the uptake of certification by diverse businesses. The assurance mechanism aims at promoting measurable and continual improvements in environmental, social and governance impacts of aluminium.

Click on the + icons to see an initiative summary



5

CHAPTER 5

Troubleshooting



LOADING ISSUES.

The **ANALYTICS: RISKS** tab of the **Partners area** can take a few seconds to load due to the amount of data it stores.

The Loading sign indicates that the site is charging. Results will appear soon.

The screenshot displays the 'ANALYTICS: RISKS' interface. At the top, the title 'ANALYTICS: RISKS' is centered. Below it, there are two filter sections: 'MATERIAL' and 'COUNTRY'. The 'MATERIAL' section contains three tags: 'Aluminium x', 'Graphite x', and 'Lithium x'. The 'COUNTRY' section contains three tags: 'Bolivia x', 'Chile x', and 'China x'. Below these filters are two buttons: 'Search' and 'Clear'. A loading spinner icon, consisting of a circle of dots, is positioned above the 'COUNTRY' filter. A callout line points from the text 'Indicates that the site is charging. Results will show soon' to this spinner icon.



Multiple ANALYTICS: RISKS TABS open.

- If you have multiple tabs of the ANALYTICS RISKS TAB open in your browser, then the results won't display properly.
- For the best user experience **only open one tab at a time in the analytics risks tab.**
- You can have other sections opened in different tabs, but not multiple analytics risks tabs open.
- We recommend using the RMO Platform on desktop for the best user experience, rather than on mobile devices.