re-sourcing

The International Responsible Sourcing Agenda

State-of-Play

Deliverable 1.1

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Executive Summary

Keywords: Responsible sourcing, due diligence, responsible mining, sustainable mining, Green Deal, mining standards

Responsible Sourcing practices are ingrained within the wider sustainability agenda; they are a means to an end. Driven by an international sustainability agenda that considers the economic, social and environmental consequences of raw material extraction and consumption, numerous approaches and practices have been developed. These address RS challenges across value chains ranging from employing safe and fair labour practices, protecting human rights, safeguarding financial integrity, negative impacts on the environment linked to operations, the social impact on communities and inter-related business practices, to name a few.

A review of the current RS approaches notes that these have largely focused on the behaviour of firms, through requiring changes in their management and business operation strategies as well as generating and reporting information on their procurement practices. These approaches range from offering guiding principles, due diligence templates, industry standards and standardised reporting practices. Some have evolved from collective industry learning, while others originate from civil society and investors.

With firms, governments and international institutions, investors and civil society advocating for RS, there has been a proliferation of RS initiatives, guidelines and templates, resulting in some overlap but largely a fragmented spectrum of operational and reporting principles. Standardised reporting to provide assurance remains a key weakness: the ability for these approaches to offer comparable measurement of RS activities and achievements, that can be uniformly assessed, ranked, and even be aggregated to a few indices, remains unmet. This resulting inefficiency hampers the ability to measure the impacts of firm RS practices.

The uptake of RS practices by firms has largely remained voluntary. However, RS practices are beginning to move from a 'guidance' into a 'required' phase. The fragmentation of RS approaches will be a challenge for uniformed adherence. These challenges will include issues such as: which RS standards should be followed; do these RS standards positively and adequately impact sustainability; can these RS standards be operationalised given a firm's knowledge and resources and how will RS compliance be reported and assured?

Employing a Global Value Chain approach to how RS practices are undertaken within upstream and downstream actors can illustrate the strength and the weaknesses of the actors and approaches involved, and how these RS practices need to evolve in the future for contributing to a sustainable development and growth part.

For the EU, the targets set under The Green Deal (2019) require contributions from the renewable energy, mobility and the electric & electronic goods sector. The global value chains that provide the final products in these sectors extend well beyond the EU borders. For these sectors to contribute to the EU sustainability agenda, responsible sourcing of their raw material inputs is essential. While progress has been made in the mobility and electric & electronic goods sectors, these approaches need to be rationalised and take a more cohesive form. Within the renewable energy sector, the uptake of RS practices appears to be limited and needs to be further examined.

Given complexity of the value chains that provide for the inputs into these sectors, the RS challenge is not simple to address. International cooperation and a globally agreed RS definition is required

expanding practices beyond EU borders. The role and actions taken by firms, industrial sectors and governments to address these challenges determine how widespread and cohesive the uptake of RS practices will be. The more integrated and common the deployment of RS practices become, greater will be the progress in achieving a sustainable development and growth path.

Given how standards are implemented across value chains, many actors may require support in understanding and meeting common RS standards. Aiming for a level playing field for businesses and firms adapting RS, is the only way to ensure that meaningful progress is made towards global sustainability goals, without compromising the competitiveness of firms.

An international consensus can also unlock the creation of enabling frameworks for firms, sectors and industry directing assistance to those who need it the most. Thus, there is a need for a better understanding the power relations, associated institutions and value systems that facilitate or block responsible sourcing. Much progress has been made on this front, but more remains to be done.

Abbreviations

3T	Tin, Tantalum, Tungsten
3TG	Tin, Tantalum, Tungsten & Gold
ASI	Aluminium Stewardship Initiative
ASM	Artisanal & Small-Scale Mining
BAT	Best Available Technologies
BEV	Battery Electric Vehicles
BGR	Federal Institute for Geosciences and Natural Resources
CCCMC	China Chamber of Commerce for Metals, Minerals and Chemical Importers
CFSP	Conflict Free Smelter Programme
CO2	Carbon Di-oxide
CRM	Critical Raw Materials
CTC	Certified Trading Chains
DRC	Democratic Republic of Congo
EEE	Electric & Electronic Equipment
EIB	European Investment Bank
EITI	Extractive Industries Transparency Initiative
EPRM	European Partnership for Responsible Minerals
ESG	Environment, Social & Governance
EU	European Union
GHG	Green House Gas
GRI	Global Reporting Initiative
GVC	Global Value Chains
GWh	Giga Watt per hour
ICC	International Chamber of Commerce
ICMM	International Council on Metals and Minerals
ICT	Information & Communications Technology
IEA	International Energy Agency
IFC	International Finance Corporation
IGF	Intergovernmental Forum on Mining, Minerals, Metals & Sustainable Development
ILO	International Labour Organisation
IoT	Internet of Things
IRENA	International Renewable Energy Agency
IRMA	International Responsible Mining Alliance
ISO	International Standards Organisation
IT	Information Technology
ITRI	International Tin Research Institute
ITSCI	International Tin Supply Chain Initiative
JRC	Joint Research Centre

LBMA	London Bullion Market Association
LME	London Metals Exchange
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
R&D	Research & Development
RBA	Responsible Business Alliance
RCI	Responsible Cobalt Initiative
RCM	Regional Certification Mechanism
RE	Renewable Energy
RMAP	Responsible Minerals Assurance Process
RMI	Responsible Minerals Imitative
RS	Responsible Souring
UN	United Nations
WEEE	Waste Electrical and Electronic Equipment
WGC	World Gold Council

1 Sustainability, Raw Materials & Responsible Sourcing

> Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.
>
> *Our Common Future, 1987.*

In October 1987, the Brundtland Report 'Our Common Future', commissioned by the United Nations set out a global agenda for change; recognising the environmental and social challenges facing the planet and aiming to build a prosperous future, which was more just and secure, for multiple generations and for citizens of all countries.

The 1992 Earth Summit in Rio de Janeiro (Brazil) saw the first collective steps towards forming a global partnership on sustainable development. The 2000 Millennium Summit at the UN (New York) led to the framing of the Millennium Development Goals aiming to reduce extreme poverty by 2015. In 2002, the Johannesburg Declaration on Sustainable Development and the Plan of Implementation furthered this agenda, with the world returning to Rio in 2012 to build on commitments from over 20 years ago. At its latest stage, the adoption of the 2030 Agenda for Sustainable Development[1] developed 17 Sustainable Development Goals (SDGs) and 169 targets that depict the international agenda for sustainable development.

In 2015, the Paris Agreement on climate change saw nations committing to tackle climate change and to find and fund financial, technical, technological and capacity building frameworks for assisting all countries to keep global temperature rise well below 2 degrees Celsius above pre-industrial levels.

International commitments towards sustainable development are not new, these initiatives have been on-going for well over three decades now, with some results being achieved: in 2019 the global energy-related CO^2 emissions remained unchanged for the first time over the past decades. However, more needs to achieved; Against this background, the follow up on the SDGs in Europe shows some progress[2].

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[1] UN 2030 Agenda for Sustainable Development (accessed 20 April 2020)

[2] Gottenhuber, S. & Mulholland. E. "The Implementation of the 2030 Agenda and SDGs at the National Level in Europe –Taking stock of governance mechanisms", ESDN Quarterly Report 54, December 2019, ESDN Office, Vienna; Sustainable development in the European Union — Monitoring report on progress towards the SDGs in an EU context — 2019 edition (accessed 20 April 2020)

Raw materials extraction and use are an important element of the sustainability debate. According to the OECD's Global Material Resources Outlook to 2060 (2018), the use of material resources grew form 27 billion tonnes in 1970 to 89 billion tonnes by 2017. The OECD forecasts that in the absence of new policies, material resource use could reach 167 billion tonnes in 2060, with the largest increase seen for metallic ores, followed by non-metallic minerals (see Table 1).

Table 1: Global material resources outlook to 2060*

Material resources	2017	2060	Change
	(billion tonnes)		
Metallic ores	9	20	↑ 122%
Non-metallic minerals	44	86	↑ 95%
Biomass	22	37	↑ 68%
Fossil fuels	15	24	↑ 60%

**in the absence of new policies*

Source: OECD (2018)

Minerals (metallic and non-metallic) by their production (how they are extracted) and by their consumption (their wide use in everyday life) can have both positive and negative impacts on different aspects of sustainability.

The **environmental impacts** associated with the extraction of raw materials are mostly negative: the 2019 Nairobi Summit of the UN Environment Assembly noted that the 'extraction and processing of materials, fuels and food make up about half of total global greenhouse gas emissions and more than 90 [%] of biodiversity loss and water stress'[3]. However, these minerals make a positive contribution to the environment through their use in the production of green technologies (wind and solar energy generation etc) which lower GHG emissions.

Social aspects of extractive activity often bring benefits to local communities, including access to education and health services in many rural communities in developing countries. However, extractive activity also has a long association with fuelling violent conflict and human rights abuses as well as land-use conflicts. In addition, how raw material production is organised, such as labour practices and health and safety measures, also have social impacts.

The **economic impacts** of extractive activity can be positive (generation of employment and income opportunities) as well as negative (association with corruption and tax evasion). Thus, both, positive and negative impacts on economic sustainability may result.

The current impacts sustainability impacts associated with the extraction of raw materials make it imperative that these materials be responsibly sourced, to meet the wider sustainability agenda.

This working paper provides an overview of the current state of responsible sourcing practices related to the extraction of minerals and their processing. The first two chapters of this document outline the challenges that have been identified in the economic, social and environmental spheres and analysis the approaches to RS that are attempting to address these. It considers the role that key actors play in the uptake of responsible sourcing practices. In the second half of the document, the focus shifts to issues for responsible sourcing in three key sectors: renewable energy, mobility and the electric and electronic equipment sector.

The objective of this document is to 'set the scene' for the engagements and dialogues that will be undertaken by the RE-SOURCING Project over the next four years. Therefore, the content of the report

[3] UNEP (2019). UN calls for Urgent Rethink as Resource use Skyrockets <accessed 8th February 2020>

is more analytical in nature: what approaches are being undertaken and where the gaps remain. This document is not meant to provide an in-depth analysis of the current RS initiatives that exist[4].

The document is based on desk-based research and review of industry and academic literature. Where possible, it provides suggestions for further reading and links to material that discuss RS practices and sustainability issues in greater detail.

The last chapter of this document summarises the RS approach, the progress made and the importance of a cohesive approach to RS, building on the strengths of current approaches and addressing their weaknesses.

1.1 Introduction to the RE-SOURCING project

Responsible Sourcing (RS), whilst being commonly referred to by different stakeholder who work on and affected by the Sustainable Development Agenda, both amongst EU and non-EU stakeholders, its concept and implementation remains vague. For the implementation of RS practices, guidance and collaboration is required at a number of levels: firms to learn from other firms; sectors to share experience with other sectors; and for international agendas to integrate their strategies and share common objectives and the means to achieve them. These three levels are further intersected by mineral global value chains, where activities in one chain supply inputs to a number of firms across sectors. The source of these minerals, often global in nature, also implies that both, developing and developed countries, are involved in the international agenda setting process that informs RS practices. RE-SOURCING, considering these complexities, employs a holistic approach that integrates

- firms and industry;
- three key EU sectors (renewable energy, mobility, electric and electronic equipment);
- EU and other important actors (political, economic, financial, social & environmental);
- mineral Global Value Chains of traditional minerals (e.g. copper), conflict minerals (3TG) and green tech minerals (e.g. Lithium); and
- international agenda setting processes.

RE-SOURCING is a four-year project (November 2019 – October 2023), with 11 partners from different European countries, that is coordinated by the Vienna University of Economics and Business. The project consortium will be working together to develop the RE-SOURCING Platform to strengthen the responsible sourcing agenda among EU and international stakeholders.

The RE-SOURCING project actions will:

- facilitate the development of a globally accepted definition of RS;
- develop ideas for incentives facilitating responsible business conduct in the EU, supporting RS initiatives;
- enable exchange of stakeholders for information and promotion of RS;
- foster the emergence of RS in international political fora; and

[4] For comprehensive overviews of Sustainability/RS schemes in the mineral sector please see the following:

- Sturman, Kathryn & Rogers, Paul & Imbrogiano, Jean-Pierre & Junior, Renzo & Ezeigbo, Chinwe. (2018). Monitoring impact of mineral sustainability standards to align with the Sustainable Development Goals.
- IGF (2018). State of Sustainability Initiatives Review: Standards and the Extractive Economy.
- BGR (2017). Sustainability Schemes for Mineral Resources: A comparative overview.

- support the European Innovation Partnership on Raw Materials.

RE-SOURCING will deliver for:

- EU and international business stakeholders:
  - increased capacity of decision-makers for implementing responsible business conduct;
  - better understanding and awareness on RS in three sectors of automotive, electric and electronic equipment, and renewable energy; and
  - facilitated implementation of lasting and stable sectoral framework conditions for RS.
- EU policy makers:
  - increased capacity for RS policy design and implementation;
  - innovative ideas on policy recommendations for stimulating RS in the private sector; and
  - better understanding and awareness on RS in three sectors of automotive, electric and electronic equipment, and renewable energy.
- Civil Society:
  - integration of sustainable development and environmental agenda into the RS discourse;
  - an established global level playing field of RS in international political fora and business agendas; and
  - better understanding and awareness on RS in three sectors of automotive, electric and electronic equipment, and renewable energy.

1.2 Challenges in sourcing raw materials responsibly

Individual firms face several common challenges in responsibly sourcing raw materials. Within sectors, responsible sourcing challenges across their value chains range from employing safe and fair labour practices, protecting human rights, safeguarding financial integrity, negative impacts on the environment linked to operations, the social impact on communities and inter-related business practices, to name a few. The Electronics Industry Citizenship Code of Conduct (Table 2) based on OECD, ILO and UN guidelines, provides a good summary of these challenges. Although developed specifically for the electronics sector, the challenges faced are common to most businesses with mineral raw materials in their value chains.

Table 2: Common challenges in responsible sourcing (energy, mobility & EEE)

Common Business Responsible Sourcing Challenges		
■ Risk identification ■ Finance & procurement practices ■ Transparency & the role of social media	■ Integrating within global Value Chains ■ Innovation & demands from outside influences ■ Information & the big data revolution	■ Integration of sub-contractors ■ Collaboration with external vendors & auditors ■ Regional diversity in recruitment
Common Sustainability Challenges in Responsible Sourcing		
Labour practices	**Human Rights**	**Finance**
■ Freedom of association ■ Treatment of migrant labour ■ Living wage for workers	■ Serious abuses associated with the extraction, transport or trade of minerals ■ Use of public or private security forces	■ Payment of taxes, fees & royalties ■ Bribery & Corruption ■ Fraudulent misrepresentation of the origin of minerals

■ Exposure to hazardous substances ■ Provision of protective equipment	■ Direct or indirect support to non-state armed groups	■ Money-laundering ■ Extortion
Environment	Social	Businesses
■ CO_2 and other air emissions ■ Mining waste & disposal ■ Water contamination & competition ■ Tailings dam failure & accidents ■ Land & biodiversity	■ Contribution to welfare of mining communities ■ Forced relocation of communities ■ Indigenous rights ■ ASM	■ Establish strong company management systems ■ Identify and assess risk in the supply chain ■ Independent third-party audit of supply chain due diligence
EEE: Sector Specific Responsible Sourcing Checklist – an example*		
Labour		
■ Freely Chosen Employment ■ Wages & Benefits ■ Freedom of Association	■ Young Workers/Child Labour ■ Humane Treatment	■ Working Hours ■ Non-Discrimination
Health & Safety		
■ Occupational Safety ■ Industrial Hygiene ■ Sanitation, Food, & Housing	■ Emergency Preparedness ■ Physically Demanding Work ■ Health & Safety Communication	■ Occupational Injury & Illness ■ Machine Safeguarding
Environmental		
■ Environmental Permits & Reporting ■ Wastewater & Solid Waste ■ Storm Water Management	■ Pollution Prevention & Resource Reduction ■ Air Emissions ■ Energy Consumption	■ Hazardous Substances ■ Materials Restrictions ■ Greenhouse Gas Emissions
Ethics		
■ Business Integrity ■ Intellectual Property ■ Responsible Sourcing of Minerals	■ No Improper Advantage ■ Fair Business, Advertising & Competition ■ Privacy	■ Disclosure of Information ■ Protection of Identity & Non-Retaliation
Management System		
■ Company Commitment ■ Risk Assessment & Risk Management ■ Communication ■ Corrective Action Process	■ Management Accountability & Responsibility ■ Improvement Objectives ■ Worker Feedback & Participation ■ Documentation & Records	■ Legal & Customer Requirements ■ Training ■ Audits & Assessments ■ Supplier Responsibility

Source: Electronics Industry Citizenship Code of Conduct (2014)

The role and actions taken by firms, industrial sectors and governments to address these challenges determine how widespread and cohesive the uptake of responsible sourcing (RS) practices will be. The more integrated and common the deployment of RS practices become, greater will be the progress in achieving a sustainable development and growth path. To comprehensively understand the link between meeting RS challenges and sustainability, a framework of analysis is required. The focus of this framework is on the mineral and metallic raw materials.

1.3 Framework for analysis

Several terms and phrases are commonly used in the Sustainability and RS agenda within the mineral and metallic sector. These include, but are not limited to, sustainable mining, green mining,

responsible mining, supply chain due diligence, sustainable procurement etc ESG (Environment, Social and Governance) is also a commonly used all-encompassing term to address several indicators. In this section, the working paper outlines some of these commonly used terms and suggests how they will be incorporated within the RE-SOURCING Project going forward.

1.3.1 Sustainability

Sustainability, Sustainable Development and Sustainable Development & Growth (henceforth referred to sustainability) refer to three aspects: economic, social and environmental. Table 2 (above) indicates some of the factors that are commonly included under these three aspects. The sustainability framework has traditionally been based either on individual silos that support the overarching concept, or as three independent spheres with an intersecting common (see Figure 1**Error! Reference source not found.**).

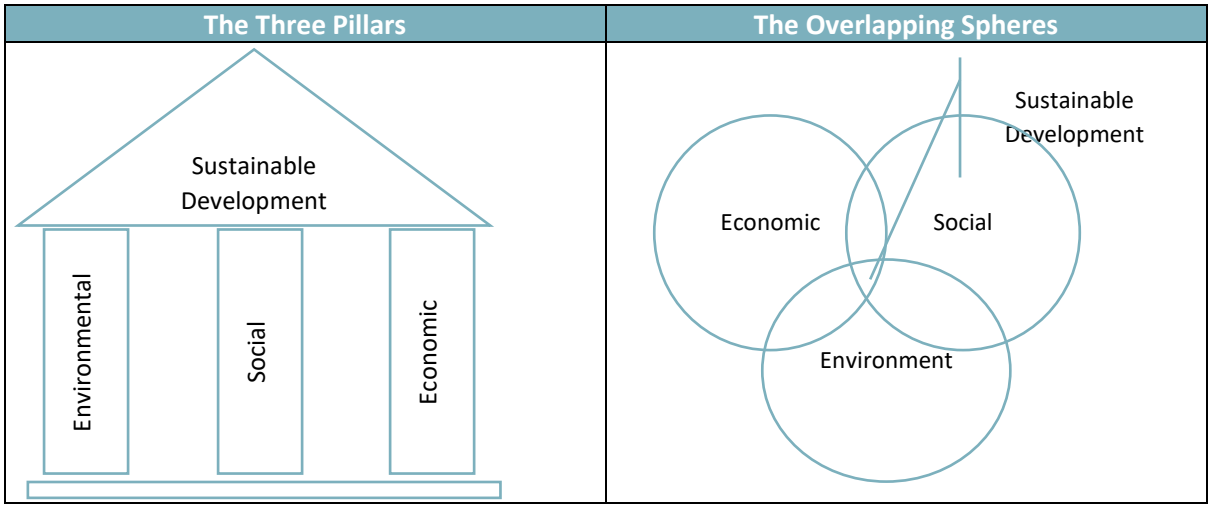

Figure 1: Common approaches to sustainability

Source: Tost et. al (2018)

As the discourse on sustainability has progressed, the understanding of the interdependence of these spheres has considerably increased. While each sphere needs to be understood and its challenges addressed, sustainability is perhaps best understood as nested circles (**Error! Reference source not found.**), with each sphere contributing to and being influenced by the other. The nested circles do not imply hierarchy, i.e. economic issues are not understood as more important to social or to environmental issues. The nested circles only imply the interdependence of these spheres.

The JRC's report[5] on the role of raw materials points out this interconnectedness, arguing that there are currently interlinkages and trade-offs between mineral consumption and extraction. Tost *et.al* (2018)[6] further refine this by interconnectedness by discussing this trade-off offering the concept of 'weak' vs 'strong' sustainability. The former refers to the concept of interchangeability of human capital with natural capital. For example, human capital such as infrastructure, energy production etc can be developed at the cost of depleting natural capital (such as water and clean air). Strong sustainability on the other hand limits the inter-changeability of the two forms of capital. The authors argue, that while the raw material sector at present has focused on the three spheres through a weak

[5] JRC (2019). Mapping the Role of Raw Materials in Sustainable Development Goals. <accessed 15th January 2020>
[6] Tost, Michael & Hitch, Michael & Chandurkar, Vighnesh & Moser, Peter & Feiel, Susanne. (2018). The state of environmental sustainability considerations in mining. Journal of Cleaner Production. 182.

sustainability lens, its future orientation needs to address strong sustainability, i.e. natural capital and its limited interchangeability for human capital, as an increasingly important societal agenda.

1.3.2 Responsible sourcing

RS is a contributory factor to a sustainable development and growth path, and influences firm operations and strategies. In general, RS has been defined by the International Chamber of Commerce (ICC) as 'a voluntary commitment by companies to consider social and environmental considerations when managing their relationships with suppliers'[7].

Another RS definition states: 'The responsibility of sourcing is a shared responsibility; a responsibility that must be demanded, governed, complied with, expected, standardized, and executed upon by suppliers, traders, manufacturers, logistic providers, purchasers, retailers, investors, employees and consumers'[8].

The ISO 20400 (2017) Guidance on Sustainable Procurement defines RS as 'procurement that has the most positive environmental, social and economic impacts possible over the entire life cycle (consecutive and interlinked stages of a goods or services system), from raw material acquisitions or generation from natural resources to final disposal'[9].

For raw materials specifically, Brink *et al* (2019), based on extensive literature review, find no concrete definition for RS. Based on their analysis they offer the following definition: 'the management of social, environmental and/or economic sustainability in the supply chain through production data'. This definition combines two important dimensions of RS: the first is the **management** of internal business operations of a firm and the monitoring of supply chains. The second focuses on the collection of **data** and **information**, tracing the conditions at the location/origin of minerals and documenting the process from origin to smelter/manufacturer. Thus, within the raw materials sector, RS refers to how firms manage their own operations and procurement practices to support sustainability and the information they collect to monitor and evidence the supply chain of minerals used in their products and services.

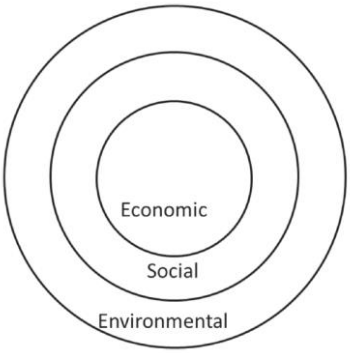

Figure 2: Nested circles model of sustainable development

Source: Tost et.al (2018)

Responsible is often interchangeable with ethical, green, sustainable, whilst sourcing is interchanged with procurement and purchases. While any combination refers to essentially the same concept, for consistency, we will be using the term Responsible Souring throughout the project.

1.3.3 Global value chains

Production within major sectors (such as Mobility, Renewable Energy and Electric and Electronic Equipment) is based on a complex network of firms and suppliers, often across international borders.

[7] ICC. Guide to Responsible Sourcing < accessed 8th February 2020>

[8] Kodiak Rating Community <accessed 10th February 2020>

[9] ISO (2017). Sustainable procurement – Guidance. <accessed 8th February 2020>

To understand and map this network, the Global Value Chain approach is employed. The GRI Reporting Standard defines[10] a value chain as:

> An organization's value chain encompasses the activities that convert input into output by adding value. It includes entities with which the organization has a direct or indirect business relationship and which either (a) supply products or services that contribute to the organization's own products or services, or (b) receive products or services from the organization. The value chain covers the full range of an organization's upstream and downstream activities, which encompass the full life cycle of a product or service, from its conception to its end use.

It is important to note the **difference between a supply chain and a value chain**, as the distinction is not always clear. A supply chain is a process for mapping the movement of goods and services, it is **devoid of the power relations** that exist between the firms in a chain. A value chain on the other hand notes where 'value' is created along the supply chain – which firms have the power of design, governance, standard setting, procurement guidelines, auditing control, financial control etc.

GVC analysis categorises firms into upstream and downstream chains. Using the approach from the BGR study *Sustainability Schemes for Mineral Resources: A Comparative Overview (2017),* we use the 'smelter/refinery' as the distinguishing point between upstream and downstream segments.

Upstream: Refers to the extraction process and includes exploration, mining and processing, intermediary and export of minerals. Smelters and refineries are included in this segment of the chain.

Downstream: Refers to (re)import, semi-fabrication, material conversion and manufacturing.

Use/Re-Use Phase: Wholesale and retail, recycling/smelting are included as a third segment, for this project. This allows for an evaluation of RS practices specific to the recycling node of the chain.

The GVC does not make specific reference to traders/Artisanal and Small-scale Mining (ASM) production, as these are considered actors that are subsumed within the value chain – traders are active within the processing/intermediary state, while ASM is active within the mining segment.

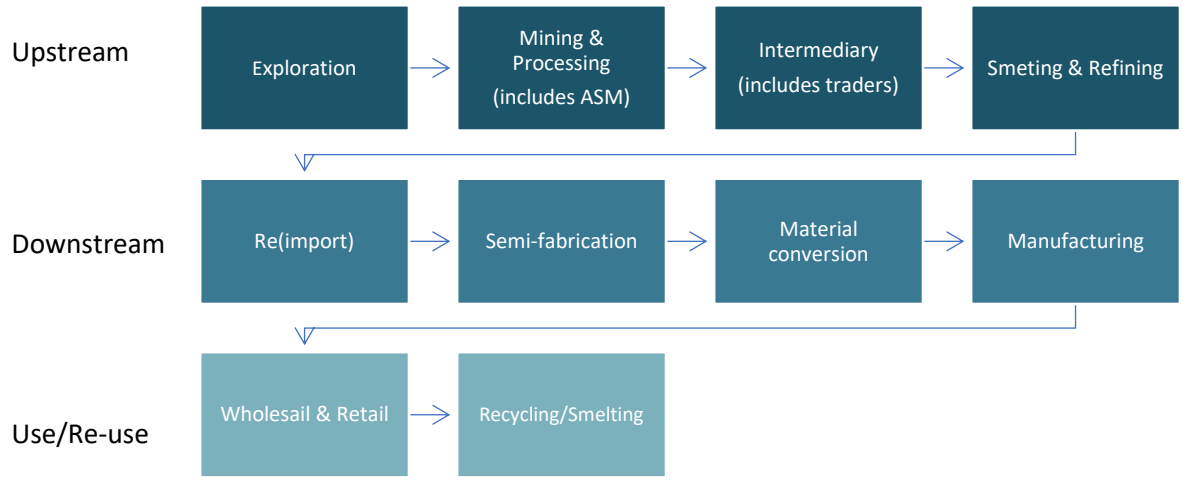

Figure 3: Frameworks for analysis - Global Value Chain

[10] This definition is based on UN *The Corporate Responsibility to Respect Human Rights: An Interpretive Guide*, 2012.

Employing a GVC approach to how RS practices are undertaken within upstream and downstream actors, how these RS practices are monitored and reported, the strength and the weaknesses of the actors and standards involved, and how these RS practices need to evolve in the future for contributing to a sustainable development and growth part, form the basic analytical framework for the RE-SOURCING Project.

In the next chapter, this working document examines the current state of RS practices and the major actors involved.

2 Mapping Responsible Sourcing

Responsible Sourcing (RS) is a culmination of several economic, social and environmental factors and can be considered as a means to deliver on a sustainable growth and development agenda. Initially sustainability driven initiatives led to the emergence of RS initiatives, setting out either voluntary or regulatory RS requirements. It is difficult to pinpoint how the need for RS emerged; safeguarding working conditions, protecting the environment and habitats and defending human rights etc have been around for centuries. Similarly, the emergence of advocacy for RS practices from civil society organisations, governments and international actors have an equally long history. However, over the past two decades, the impetus from a sustainability driven international agenda has incentivised a greater focus on RS practices.

While RS initiatives and practices have increased in number and scope, they are fragmented at this time. As Figure 4 indicates, there are a myriad number of actors, initiatives and standards operating across the raw material sector focusing on sustainability and RS practices, standards and reporting mechanisms.

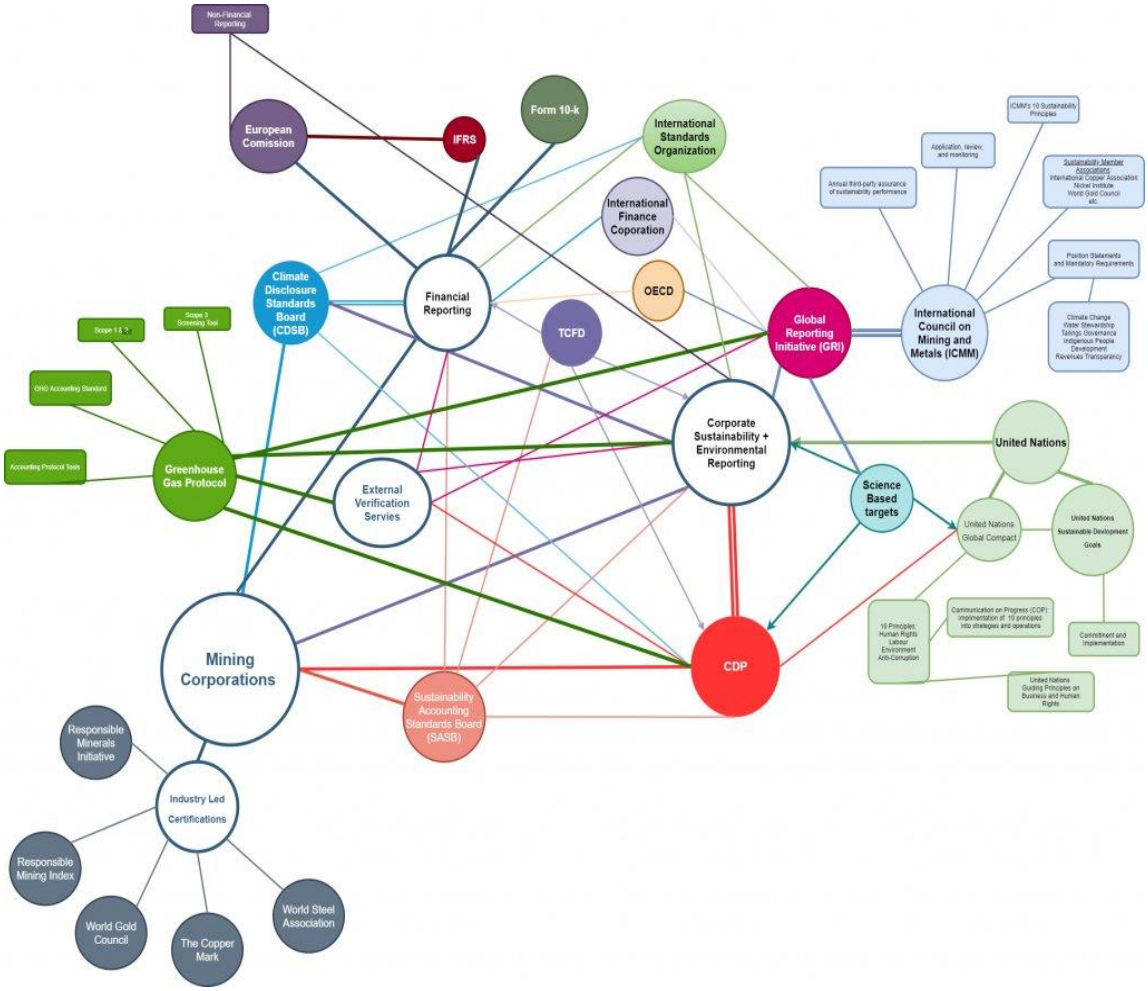

Figure 4: Sustainability & responsible sourcing reporting initiatives & standards

Source: Lee and Bazilian (2020). [Mining the Energy Transition]

This fragmentation of RS approaches, as well as inadequate and inconsistent measurement and reporting RS practices, are becoming a challenge in constructing a unified, internationally agreed definition of RS, or an RS reporting mechanism.

2.1 Developers of responsible sourcing approaches

To move towards a more unified approach for the wider uptake of RS practices, and its measurements, the motivation and role of key actors and influencers needs understood. Here we focus on four key stakeholders: firms, governments and international institutions, investors and civil society.

2.1.1 Firms

Given the advances in product/service management, defragmentation of production, communication technologies and the lowering of transport costs, final products and services are the culmination of the efforts of several firms operating within **Global Value Chains**. Any number of actors are involved in the production of a given consumer good or service. These would include the firms that manufacture the **final product**, firms that provided the **intermediary goods** and services to the lead firm and those that **extract and process the raw materials** that go into the final product. Firms employ RS through adapting their own business operations and as lead firms, and by requiring their suppliers

to adhere to RS practices. Therefore, the operating strategies they adopt and the RS principles they follow has an impact on the entire value chain.

The uptake of RS practices will affect a firm's ability to operate in certain markets as well as on its cost competitiveness. RS practices require managerial commitments as well as human and financial resources from a firm. To retain a competitive business environment, a **level playing field**, whereby all firms adhere to similar RS standards, is beneficial for the wider uptake of RS. Selective uptake by some businesses and not by others can lead to mixed results – firms that adhere to RS standards may find their cost competitiveness challenged, but adherence also allows firms access to markets that are closed to non-compliant firms. Therefore, firms face both advantages and disadvantages resulting from the uptake of RS practices, unless the same RS rules apply to all firms.

2.1.2 Governments & international institutions

Governments shape the regulations that impact consumption patterns within their jurisdictions: these can take the form of banning harmful products (such as the use of dangerous chemicals in food production); discouraging the consumption of harmful products through high taxation (tobacco products), and setting regulatory standards for the production of products (such as energy efficiency standards for electronic products sold in the EU).

The role of governments and international institutions is largely to create and support the sustainability agenda, which in turn facilitates the uptake of RS practices. Some can take the form of compliance-based instruments such as **regulations** (for example the EU Conflict Mineral Regulations) while others can be **non-compliance-based instruments** such as tax or other incentives (such as the EU Non-Financial Reporting Requirements). The objective of governments is to provide frameworks that encourages or requires actors to employ RS practices; how successfully such frameworks can be operationalised is often a factor of political commitment and the monitoring and enforcement capacity of governments.

In addition to EU Member States and the EU, other agenda setting organisations such as the United Nations, provide an **international set of sustainability goals**, such as the UN Sustainable Development Goals, Paris Agreement, ILO Labour Conventions. These international agreements provide a collective set of global sustainability objectives that encourage the adoption of RS practices. At the global level, the approaches to sustainability, and in turn their influence on RS practices, varies. **Non-EU governments**, such as those in Latin America, Africa, China, will have differing priorities to address sustainability and therefore the uptake of RS, with some governments giving greater urgency to income generation, while others prioritise the protection of social rights. The ranking of these priorities will influence how RS practices are employed across different countries.

2.1.3 Investors

Shareholder activism, where equity shareholders of a publicly listed company actively campaign to influence the firm management's behaviour, has been gaining strength in recent years[11]. There is a greater push for business operations integrating sustainable practices, including RS. Actions precipitated by shareholders have ranged from the decision by some pension/sovereign wealth funds to stop financing coal-based projects, to the introduction of S&P 500 ESG Index[12] that provides a green investment portfolio. There are now emerging examples of investors actively funding 'green'

[11] Grewal, Serafeim and Yoon (2016). Shareholder Activism on Sustainability Issues. SSRN <accessed 23rd March 2020>
[12] S&P (2019). The S&P 500 ESG Index. <accessed 23rd March 2020>

projects[13], as opposed to taking a passive role in portfolio management. Investors are also increasingly linking their financing with wider sustainability practices of firms. These include The IFC's Performance Standards, The Equator Principles, The EIB's Environmental & Social Standards for its funding, BlackRock's Sustainable Investing strategy. The role of financing in the deployment of RS practices by firms is an important influence for the expansion of such practices.

2.1.4 Civil society

Civil society organisations - local, national and international - have played an immeasurable role in bringing RS issues to the forefront of the global discourse. They play two crucial roles: advocacy and monitoring. As advocates, they engage and campaign for better economic, social and environmental rights for themselves as well as for other adversely affected communities. As monitors, they document and report breeches of national and international conventions impacting RS issues as well as assisting state and non-state actors in developing and adhering to an RS agenda.

While there are several platforms that bring civil society together on RS, the spectrum across which these organisations operate is immense. On the one hand, this allows them to address a plethora of RS issues. On the other hand, the fragmentation of approaches to particular RS issue, geographical scope and focus of operations makes it difficult for a unifying stance to be attributed to these organisations. For example, some civil society organisations work on better engagement and safeguarding of the rights of artisanal miners (for example Amnesty International)[14] while others oppose mining activity, particularly fossil fuel related investments (Keep it in the Ground campaign).

Civil society exerts a strong influence on the uptake of RS practices. However, the divergence amongst civil society on RS advocacy and monitoring activities, provides for very different operationalisation of such objectives.

With firms, governments and international institutions, investors and civil society, there has been a proliferation of RS initiatives, guidelines and templates, resulting in some overlap but largely fragmented spectrum of operational and reporting principles. The fragmentation has also given rise to the issue of 'greenwashing': originally referring to the practice of a company to make people believe that it is doing more to protect the environment than it really is. This has now expanded to include 'social washing' which overstate the impact of a firm's operations on labour and human rights. The next section examines the nature of this fragmentation, while highlighting the commonality in these approaches.

2.2 Current approaches to responsible sourcing

The cluster of actors listed above have developed various approaches to address RS. Some focus on using industry associations for collective learning and developing operating standards, other independent organisations provide guidelines and due diligence procedures, whilst still others provide reporting mechanisms and tools for businesses.

As noted in Chapter 1, RS practices can be defined under management of operations and by collection of information/data on procurement. A review of the current schemes notes individual and collective use of both aspects in the development of RS approaches. Three common threads appear in the RS approaches in the raw materials sector: 1) employing due diligence and tracking templates, 2)

[13] IMF (2019). Global Financial Stability Report: Lower for Longer. <accessed 23rd March 2020>
[14] Amnesty International (2016). This is What we Die for. <accessed 23rd March 2020>

adapting RS business strategy in operations, and 3) using auditing and homogenous reporting processes. These approaches can result in two outcomes: a recognised industry certificate and/or a stand-alone sustainability report. These are summarised in Table 3.

Table 3: Characteristics of RS initiatives

Characterisation →	**Management Systems**	**Data/Information generation**
Tools ↓		
Employing Due diligence/tracking templates		
Adapting business strategy & operations		
Homogeneous auditing & reporting templates		
Outcome →	Certification	Standardised reporting

2.2.1 Employing due diligence & tracking templates

These schemes employ a due diligence and information tracking templates with a focus on risk identification, allowing for mitigation measures to be deployed. These templates allow tracking of where raw materials are sourced from, what are the risks that can arise in their extraction and in some cases, measures taken to address and mitigate these risks. A good example is the **OECD Due Diligence Guidance for Responsible Mineral Supply Chains.** This approach provides for structured and specific risk identification actions for a business to undertake as part of its RS practices and is considered by many to be the de facto standard for most RS due diligence templates. EU directives, including the one on EU Conflict Minerals and EU Non-Financial Reporting Directive also make reference to this document. The due diligence was primarily developed to address minerals from conflict-affected and high-risk areas but has since expanded (its 3rd edition was published in 2016) to include recommendation on money laundering and terrorist finance. However, the primary aim of the guidance is to address human rights concerns within supply chains, with an emphasis on artisanal and small-scale miners (ASM) and 3TGs (tin, tungsten, tantalum and gold). There are the five steps outlined under OECD guidance:

- Step 1: Establish strong company management system
- Step 2a: Identify risks in the supply chain
- Step 2b: Assess risk of adverse impacts
- Step 3: Design and implement a strategy to respond to identified risks
- Step 4: Carry out independent third-party audit of supply chain due diligence
- Step 5: Report on supply chain due diligence

The **ITSCI (Tin Supply Chain Initiative)** initiative developed by the ITRI (International Tin Research Institute) provides for similar due diligence undertaking, giving member firms due diligence guidance, encapsulating data collection, risk management and auditing functions. Another emerging example is the **LME Responsible Souring Requirements,** which follow a similar risk identification approach. Based on a two-year consultative process, the LME is introducing responsible sourcing requirements for all

metals (by brand) for delivery through the exchange. The first reporting period for firms is set for 2021 with audits (where required) to be carried out by the end of 2023. The LME RS approach combines two principles: ethical responsibility and commercial interest, i.e. that it continues to provide a price discovery function that better reflects the value of responsibly sourced metal. The RS requirements are built on four key principles[15]:

1) Defining a pragmatic and clear process. To ease the uptake by both large and smaller metal producers, the LME has outlined a three-track model that will be used as the basis for compliance. The model works under a 'red flag' approach based on the OECD Guidance for Minerals from Conflict-affected and High-risk Areas.
2) Building on well-established work in the sector. Interestingly, the LME does not set its own standards for RS. Instead it encourages the use of current relevant RS templates which have defined audit processes. It proposes an 'equivalence' list for firms, which outlines which current standards meet its specifications and can therefore be used by firms.
3) No discrimination between large-scale and artisanal/small scale mining. This principle ensures that LME RS requirements do not 'sterilise' mineral supply chains by removing ASM completely or unfairly penalize firms that are working with the ASM sector to meet globally accepted standards. Additionally, acknowledging the potential of financial crimes from the large-scale mining sector, firms are required to address disclosure of corruption risks, as outlined by the EITI.
4) Utilising twin tools of transparency and standards. The LME acknowledges that transparency requirements should not impinge on the commercial health of a firm, where exposure of their supply chain risks may disadvantage them in relation to their competitors. To balance commercial interests against transparency requirements, a minimum standard (OECD Guidance) must be met by all firms.

2.2.2 Adapting business operations & standards

A second approach within RS looks towards changes in business processes, largely organised around operating standards. Such standards stem from two sources: 1) a uniformed set of guiding principles for all firms to incorporate in their business strategies and 2) a set of standards specifically developed by industry associations for their members.

The **OECD Guidelines for Multinational Enterprises** (2011 Edition)[16] is an example of the first set and focus on issues to be addressed by multinationals as part of their responsible business conduct – these principles remain voluntary, to be adapted in firm strategies. The principles address issues around human rights, employment and industrial relations, the environment, combatting bribery, tax extortion, protecting consumer interests etc. One aspect of responsible business conduct encourages firms to participate in industry wide efforts to coordinate shared common supplier policies and risk management strategies as well as dialogues on supply chain management. While responsible sourcing is not separately addressed, it is implied by the guiding principles. The principles or guidelines themselves do not include a template or a 'how to' guide, leaving it to firms to design their own strategies to meet these principles[17].

[15] LME (2019). Responsible Souring: a high-level outline for the rationale for, and requirements of, the LME's proposal. <accessed 20th March 2020>

[16] OECD (2011). OECD Guidelines for Multinational Enterprises: 2011 Edition.

[17] Assistance is available to firms from non-OECD parties in operationalising these principles.

Such actions are also found in specific industrial sectors. For example, automobile sector's **Drive Sustainability** has drafted common guidelines for the responsible souring of raw materials by its members – The Global Automotive Sustainability Guiding Principles[18]. These provide detailed guidance on environment sustainability, human rights and working conditions. Another version is found in cross-industry collaboration by the consumers of specific minerals. For example, in November 2016, the Chinese CCCMC launched the **Responsible Cobalt Initiative** (RCI) with support from the OECD, which brings together firms that use cobalt in their manufacturing operations. In 2017, the RCI had 24 members including Apple, BMW, Dell, HP, Huawei, Sony, Samsung SDI, LG Chem, Hunan Shanshan, L & F, Tianjin B & M and Huayou Cobalt. The Chinese battery manufacturer CATL is also becoming an RCI member. The initiative aims at addressing environmental and social risks along the cobalt supply chain with the elimination of child labour as one of its primary goals.

The next progression of RS approaches combines guidelines with process objectives. For example, the **International Council on Metals and Minerals** (ICMM) in its guide to responsible sourcing for the industry[19], blends management strategy with information-collection strategies. The objective is for member firms to build a reporting and assurance requirements framework, consisting of four themes to support RS practices: 1) mapping the value chain, 2) developing effective programmes and standards, 3) engagement with suppliers and value chain and 4) data and information.

In some industrial sectors these guidelines have taken the form of standards. For example, the **Electronic Industry Citizenship Coalition** and its Code of Conduct[20] specifically provide standards for employment in the electronics industry, requiring signatory firms to adhere to these standards as well as their next tier suppliers. The **Responsible Steel Standards** developed by Responsible Steel, a not-for-profit organisation is an industry wide multi-stakeholder forum, has developed standards for its members to cover environmental, social, governance, management, system, stakeholder engagement, and closure principles. Similarly, the **Aluminium Stewardship Initiative** (ASI) works towards building stakeholder consensus in the aluminium sector around responsible practices and performance standards. The organisation aims to create a collective impact on environmental and social issues. The ASI Standards program is applicable to all stages of the aluminium production and transformation stages. Members are certified when they have met these standards.

Within these set of RS approaches, the movement has been from guiding principles towards a set of defined industry standards. There is an overlap between addressing RS only through management strategies, while others require data collection and information reporting as well. Only the ASI standard includes an aspect of certification through an auditing process.

2.2.3 Reporting & auditing

Progressing from standard setting, some RS approaches look at evidencing these practices through standardised process-based reporting, i.e. what has been done to achieve RS. This can take two forms: self-reporting and through third-party auditing. Both approaches employ a standardised reporting template.

A commonly used standardised reporting template is the **Global Reporting Initiative** (GRI). The GRI has been designed to report on the underlying question of 'how an organization contributes, or aims to contribute in the future, to the improvement or deterioration of economic, environmental, and

[18] Drive Sustainability. Guiding Principles. <accessed 11th February 2020>

[19] ICMM (2015). Demonstrating Value: A Guide to Responsible Sourcing. <accessed 10th January 2020>

[20] EICC (2014) Electronic Industry Citizenship Coalition Code of Conduct. <accessed 10th January 2020>

social conditions at the local, regional, or global level[21]'. GRI is an independent international organisation, in operation since 1997, working with a host of actors from governments, international institutions, firms and addresses a range of sectors, including the extractive sector. The reporting requirements and formats include a range of topics, some are mandatory and whilst others are encouraged. **Error! Reference source not found.** outlines the major topics that the GRI Reporting S tandard for the extractive sector addresses. While GRI Reporting itself does not lead to certification, the standardised reporting template can be used for third-party auditing purposes.

Table 4: GRI reporting standards for sustainability for the extractive sector*

Sphere	Indicators for measurement	
Economic	• Economic dimension • Market Presence • Indirect Economic Impacts • Procurement Practices	• Anti-corruption • Anti-competitive Behaviour • Tax
Social	• Employment • Labour management relations • Occupational health and safety • Training and education • Diversity and equal opportunity • Non discrimination • Freedom of association and collective bargaining • Child labour • Forced or compulsory labour • Security practices	• Rights of indigenous peoples • Human rights assessment • Local communities • Supplier social assessment • Public policy • Customer health and safety • Marketing and labelling • Customer privacy • Socio economic compliance
Environmental	• Materials used • Energy • Water and effluents • Biodiversity	• GHG emissions • Effluents and waste • Environmental compliance • Supplier environmental assessment

Full list of indicators and sub-indicators can be found at GRI Standards Download Centre

Source: GRI Reporting Standards (2016)

Another emerging reporting template is the **Copper Mark**, by the Responsible Minerals Initiative. Initially developed with funding from the International Copper Association, it combines RS performance with verification, with the intended objective of providing 'assurance' of a company's RS practices. The approach focuses on identified social, environmental and governance issues and associated management practices of a firm to address these issues. The reporting template allows for auditing of information received from a firm.

[21] GRI. Global Reporting Standards. <accessed 20th January 2020>

An example of a certification based scheme, that requires auditing is the **CTC Cobalt (Certified Trading Chains),** that was developed by the BGR to trace RS practices for minerals from artisanal and small-scale mining in the DRC and Rwanda.

Other RS approaches combine due diligence, management approaches and reporting, for example the standardised reporting template created by the Responsible Minerals Initiative. The RMI has developed a host of general assessment tools for firms, with individual templates for tin and tantalum, tungsten and gold. The tools tend to follow a due diligence approach to assessment, requiring firms to provide information on corporate policy, mapping of their supply chains, risk mitigation employed, mine site assessments and public disclosure, through reporting. In addition its Responsible Minerals Assurance Process (RMAP) provides a set of standards and assessments that can be employed for auditing purposes.

Auditing, particularly third-party independent auditing, remains one of the weakest areas for most approaches to RS. Of the seven major assurance schemes that have auditing aspects and apply to large scale mining activities, an IGF (2018) review found that while six of the seven required third-party assessment, only four required third-party assessment as a key determinant of the assessment. As for third parties that conduct the assessment, only two out of the seven schemes (ASI & IRMA) formally accredited these parties.

2.3 Developing a cohesive responsible sourcing approach

The RS approaches discussed in this chapter illustrate some of the measures that firms can currently adapt in their operations and to report on their RS practices. There are numerous other approaches that have not been discussed, but follow the same general principles. They all share a common objective: to increase the uptake of RS practices to support a sustainability agenda. However, as **Error! Reference source not found.** indicates, the assurance of the uptake of RS practices by firms remains inadequate. Of the 19 most commonly used RS approaches, the extent of reporting requirements ranges from commitments in company policy, to full reporting on tracking of origin of materials that can be audited. The gap between self-reporting and auditing remains a significant one, given the risk of greenwashing and social washing.

Table 5: Certification schemes by type of requirements

Compliance requirements	Scheme
Implementation of sustainability requirements beyond commitment and reporting (may include due diligence on conflict risks and human rights violations)	• IFC • IRMA • Fairmined • CTC • ASI • RJC (Responsible Jewellery Council) • Fairtrade • Fairstone
Sustainability commitments in company policies; Sustainability reporting requirements	• GRI • MAC (Mining Association of Canada) • ICMM
Requires traceability and tracking of origin of raw materials, i.e. mine or secondary source	• ASI • Fairmined • Fairstone • CTC (Certified Trading Chains) • Fairtrade

Compliance requirements	Scheme
Requires supply chain due diligence on conflict risks and human rights violation	• WGC (World Gold Council) • RCM (Regional Certification Mechanism) • CFSP (Conflict Free Smelter Programme) • ITSCI (only 3T) • LBMA (London Bullion Market Association)

Source: Sustainability Schemes for Mineral Resources: A Comparative Overview (2017)

The uptake of RS practices by firms has largely remained voluntary and adherence is linked to industry peer pressure and incentives. However, RS practices are beginning to move towards compulsory uptake, driven by actions such as the EU Conflict Minerals Regulation (required by 2021) and the LME RS requirements (required by 2023).

As firms move from a 'guidance' into a 'required' phase, the fragmentation of these RS approaches will be a challenge for uniformed adherence. These challenges will include issues such as: which RS standards should be followed; do these RS standards positively and adequately impact sustainability; can these RS standards be operationalised given a firm's knowledge and resources and how will RS compliance be reported and assured?

For the adaptation of RS practices to meet the wider sustainability agenda, as well as retain the competitiveness of businesses, a cohesive RS approach needs to developed. The development of such an approach will need to incorporate lessons learnt from existing approaches, identifying weakness that need to be addressed and through engagement with stakeholders from firms to local communities.

The RE-SOURCING Project looks to build such engagement through a stakeholder platform (see RE-SOURCING Inception Report 2020 for more details). In this engagement, the project will focus on three key sectors that contribute to the larger sustainability agenda: Renewable Energy, Mobility and Electric & Electronic Equipment. The next chapter provides an overview of the importance of RS in these sectors.

3 Responsible Sourcing and The EU's Sustainability Agenda

The EU's current commitment to the support sustainable growth and development is outlined within the European Green Deal (2019). The Communique outlines four key **commitments** for the EU:

- Become climate-neutral by 2050
- Protect human life, animals and plants by cutting pollution
- Help firms become world leaders in clean products and technologies
- Help ensure a just and inclusive transition.

These commitments translated into **goals** to be addressed by four key sectors:

- Energy: Decarbonise the energy sector – the production and use of energy account for more than 75% of the EU's greenhouse gas emissions.
- Buildings: Renovate buildings to help people cut their energy bills and energy use – 40% of the EU energy consumption is by buildings.
- Industry: Support industry to innovate and to become global leaders in the green economy – European industry only uses 12% of recycled materials
- Mobility: Roll out clean, cheaper and healthier forms of private and public transport – Transport represents 25% of EU emissions.

The 2019 communique sets out **an initial roadmap** to deliver the Green Deal, outlining the key polices and measures such as the European Industrial Strategy[22] and the new Circular Economy Action Plan [23] and are expected to be updated and evolve. It states that 'All EU actions and policies will have to contribute to the European Green Deal objectives' [24]. For these commitments and goals to be achieved, the sourcing of inputs in these sectors need to adhere to the sustainability agenda, and therefore the uptake of RS practices by stakeholders becomes essential. The RE-SOURCING Project focuses on three key sectors that are central to the EU Green Deal:

Renewable Energy: Renewable energy sources include wind power, solar power (thermal, photovoltaic and concentrated), hydro power, tidal power, geothermal energy, ambient heat captured by heat pumps, biofuels and the renewable part of waste[25].

Mobility: Mobility sector includes manufacturing motor vehicles (passenger cars, mini busses, busses, trucks, motor cycles) and other transport equipment (ships, airplanes, trains).

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[22] European Commission (2020) A New Industrial Strategy for Europe: Communication from the commission to the European parliament, the European council, the council, the European economic and social committee and the committee of the regions. <accessed 20th April 2020>

[23] European Commission (2020) A new Circular Economy Action Plan For a cleaner and more competitive Europe: Communication from the commission to the European parliament, the European council, the council, the European economic and social committee and the committee of the regions. <accessed 20th April 2020>:

[24] European Commission (2019) The European Green Deal: Communication from the commission to the European parliament, the European council, the council, the European economic and social committee and the committee of the regions. <accessed 20th January 2020>

[25] Source: Eurostat Renewable Energy Statistics <accessed 20th February 2020>

Electric & Electronic Equipment: This includes manufacture of computer, electronic and optical products and the manufacture of electrical equipment.

The raw materials, particularly minerals and semi-manufactured materials that feed into these sectors come from several non-EU countries, with domestic EU mineral production covering only a small share of EU's demand of primary minerals (see Figure 5). A majority of the ores are imported from the following countries[26]: Chile (copper, lithium), Peru (copper), Brazil (iron), Guinea (bauxite), Indonesia (tin), South-Africa (platinum), Philippines (nickel); USA (zinc, molybdenum), Australia (zinc, titanium), Bolivia (zinc), Turkey (magnesium) and DRC (cobalt, tantalum, tin, gold), Gabon (manganese), Canada (titanium), India (titanium), Norway (titanium) and China (rare earths).

The RE-SOURCING Project focuses on non-energy raw materials encompassing minerals and metallic products, which are grouped as follows[27]:

Traditional Minerals/Metals: Refers generally to minerals consumed by manufacturing over decades. Using the London Metals Exchange as a benchmark, the oldest metals trading exchange, the following minerals (and their metallic form)are included under traditional minerals: Aluminium (Bauxite), Copper, Zinc, Lead, Steel (iron ore).

Conflict Minerals: Refers to minerals particularly associated with the African Great Lakes Region. Using the Responsible Minerals Initiative definition, this group includes Tantalum, Tin, Tungsten and Gold (3TGs) under this heading. Both US Legislation (Dodd Frank Act) and the EU Conflict Mineral Regulations refer to this grouping of conflict minerals.

Green Technology Minerals: Refers to a cluster of emerging and traditional minerals that are heavily used in the manufacture of green technologies, such as wind turbines, electric vehicle batteries and solar panels. The World Bank, in its seminal report on The Growing Role of Minerals and Metals for a Low Carbon Future include the following minerals (minus those already included in the above two categories): chromium, cobalt, indium, lithium, manganese, molybdenum, nickel, platinum group metals, rare earth metals, silver and titanium.

The next sections briefly describe the three sectors and the extent to which RS practices are being addressed within each sector.

[26] STRADE (2017). Socio-economic and environmental challenges in the EU mineral supply. <accessed 20th February 2020>

[27] While this is an extensive list of minerals, we expect certain minerals to be prioritised for research as the RE-SOURCING Project progresses.

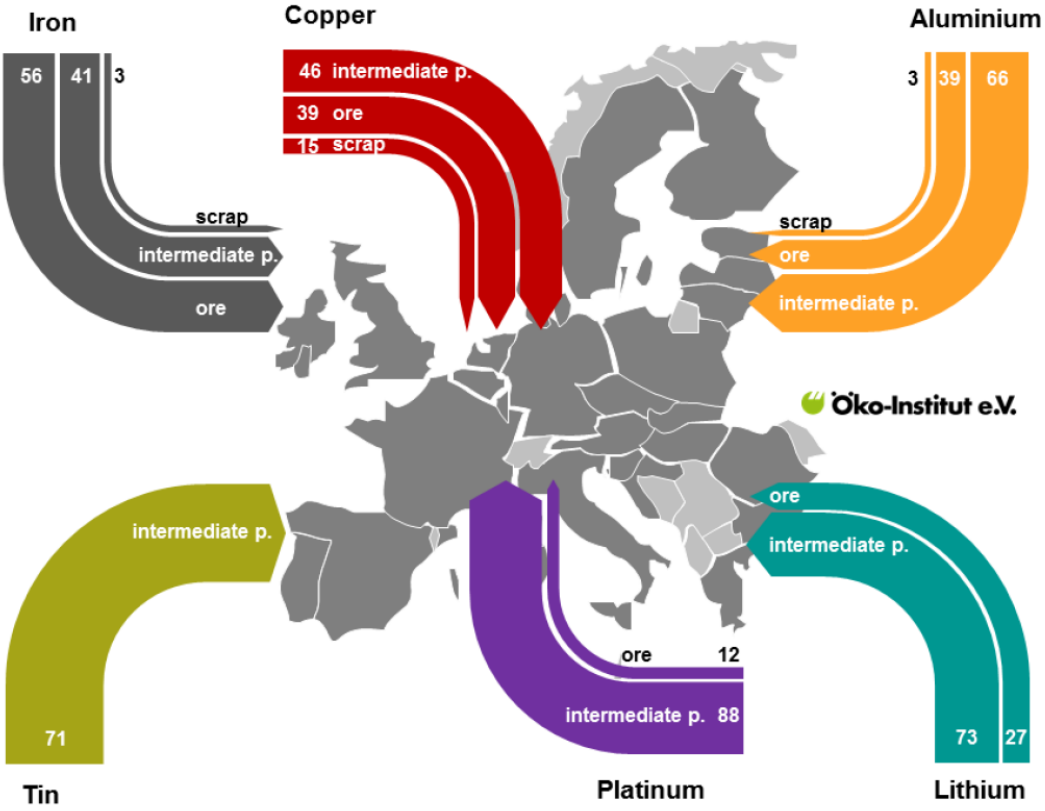

Figure 5: Gross EU imports of ores & intermediate product; market shares (%)

Source: Socio-economic and environmental challenges in the EU mineral supply STRADE (2017)

3.1 The renewable energy sector

The Renewable Energy (RE) sector encompasses the installation and operations for the production and delivery of energy that originates from renewable sources. In 2017, 30% of energy production in the EU was from renewable sources. The EU Directive 2018/2001 on the promotion of the use of energy from renewable sources has set a target of 32% by 2030[10]. Broadly, renewable energy is produced from the following sources:

Solar – the conversion of sunlight into electricity using photovoltaics or solar cells. Solar panels**,** a central component of solar energy production, are predominantly manufactured in China, which is home to seven of the top 10 global producers. The major EU producers are firms based in Germany, with a few firms in Spain, Slovenia, Poland, Estonia, Bulgaria, Austria.

Wind – one of the fastest growing renewable energy technologies; wind turbines transform kinetic energy of the air into rotational energy. For wind turbines, the largest manufacturing company is based in Denmark, with five of the top 10 firms based in China. Within the EU, firms from Germany and Spain are included in the top 10 manufacturing firms.

Geothermal energy – from medium to high temperature resources, usually located in or close to tectonically active regions. For geothermal energy equipment, most of the manufacturers are based outside China and include Italian, Swedish, Belgian, Japanese and American firms.

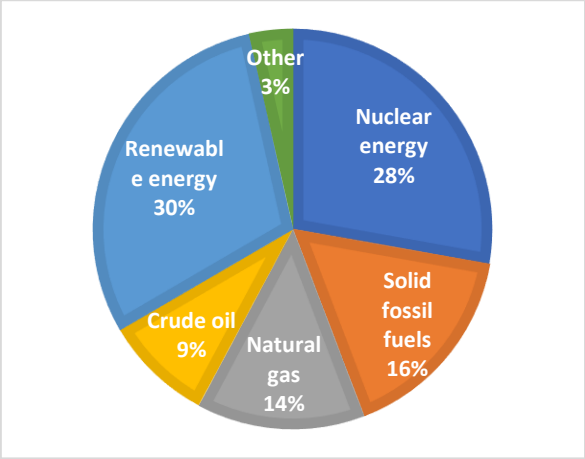

Figure 6: Energy production mix in EU 28 (2017)

Source: Eurostat (2019)

Hydropower – energy derived from flowing water by driving turbines, with dams or reservoirs or run-of-the-river power plants. Hydropower includes the production of turbines that generate electricity from water flows. Ignoring the construction of dams themselves, several European firms are active in this area, including Austrian, German and Japanese firms.

Bioenergy – the traditional combustion of biomass (wood, animal waste, charcoal).

Ocean – these are promising technologies still under development focusing on wave energy, tidal energy, salinity gradient energy, ocean thermal energy conversion. Ocean technology is one of the few categories not to have major Chinese manufacturers.

3.1.1 RS practices in securing raw materials for the RE sector

The RE sector utilises a host of minerals and metals, combining traditional and green technology minerals. These include iron and steel, cooper, aluminium, chromium, lead, tin, zinc, molybdenum, manganese, indium, silver, platinum group of metals, nickel and rare earths. As indicated in Figure 5, most of these minerals come from outside the EU. Challenges in the responsible extraction, tracking and sourcing of these minerals are well noted. While some RS approaches (such as the Copper Mark, Responsible Steel Initiative, ICMM responsible guidelines etc) address these mineral chains, the extent to which these RS practices are incorporated within the RE sector remain opaque.

Of the studies that examine RS issues in the RE sector, the evidence suggests RS practices are limited. For example, SOMO[28] assessed eight wind turbine manufacturers on their adherence to the OECD Due Diligence Guidance for Responsible Business Conduct and found that only the first two steps (integration in policies and systems; identification of risks) have been partially fulfilled. Steps 3-6 (take action; monitoring results; communicating transparently; providing remedy) have not been addressed by any of the firms. Given the number of EU firms that are the top producers for many of the renewable energy equipment, the uptake of RS practices in these firms needs to be more widely assessed and addressed.

[28] SOMO(2019) Human Rights in Wind Turbine Supply Chains Update 2019. <accessed 1st March 2020>

3.1.2 Role of major initiatives & associations

A number of industry associations are found within the EU RE sector, however they are primarily focused on promoting the expansion of renewable energy as well as advising member firms on a host of industry challenges related to investment, public private partnerships in projects, technical standards for equipment and updating members on policy and technology news and discourse. Limited communication on RS practices are noted at this time, and further engagement is required with these associations to establish their commitment to RS practices. Some of the major associations identified for further engagement in the Re-SOURCING Project include:

- Wind Europe
- SolarPower Europe
- Fuel Cell Europe
- International Geothermal Association
- IRENA - International Renewable Energy Agency
- IEA - International Energy Agency
- Offshore Renewables Joint Industry Programme (ORJIP) Offshore Wind (led by Carbon Trust)
- Cross-sector platform on wind turbine recycling (partnership between WindEurope, Cefic and EUCIA)
- SafetyOn (run in partnership with the Energy Institute)
- Bioenergy Europe
- Business & Human Rights Resource Centre
- International Hydropower Association

3.1.3 Responsible sourcing and the sustainability agenda

Under the EU Green Deal[29] an expansion within the RE sector is required, which will include an increase in offshore wind production as well as cross-border and regional cooperation for innovative technologies and infrastructure (smart grids, hydrogen networks, etc). To achieve these targets, minerals and metals will be required for the goods and services consumed by the sector. While a number of EU guidelines and directives address issues, such as the environmental protection, labour, health and safety, use of Best Available Technologies (BAT) in operations, they do not specifically address the RS aspect (apart from the EU Conflict Mineral Regulations). Therefore, the link between uptake of RS practices and delivering on the sustainability agenda requires further work.

3.2 The mobility sector

The mobility sector includes manufacturing of motor vehicles (passenger cars, minibuses, busses, trucks, motorcycles) and other transport equipment (ships, airplanes, trains). The sector contributed nearly 3.5% to EU27 GDP, with 25% of the EU's GHG emissions came from the transport sector[30]. Under the Green Deal, 90% reduction of emissions from transport is required by 2050 to achieve climate neutrality with necessary contribution from all modes of transport: road, rail, aviation and waterborne transport (emissions from mobility sector differ strongly by the transport mode). The

[29] European Commission (2019) The European Green Deal: Communication from the commission to the European parliament, the European council, the council, the European economic and social committee and the committee of the regions. <accessed 20th January 2020>

[30] European Commission (2019): Statistical Pocketbook 2019. EU Transport in figures. <accessed 22nd January 2020>

most important sector by far is road transport, which is responsible for more than two thirds of EU GHG emissions (71.7 % in 2017).

The main elements of the European strategy for low-emission mobility include speeding up the deployment of low-emission alternative energy for transport and moving towards zero-emission vehicles. For this to be successful the shift to Hybrid and Electric Vehicles is required; in 2050 80% of all newly registered passenger cars globally, could be powered by alternative drivetrains[31]. The key to e-mobility is the production of strong, efficient and affordable batteries. Currently the best solution is a shift to BEV (**Battery Electric Vehicles**) since they have the highest degree of efficiency when compared to other alternative drivetrains[30]. The EC projects the EU batteries market to increase by a factor of 4 to 10 by 2025, creating a market valued at €250 billion/year[32].

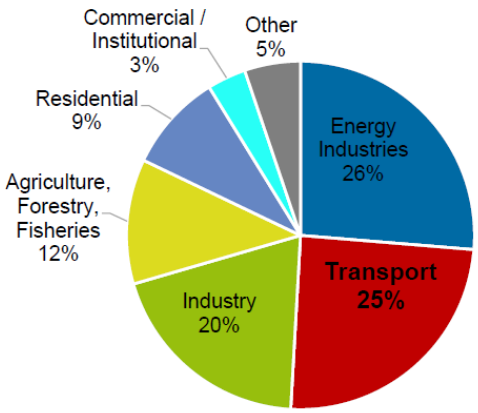

Figure 7: GHG by Sector in EU 2017

Source: EC Statistical Pocketbook (2019)

3.2.1 RS practices in securing raw materials for the Mobility sector

The mobility sector requires a wide range of raw materials that differ according to the application. The major minerals used in the mobility sector are listed below, and are sourced from a number of non-EU regions:

Traditional Minerals: Steel, Copper, Aluminium

Conflict Minerals: 3TGs

Green Technology Minerals: Rare Earth, PGMs, Cobalt, Nickel, Natural Graphite

For batteries, currently the most widely used lithium-ion battery cell chemistry is NMC (Nickel-Manganese-Cobalt). This type of cell uses an anode made of graphite applied to a copper-foil and a cathode containing lithium-nickel-manganese-cobalt-oxide on an aluminium-foil.

The GVC for securing these raw materials face many RS challenges and RS practices are addressed for by a number of approaches (see next section). Given that the most important vale addition within mobility market will come from electric batteries, RE-SOURCING Project will focus on cell manufacturing. Currently, Asia dominates the e-battery market, with China, Japan and South Korea being the largest players. In the US only Tesla produces larger amounts of cells. Europe's share in the global battery cell production represents only 3% while Asia accounts for 85%[33]. However, there are several projects in Europe that aim at cell manufacturing and some are already in production (e.g. LG Chem in Poland).

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[31] Oko Institute (2019). Lithium-ion batteries: Global resource demand and recycling potential until 2050. <accessed 1st March 2020>

[32] EC (2018). Our Vision for a Clean Planet for All: Industrial Transition.

[33] Tsiropoulos I., et.al.(2018): Li-ion batteries for mobility and stationary storage applications –Scenarios for costs and market growth. <accessed 24th January 2020>

As illustrated in **Error! Reference source not found.**, many of these minerals come from outside the E U and RS practices would require examining the conditions under which these minerals are extracted. With some part of the value chain based in other countries (such as China) RS practices also need to consider the downstream segment of the GVCs.

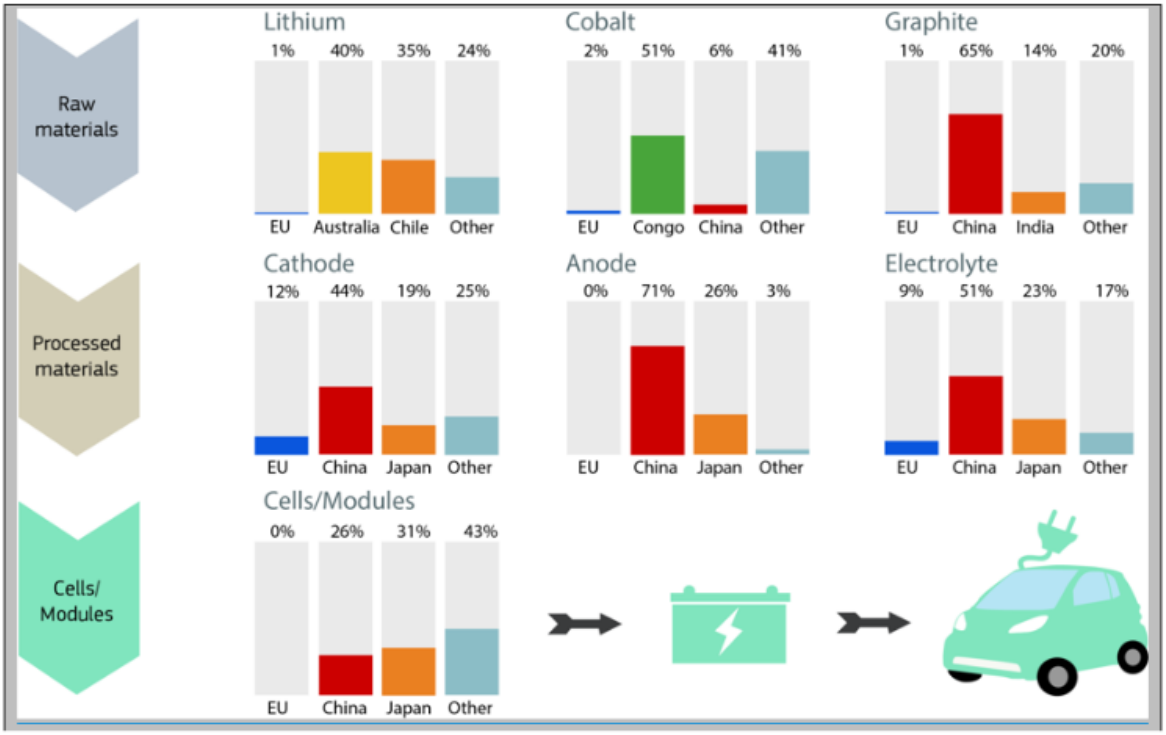

Figure 8: Supply dependency of materials along the value chain for electric vehicles' batteries

Source: European Commission (2019): On the Implementation of the Strategic Action Plan on Batteries: Building a Strategic Battery Value Chain in Europe. (retrieved 24.01.2020)

3.2.2 Role of major initiatives & associations

A number of automobile sector associations have been identified that aim at bringing together various actors to form a common approach to RS. For example, **Drive Sustainability** is an initiative bundling EU responsible sourcing activities of the automotive sector. They promote 'standardization and harmonization of supply chain approaches to achieve long term impact, while also maintaining independent supply chain management'. One of their main objectives is to integrate sustainability in the overall procurement process[34]. Similarly, the **Responsible Cobalt Initiative**, with a high relevance for batteries, was founded by the China Chamber of Commerce for Metals, Minerals and Chemical Importers (CCCMC) and represents a collaboration between Western and Eastern stakeholder's responsibility along the supply chain for cobalt sourcing.

Partnerships also exist between **mineral suppliers and automakers**: In 2020, the Responsible Sourcing Blockchain Network will be launched introducing a step-by-step digital record that will track cobalt

[34] Drive Sustainability (2019). Vision and mission. <accessed 27th January 2020>

from mine to end-manufacturer [35]. BMW and the Chilean copper producer CODELCO have announced an agreement on cooperation for sustainable and transparent procurement of copper[36]. BMW is also performing due diligence within their supply chains, and starting from 2020 they plan to source cobalt from Australia and Morocco to avoid issues related to the adverse situation in the DRC. In parallel, BMW is engaging in a pilot project in DRC's ASM sector, in collaboration with the GIZ, aiming to incorporate DRC based production into the BMW the supply chain. Furthermore, Ford and Fiat Chrysler have established a partnership to ensure that no child labour in the mining of cobalt is present.

Other partnerships are between **battery manufacturers and automobile makers**. For example, Volkswagen and Northvolt (59/59 Joint Venture) plan to build a battery cell production factory in 20203/2034 in Germany (Salzgitter where the VW battery research site was opened September 2019)[37]. Northvolt also aims at establishing a cell manufacturing factory in Sweden using clean energy to power the battery cell manufacturing[38]. Such partnerships are aimed at tracking supply chains to establish responsible sourcing for sector.

The major industry associations that are addressing RS practices within this sector include alliances formed by automobile makers as well as battery specific alliances. The major associations include:

- ACEA: The European Automobile Manufacturers` Association representing 16 major Europe-based cars, wan, truck and bus makers.
- VDA: German Association of the Automotive Industry.
- Drive Sustainability: Led by European automobile manufacturers, and other international firms
- European Battery Alliance: A network of over 400 public and private sector organisations across the battery value chain.
- Global Battery Alliance: Hosted by the World Economic Forum the alliance aims to scale-up efforts for battery value chains to meet the sustainability agenda.

3.2.3 Responsible sourcing and the sustainability agenda

To meet the EU Green Deal targets and retain the competitiveness of its automobile sector, Europe requires the building of a strong cell manufacturing sector (as the transformation to electric mobility also means that internal combustion engines will be produced in lowering volumes). So far, the engine has been one of the main steps in value adding, with this step being lost, battery cell manufacturing becomes a key element to maintaining a strong automotive industry in Europe.

The European Strategic Action Plan on Batteries, adopted by the European Commission in 2018, is an important initiative for this sector. The EU can be expected to account for up to €250 billion a year of the global battery market from 2025 onwards while European demand for electric vehicle batteries alone would be around 400 GWh by 2028, creating at least 3-4 million jobs[39].

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[35] Noble, B. (2019). Automakers work to ensure cobalt for EV batteries isn't mined by children. The Detroit News. <accessed 28th January 2020>

[36] BMW (2020): Kooperation mit Codelco. <accessed 28th January 2020>

[37] Elektrauto – news (2019). VW & Northvolt: 16 Gigawattstunden-Batteriefabrik in Salzgitter wird Realität. <accessed 31st January 2020>

[38] Northvolt (2020): Production. <accessed 28th January 2020>

[39] European Commission (2019): on the Implementation of the Strategic Action Plan on Batteries: Building a Strategic Battery Value Chain in Europe. <accessed 24th January 2020>

Given the importance of electric batteries, both to meet the EU's sustainability agenda as well as retaining the automobile sector's competitiveness, the uptake of RS practices is indispensable. Specific to the mobility sector, RS challenges arise from the relevance of batteries in material demand. For lithium for example, demand has risen continuously (for all batteries: IT, transport etc): in 2016, the demand for batteries was 39% of global end-use market[40], rising to 56% by 2018[41]. The increased competition for these materials requires sourcing from many different countries, thus necessitating measures to monitor and track how these materials are extracted and manufactured before they reach EU borders. RS challenges are also noted as new battery production capacities in Europe are developed (against technology advantage of China and other countries). Such manufacturing will also require raw material inputs from outside the EU. In addition, EU based battery manufacturing will require addressing RS issues from the very start of production (for example using only renewable energy for operations).

Sourcing materials from recycling can play a significant role in the medium to long term in the supply of raw materials for battery cell manufacturing. Currently recycling takes place for the few traction batteries that have reached their end of life as well as for portable li-ion batteries. Recycling is also focusing on other battery metals such as cobalt, copper and nickel, which can be recycled with efficiencies of up to 90%. Steel and aluminium from the cell packaging are also being recycled.

Other materials pose a bigger challenge to be extracted economically. Some recyclers are feeding lithium containing slack to primary processing routes since the material is similar to ore. No commercial graphite recycling is currently taking place, however R&D projects are working on the issue[42]. The RS issues within the recycling sector (discussed in a later section) need to be examined, particularly how these operations and their RS practices align with the sustainability agenda.

Given the contribution of the Mobility sector to lowering GHG emissions and meeting the targets set by the EU Green Deal, RS practices within this sector are important. Considerable progress has been made by the automobile and electric battery associations in addressing RS challenges. To what extent these RS practices are adequate and how can they be further strengthened will be explored in the RE-SOURCING Project.

3.3 The electric & electronic equipment sector

The electronics production network encompasses a wide variety of processes and firms, from suppliers of raw materials, to smelters, refineries, providers of chemicals and component producers; from research & development to manufacturing and assembly; from brand name firms to retailers and telecommunication providers, churning out and disseminating a wide range of different products. Taking the full life cycle of electronics products into account, enterprises involved in recycling, upcycling or disposal of such products are also included.

[40] USGS (2017). Lithium Profile. <accessed 1st March 2020>

[41] USGS (2019). Lithium Profile. <accessed 1st March 2020>

[42] Doris Schüler, Stefanie Degreif, Peter Dolega, Diana Hay, Andreas Manhart, and Matthias Buchert (2017): EU raw material import flows - acknowledging non-EU environmental and social footprints (February 2017). STRADE Policy Brief 01/2017. <accessed 27th January 2019>.

Even when only looking at the manufacturing and assembly phases of electronics hardware, this is one of the largest industries in the world: with approximately 18 million workers[43] who produce 20% of global imports and generate US$1.7 trillion trade in electronics products.[44]

This industry is further characterised by its globalised nature, outsourcing, fragmentation, complexity, competitiveness, concentration and continuous product development, and a prevalent lack of transparency.[45]

The global electronics industry is highly fragmentised. Brand firms typically work with numerous contract manufacturers. Equally, contract manufacturers produce for different brand firms, making the industry a complex global production network. Beyond the first tier of contract manufacturers, there is large network of relationships, involving thousands of entities. Electronics devices are typically composed of hundreds of thousands of components, and these components in turn may consist of countless parts.

3.3.1 RS practices in securing raw materials in the EEE sector

Given the range of products that are manufactured within this sector, EEE makes use of the **traditional** minerals (copper, iron ore, zinc etc) as well as **green technology** minerals (such as cobalt, lithium, graphite, mica). The 3TG minerals (tin, tantalum, tungsten and gold) are essential in the production of electronic goods and, until now the biggest focus of RS practices has been on the multi-national firms selling consumer electronics (Apple, Samsung, Sony etc). At the same time some minerals with high sourcing risks, such as mica commonly used in electrical devices, have not received the same attention. Given the complexity of EEE production chains, several actors and RS risks have been noted.

Mining & extraction of minerals: The extraction of minerals used in the EEE sector involve production from both the Artisanal Mining Sector (ASM) as well as mechanised mining (Medium to Large Scale Mining). Mining is usually associated with negative environmental impacts on the environment and ASM activity can include wider social and environmental risks as well.

The minerals/metals used in the EEE sector mostly originate from non-EU countries. In general, these minerals are sourced from: Africa (DRC, Gabon, South Africa); Latin America (Argentina, Brazil, Bolivia, Chile, Mexico, Peru) and in Asia Pacific (China, India, Indonesia, Russia, Philippines, Australia, New Caledonia). The main risks associated with the supply of minerals for the EEE sector are linked to the 3TGs from conflict and high-risk areas. These risks include:

3T Risks that non-state armed groups or security forces:

- Physically control the mines. Use forced or compulsory labour to mine.
- Illegally tax or extort money or minerals from miners.
- Logistical assistance or equipment from producers.
- Commit serious abuses: (Forced or compulsory labour. Worst forms of child labour. Torture, cruel, inhuman or degrading treatment. Sexual violence. Serious violations of international humanitarian law.

[43] McFalls (2016). The impact of procurement practices in the electronics sector on labour rights and temporary and other forms of employment. International Labour Office, Geneva.
[44] UNCTAD (2015). Trade in ICT Goods and the 2015 Expansion of the WTO Information Technology Agreement.
[45] Persistent Market Research (2016). Consumer Electronics Market Revenues to Rake in at a CAGR of 15.4%, Smartphones to Continue Dominance over 2016-2020. . <accessed 30th March 2020>

Gold related Risks of direct or indirect support to non-state armed groups:

- Risks of serious abuses
- Risks related to contracting of security forces
- Risks of bribery to conceal or disguise illicit origin
- Risks of fraudulently misrepresented information on transportation routes, chain of custody and circumstances of extraction, trade, handling
- Risk of non-existent due diligence

Traders and exporters – ASM output related: Local traders or exporters from country of mineral origin refer to actors that are involved in buying output from artisanal and small-scale miners and either selling this product to other larger traders or to mining firms for refining. The risks that are specific to the supply chain of 3T from conflicted and high-risk areas include risks that non-state armed groups or security forces will:

- Illegally tax or extort exporters.
- Control exporters through ownership rights or other means.
- Sell minerals to exporters.
- Transport minerals for exporters.

There are also risks that are specific to the interaction with international concentrate traders as well as mineral re-processors that are applicable for the supply chain of 3TG.

Smelters/Refiners: The smelter/refinery have been referred to as the choke point by the OECD, as after this stage it becomes very difficult to trace the origin of the mineral. Given that smelters and refineries tend to be mechanised processing units and are often medium to large-scale industrial units, most of the risks that arise in this sector are related to the nature of the industrial work undertaken. These risks have been highlighted in chapter two for all firms.

Downstream: These include metal traders and exchanges, component and product manufacturers, and contract manufacturers. The main risks in the supply chain of 3TG from conflict and high-risk areas is related to risk of non-existent or inadequate due diligence activities by these firms. Risks to workforce is also a major issue, as most of electronics manufacturing is done in China, South East Asia (Malaysia, Philippines, Indonesia, and Vietnam), India, Mexico, Brazil and East Europe. With millions of workers in low-cost production countries, labour rights violations are rife.

3.3.2 Role of major initiatives & associations

Apart from the general initiatives discussed in chapter two, the following initiatives are more specific to the EEE sector:

- Responsible Business Alliance initially founded by electronic companies it has now expanded to include retail, auto and toy companies. RBA Members in 2018: 145 in 17 countries.
- GeSI, which is focused on ICT sustainability, has a range of international members and partnerships – including leading ICT companies and global businesses.
- The Netherlands has set up a European Public-Private Partnership (PPP) for Responsible Minerals Sourcing (European Partnership for Responsible Minerals; EPRM).
- Public-Private Alliance for Responsible Minerals Trade. The initiative supports projects that improve due diligence and governance systems that promote ethical supply chains. These projects have a geographical focus on the DRC and the surrounding Great Lakes Region of Central Africa.

- Responsible Mica Initiative, which works across industries and sectors with the main aim of establishing a responsible and sustainable supply chain, that is free from child-labour by 2022. Its membership is open to experts, businesses and civil society engaged with the mica supply chain.
- GoodElectronics Network brings together networks, organisations and individuals that are concerned about human rights and sustainability issues in the global electronics supply chain. Members include trade unions, grassroots organisations, campaigning and research organisations, academia and activists.
- International Campaign for Responsible Electronics is a network of activists that promote corporate and government accountability in the EEE sector. It seeks to build capacity for grass root organisations and adversely affected local communities along the EEE value chain.

3.3.3 Responsible sourcing and the sustainability agenda

The EEE sector will be key for the industrial modernisation needed for a circular economy and serves several key EU manufacturing businesses: automotive (electrification of vehicles and autonomous mobility), Industry 4.0, Internet of Things (IoT) devices and systems, 5G, energy, healthcare, aeronautics and space. In 2018, the EC launched a process to update its current Strategy on Electronics that was adopted in 2013. Several EU directives specifically address the EEE sector that impact RS practices, including the following:

- The EU Regulation 2017/821 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas.
- The EU Regulation on Conflict Minerals requires importers to adhere to the due diligence recommendations of the OECD Guidance. It is noted that the EU Conflict Minerals Regulation is only applicable for EU firms importing raw materials and does not focus on sourcing of semi-manufactured products that may include conflict minerals.
- Relevant EU Regulations include the WEEE Directive (Waste Electrical and Electronic Equipment. The new WEEE Directive 2012/19/EU became effective on 14 February 2014.
- Directive (EU) 2017/2102 (2017) amending Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The RoHS 2 Directive restricts the use of mercury, lead and other hazardous substances in electrical and electronic devices.
- Electronics Strategy for Europe was adopted in May 2013, which aims to maintain Europe at the leading edge in the design and manufacturing of micro and nano-electronics, and to provide benefits across the economy.
- A European Industrial Strategic Roadmap for Micro- and Nano-Electronic Components and System

A number of RS approaches are found within the EEE sector, some of which have a regulatory component as well. However, the complexity of the GVCs that are found in this sector, provide challenging in uniformed reporting on the nature and extent of RS practice uptake across a variety of firms.

3.4 Secondary resources and circular economy

In the objectives of the EIP Raw Materials to reduce supply risks for raw materials of economic importance and higher risk of supply interruption[46], the European Commission is not only focusing on the principles of RS, but also follows the strategy of reducing import dependency through a more resource efficient and climate-resilient economy. Besides supply from domestic primary sources and improved resource efficiency, this objective should be achieved through improved recycling rates of secondary raw materials and a transition to a more circular economic model. Special focus is given to Critical Raw Materials (CRMs) as defined by the European Commission and strongly related to the three sectors RE, Mobility and EEE.

Recycling of secondary resources has a long-standing history for the sustainability agenda. Over the last decades a highly professionalized recycling industry has developed, especially focusing on the recovery of precious and critical metals, among others. Still, recycling rates are not equally high for all metals. To some extent, this is because of an increased metal use over time and long metal in-use lifetimes. More relevant are the relatively low efficiencies in the collection and processing of waste materials and inherent limitations in recycling processes. In addition, primary material is often relatively abundant and low-cost, thereby keeping down the price of scrap and hampering economic incentives for recycling. Bulk metals such as copper achieve high recovery rates above 50%, while the recovery of most CRMs is still below 10% or close to 0%.

Recycled materials are not just sourced within the European Communion but are increasingly also imported from other regions in the world. Driven by the value of secondary raw materials, developing countries have also experienced a steep growth in recycling activities over the past decade. The informal sector and businesses engaged in recycling provide subsistence and economic benefit to their communities and are contributing positively to the circular economy. In the absence of appropriate policy frameworks, control mechanisms and technical capacities, however, their activities often have negative impacts on human health and the environment. Collection and crude recycling techniques of e-waste mainly happens in the so-called informal sector, causing various issues, among others, exploitation of the most vulnerable individuals (incl. child labour), tax avoidance and illegal practices, as well as unfair competitive advantages over formal players through the externalization of environmental and social costs.

Such issues add another dimension of RS of secondary raw materials. **Sustainability standards related to the responsible sourcing of secondary raw materials are in its infancy**. An early framework addressing the concept of inclusive recycling, allowing the fair trade of secondary raw materials while including and developing the prevailing informal sector in developing countries, was published in 2017 as an International Workshop Agreement under ISO[47]. The private industry is also slowly increasing their efforts to address RS for secondary resources, such as Apple, who supports responsible sourcing for primary and secondary materials through their conflict minerals approach, which includes recycling facilities.

Although recycling contributes to the effort to keep materials in the loop, it still represents the traditional linear economy, where raw materials follow a value chain from primary mining to waste materials. The European Commission sees their Circular Economy Action Plan, as a key to putting the

[46] SIP. Strategic Implementation Plan of the European Innovation Partnership on Raw Materials

[47] ISO (2017). Guidance principles for the sustainable management of secondary metals. IWA 19:2017, International Standardization Organization, Geneva, Switzerland

EU economy onto a sustainable path and delivering on the global Sustainable Development Goals and closing the material loop. In a circular economy, the value of products and materials is maintained for as long as possible and waste and resource use are minimized (see Figure 9).

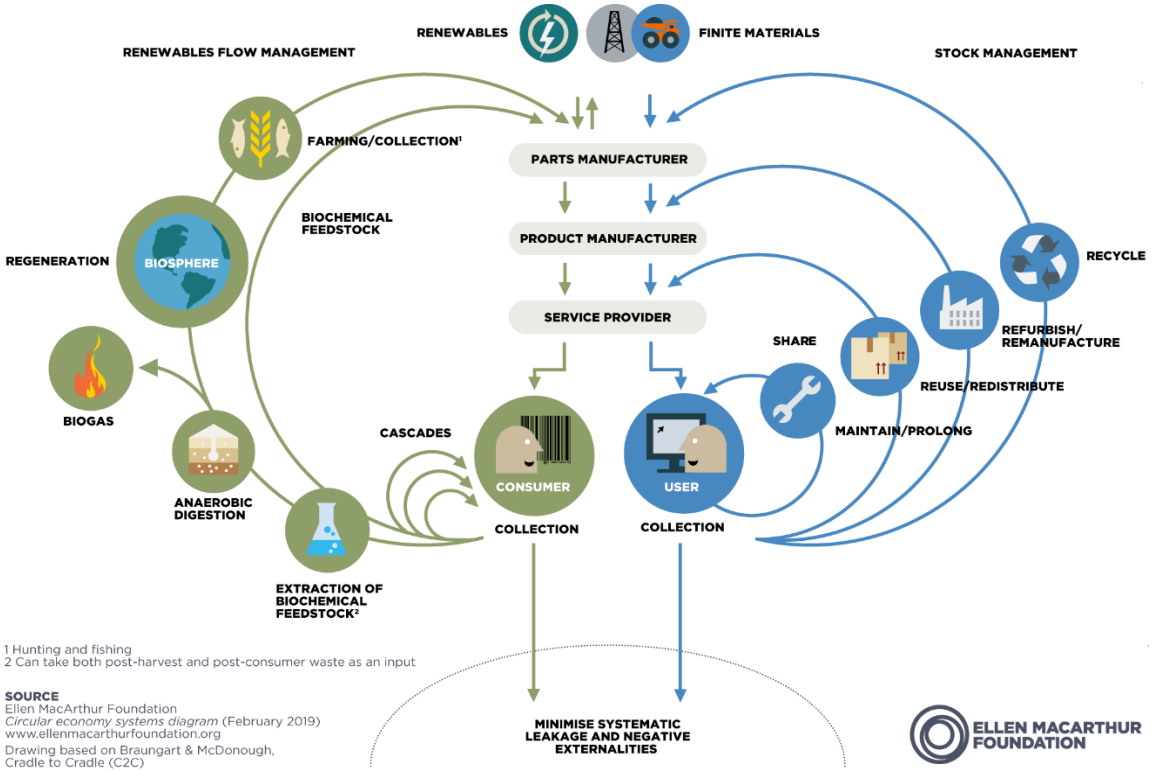

Figure 9: Role of Renewables and Primary Materials in the EU

Source: Ellen Macarthur Foundation (2019)

In its effort to mainstream the RS concept in the EU and beyond, the RE-SOURCING project is considering the aspects of secondary resources, recycling and the circular economy as laid out above and will address related challenges in the RE-SOURCING Platform. In a transition to a circular economy, Responsible Sourcing, thus, means looking at the beginning of the cycle and addressing the issue of sustainable sourcing through careful analysis of a wide range of impacts.

4 Summary

RS practices are ingrained within the wider sustainability agenda; they are a means to an end. Driven by an international agenda to consider the economic, social and environmental consequences of raw material extraction and consumption, approaches to RS practices are numerous and varied. A review of the current RS approaches outlines positive contributions to increase the uptake of such practices, but a number of challenges remain.

RS approaches have largely focused on the behaviour of firms, through requiring changes in their management and business operation strategies as well as generating and reporting information on their procurement practices. These approaches range from offering guiding principles, due diligence templates, industry standards and standardised reporting practices. Some have evolved from collective industry learning, while others originate from civil society and investors. The role of governments remains limited, with RS being addressed through non-regulatory measures, apart from the EU Critical Minerals Regulations.

Within these RS approaches, standardised reporting to provide assurance remains a key weakness: the ability for these approaches to offer comparable measurement of RS activities and achievements, that can be uniformly assessed, ranked, and even be aggregated to a few indices, remains unmet. This resulting inefficiency hampers the ability to measure the impacts of firm RS practices. Reporting activities remain at the individual firm level and cannot be meaningfully aggregated up to the sector and industry level.

There is considerable overlap in identified RS challenges within these RS approaches, which is easier to document. However, how these initiatives are operationalised and what strategies are employed remains fragmented. Thus, it is difficult to collate the impacts of these RS strategies on the sustainability agenda in any meaningful way. Some initiatives focus on firm behaviour (OECD guidelines for MNCs), others on individual minerals (cobalt), and still others on challenges of supply chain management (such as labour rights). Given the immensity of the RS challenges, such fragmentation is to be expected. However, there is a need to merge these fragments using a system-based approach. Such an undertaking will need to create a holistic approach to RS by facilitating consistency in definitions, standards and reporting.

For the EU, the targets set under The Green Deal (2019) require contributions from the renewable energy, mobility and the electric & electronic goods sector. The global value chains that provide the final products in these sectors extend well beyond the EU borders. For these sectors to contribute to the EU sustainability agenda, responsible sourcing of their raw material inputs is essential. While progress has been made in the mobility and electric & electronic goods sectors, these approaches need to be rationalised and take a more cohesive form. Within the renewable energy sector, the uptake of RS practices appears to be limited and needs to be further examined.

Given complexity of the value chains that provide for the inputs into these sectors, the RS challenge is not simple to address. International cooperation and a globally agreed RS definition is required expanding practices beyond EU borders.

Pursuing international consensus in the form of collaboration and a common definition serves an important purpose; it helps creating a level playing field for RS compliant companies and countries that could otherwise be economically worse off compared to their non-compliant competitors. Furthermore, artisanal and small-scale mining, which is a high-risk category for responsible sourcing firms, are threatened to be marginalised and excluded from supply chains. RS practices need not be

limited to operationalisation by large firms alone, medium and small businesses also need to have the capacity to meet such standards.

An international consensus on RS can also unlock the creation of enabling frameworks for firms, sectors and industry. While larger firms may have the management and financial resources to pursue RS practices, medium and smaller firms may require more support in the uptake of these strategies. Aiming for a level playing field for businesses ensures that meaningful progress is made towards the global sustainability agenda, without compromising the competitiveness of firms.

Given how standards are implemented across value chains, actors in different countries (particularly non-EU countries), may require support in understanding and meeting such RS standards. Thus, there is a need for a better understanding the power relations, associated institutions and value systems that facilitate or block responsible sourcing in the sustainability agenda. Much progress has been made on this front, but more remains to be done.

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