Critical raw materials for the EU
Enablers of the green and digital recovery

SUMMARY

The pandemic has highlighted the risk involved, including for the EU, in relying heavily on external suppliers. The EU’s 30 critical raw materials (CRMs) combine two characteristics: they are strategically important for its industry and economy, and there are high risks associated with securing their supply. The notion of strategic autonomy, which has been gaining track recently, calls for a more autonomous and independent EU policy, also in the area of CRMs. Importantly, the core of the EU’s response to the pandemic has been to use it to transform its economy and society. The twin transition to a green and digital future relies particularly on the safe and diverse supply of CRMs. In its journey to a low-carbon economy, the EU should however make sure it does not replace its reliance on fossil fuels with a reliance on CRMs.

While secure access to CRMs has been on the EU agenda for many years, the European Commission has eagerly stepped up its policy in this area since the beginning of its current term, and in September 2020 delivered a new package of measures. These included a new action plan for CRMs that supports initiatives in four main areas: i) developing resilient value chains for EU industrial ecosystems; ii) supporting sustainable and environmentally friendly domestic mining and processing of raw materials in the EU extraction (with priority given to former coal-mining regions); iii) weakening dependency on primary CRMs through better circular use of resources, environmentally friendly products and innovation; and iv) diversifying supply with sustainable and responsible sourcing from third countries. The EU has also launched the European Raw Materials Alliance, joining together the industry, researchers, Member States and civil society to close the main gaps in the value chains.

The European Parliament has been a long-standing supporter of boosting all the elements of CRMs value chains to ensure the security of supply and weaken unwanted dependencies.
Critical raw materials – Key to the EU industry and economy

In a 2018 report, the OECD forecast that yearly global materials use will more than double by 2060 compared to 2011, reaching 167 billion tonnes. Hence, global competition for materials will intensify and so will the environmental pressures. This trend is likely to be even more pronounced for raw materials, such as lithium and cobalt (used in batteries) or borates (used in wind turbines), that are strategically important for the EU industry. Called ‘critical raw materials’ (CRMs) for this reason, they are the focus of a dedicated policy that looks into securing their supply. The EU has identified 30 CRMs that are of a high importance and relevance for the present and future development of its industry and economy, yet there are high risks associated with securing their supply. These materials can be classified into five categories: industrial and construction minerals, iron and ferroalloy metals, precious metals, rare earths, other non-ferrous metals and bio and other materials.

These 30 CRMs are used in many important, clean and future-oriented industries and value chains, and as such contribute to increasing the EU’s long-term competitiveness and job-creating potential. A Commission foresight study, published in September 2020, concluded that the demand for CRMs will come from various strategic sectors such as digital technologies, renewable energy, electric mobility, defence and aerospace. Furthermore, some of these technologies and sectors are competing for the same materials. Another study for the Commission highlighted a number of broad trends that will all increase the demand for CRMs. These include the growth of wind power and energy storage systems; the decarbonisation of transport and the reduction of air pollution through increased use of electric vehicles; ongoing search for better-performing materials and substitutes; and the global expansion of digital networks and services.

As for the supply risks, they mostly stem from the fact that almost all of these materials are located or processed, smelted or refined in third countries (see Figure 1). China is the largest global supplier for the majority of CRMs used in the EU, providing just under half of them (44%). China itself also has very significant demand for several CRMs, which increases the competition. It has near monopoly on some (for example rare earths), but there are also other countries that control the supply of specific CRMs.

In some cases, this entails elevated political and economic risks: CRMs can be in countries marred by governance ineffectiveness, such as Guinea, which provides 64% of the EU’s bauxite (used in aluminium production) or Brazil, which supplies 85% of its niobium, used in jet engines.

In addition, some of the sources are located in very unstable parts of the world. For example, 68% of the EU’s cobalt, which is used in rechargeable car batteries and the aviation industry, comes from the Democratic Republic of the Congo, one of the world’s poorest and most fragile countries. Perhaps unsurprisingly, many of these precious CRMs are also associated with pronounced risks of human rights violations, such as child labour and environmental degradation. Only three out of 30 CRMs (germanium, hafnium and strontium) are sourced in more than half of their total volumes from inside the EU. Most CRM value chains in the EU only cover the refining or manufacturing stages.

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Figure 1 – Largest providers of CRMs to the EU (2012-2016)

Source: European Commission.

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Supply challenges

Bottlenecks may appear throughout all the stages of the CRMs value chain: they can be related to extraction and processing abroad, assembly and production processes, and availability of CRM-based components and intermediaries. Nothing has exposed the risks to the global supply chains so clearly as the coronavirus pandemic. Lockdowns and numerous restrictions implemented across the globe have paralysed the entire international logistics networks. These interruptions also affected the CRMs supply chains, automatically causing a lag not only in numerous industries but also in economies (such as the EU’s) that do not have their own raw material reserves and rely heavily on imports (see Figure 2).

Already before the pandemic, escalating trade tensions between the US and China and the rise in protectionism across the globe put the resilience of global supply chains into the spotlight. Demand for CRMs in particular has been growing steadily, fuelled by the accelerating technological changes and the fast growth of emerging economies. To satisfy increased domestic demand, some producers have imposed controls and restrictions (e.g. export quotas and taxes) on CRM exports to ensure adequate supplies for their own growing industries. The present high geographical concentration of CRMs extraction, processing and refining means that any trade barriers to export can have very strong impacts on downstream industries, including in the EU. Globally, established suppliers may also try to obstruct new mining operations to defend their market share and profits. Many CRMs markets are characterised by monopolistic or oligopolistic tendencies.

The high level of geographical concentration associated with CRMs also means that there are potential single points of failure along critical global supply chains. Local disruptions – resulting e.g. from natural disasters, market failures or political turbulences – can cause a global ripple effect. Finally, there is a geopolitical aspect to the international trade of CRMs, which translates into an ever-growing risk of the dominant producers leveraging their strong market position to put pressure on the dependent CRM importers in order to achieve their policy goals, using threats or even cutting supply. It is not so different from the better-known effect that the limits/calculated shortages of production established by the OPEC countries have on global oil supply and prices. To put it bluntly: the EU is overly dependent on a supplier that the Commission officially recognises as a systemic rival: China.

Difficult supply diversification

Since many CRMs are located in only a few countries, finding alternative sources of supply is naturally problematic, as creating entire CRM value chains is a lengthy and costly process. For example, creating a mine may take up to 15 years. There is also a shortage of data about where potential CRMs sources are located. Starting mine production requires large-scale and long-term investment projects, and as such is of limited use in addressing reduced supply or rising prices effectively. Furthermore, there are serious environmental concerns and notable opposition to opening new mines in the EU, coupled with gaps in skills and technology, lack of investment and cumbersome
approval procedures. Even once a mine opens, it may not be globally competitive, since the other global players often have lower labour and environmental standards.

Substituting CRMs with other materials is also challenging. Direct substitution with new materials may impair the functioning of technologies and devices in which they are deployed, since these had been developed using CRMs. Therefore, there is an added challenge of coming up with entirely novel technologies and approaches that better fit the substitutes. Substitution is also only realistically possible in the longer term, and does not provide an answer to short- and medium-term urgency.

Recycling is another possible way of mitigating supply challenges. Many CRMs are present in everyday appliances – a typical mobile phone contains 60 raw materials, including many CRMs. EU recycling rates are quite high: about a third of 9 million tonnes of discarded electrical and electronic equipment is collected and recycled. However, less than 1 % of (selected) CRMs are recovered in this process, as the EU lacks the technology and industrial processes to recycle CRMs to a degree that would cover its needs in a meaningful way (see Figure 2).

To make matters even more complicated, the sourcing of many CRMs involves high research and capital costs. This is coupled with uncertainty about the endeavours' success, making investment in this economic sector riskier than in others. As such, state investment could be an option to support CRMs-related projects.

In the EU, mainly the industry (and not the state) is broadly mandated to explore, extract, carry out beneficiation (the process of reducing ores) and deployment in manufacturing, and recycle CRMs. Hence, the principle of the free market economy is at work: long-term price drops in production capacities serve as a disincentive to governments, especially in the current long-haul deficit emergency, to develop these activities further. Conversely, climbing prices lead to new prospection incentives and, if the market trend continues for a sufficient time, to the construction of new mines. New entrants to the market may find it often difficult to raise the much needed funds.

Another specific feature of CRMs is that some are sourced as the primary extraction target of a mining or quarrying operation, while others are extracted as by-products (meaning they are of lesser economic importance). They are in essence 'a companion metal' to a primary carrier CRM, closely connected geologically and heavily dependent on the commercial value of extraction of the 'host' element. To put it in other words: if the EU were to incentivise the extraction of marketable 'carrier metals' it would at the same time promote the extraction of much

### Lithium and battery production in the EU

A good example of successful EU-level cooperation is the creation of a whole battery value chain. Currently, around 80 % of global battery production capacity is in Asia, with China alone accounting for 69 %, the US for about 15 % and the EU for only under 4 %. Furthermore, even when it is extracted in the EU, lithium needs to be shipped to China to get refined. This situation is unsustainable in the longer term: importing batteries and their ingredients from China significantly increases the carbon footprint of electric vehicles. It is also a question of competitiveness: batteries account for about 40 % of the cost of an electric car, and continuing to import them may eventually jeopardise a large proportion of the value-added part of the production chain and the technological knowledge that can be generated by it. Furthermore, there is a growing demand for lithium-ion batteries for energy storage.

Domestic production of batteries has been considered an important project of common EU interest and as such significant public funding has been authorised to be deployed. The project brings together governments, car industry enterprises, researchers and EU institutions (the Commission attends the governance meetings). One of the four main strands of this endeavour is in the area of raw and advanced materials. It focuses on developing sustainable innovative processes leading to extraction, concentration, refining and purification of ores to obtain high-purity raw materials. The project also aims to improve existing advanced materials or create new ones, to be deployed in novel battery cells. The EU expects to be 80 % self-sufficient in terms of obtaining lithium by 2025, if the four planned mines open.
needed CRMs in some cases. Consequently, in some cases the revival of mining in the EU could also contribute to achieving the production of primary CRMs.

Developing a common policy

The secure supply of raw materials for the EU's industry has been on the EU agenda for a long time. The first Raw Materials Supply Group was set up in the 1970s, but it was only in this century that the Member States and the EU started developing together a common industrial policy more actively, with a stronger focus on horizontal measures. In 2007, the Competitiveness Council called on the Commission to develop a comprehensive raw materials policy covering all relevant areas such as trade, environment, research and innovation. The Council also demanded the identification of ‘appropriate measures for cost-effective, reliable and environmentally friendly access to and exploitation of natural resources, secondary raw materials and recyclable waste’. This political support resulted in the establishment of the Raw Materials Initiative in 2008, an overall EU strategy focused on reducing external dependencies. This goal was to be achieved by diversifying sources of primary raw materials, boosting domestic sourcing and increasing resource efficiency and circularity to strengthen the supply of secondary raw materials. The Commission also proposed to publish regularly a common list of CRMs.

In 2011, the Commission presented a first list of 14 CRMs in its communication on tackling the challenges in commodity markets and on raw materials. The document proposed to strengthen the EU trade strategy and pursue a ‘raw material diplomacy’ to promote its priorities in bilateral and multilateral frameworks and dialogues, to and improve co-operation with African countries. Another priority area has been improving the regulatory framework for sustainable extraction in the EU and re-examining the legislation with a view to enhancing resource efficiency and promoting recycling. Furthermore, the Commission decided to boost research and innovation along the entire value chain of raw materials, from extraction to substitution.

The list was revised in 2014 and expanded to 20 CRMs in the communication on the implementation of the Raw Materials Initiative. The Commission underlined that the list was used in its trade negotiations, when challenging trade distortions, and also to promote research and innovation. It also prioritised the development of framework conditions for mining and improving the raw materials knowledge base.

A third list, comprising 27 CRMs, was published in 2017. It linked the EU CRMs policy to the EU renewed industrial policy strategy and presented new areas of action, such as identifying investment needs to boost domestic sourcing, supporting CRMs innovation under the Horizon 2020 research and innovation programme, and exploiting the importance of CRMs in the transition to a low-carbon, resource-efficient and more circular economy.

In 2020, the von der Leyen Commission adopted a new EU industrial strategy, which was an important step towards a stronger and reinvigorated common policy on CRMs. It recognised that the twin ecological and digital transitions define the future of the EU and will affect every part of its economy and society. Industrial policy will be fundamental in both, paving the way to climate-neutrality and shaping Europe’s digital future. The Commission also stated explicitly that this
transformation is linked to achieving 'strategic autonomy' – a reduction of external dependences in crucial areas such as CRMs.

Strategic autonomy and recovery from the pandemic

The EU policy on CRMs is indeed shaped by the larger trends that set the future direction of the EU. Strategic autonomy, which was first endorsed by the Council in the context of defence industry, has grown in importance in the current policy cycle. In recent years, the world has become increasingly volatile and there has been a marked contestation of the established international rule-based order by unilateral actions of countries such as China, Russia or even a traditional ally of the EU, the United States. This has been coupled with a ‘slowbalisation’ – a steady retreat from globalisation and international economic integration since 2008, when the global financial crisis unfolded. This global shift to a more inward-oriented stance has led the EU to contemplate on how to become more autonomous, sovereign and resilient.

The above does not mean that the EU, which has always been promoting multilateralism and open trade, will seek to become an autarchy. Rather, it embodies the EU’s quest to act independently, to rely on its own resources in key strategic areas and to cooperate and compete with others on equal and fair terms. This means, in the words of Commissioner for Internal Market Thierry Breton, pursuing an ‘open strategic autonomy’ in the area of CRMs, based on a multi-strand approach. First, this involves developing a policy that seeks to expand the EU’s domestic capacity for both primary raw materials (through activities such as mining), and secondary raw materials (through stronger circularity and recycling). Second, the CRMs supply needs to increase by mending the broken links in the value chain, such as the EU's insufficient technological aptness to process raw materials. Finally, the focus on 'openness' means that the EU will seek to ensure a diversified and secure access to global markets for raw materials, while promoting environmental and biodiversity protection standards and safe work conditions abroad.

The ongoing coronavirus crisis is also fundamentally important in shaping the policy on CRMs. It has rapidly exposed the vulnerability of global supply chains and stimulated the rethinking of the current economic model. The 'green and digital' transition in economic and societal terms featured prominently on the EU agenda even before the pandemic, as highlighted in the new growth strategy incorporating climate change concerns, the Green Deal (aiming to reach a climate-neutral EU by 2050), and the above-mentioned 2020 industrial strategy. However, the coronavirus crisis has accelerated this quest and made it an essential element of relaunching and modernising the economy.

In March 2020, the European Council called for a comprehensive plan for recovery from the pandemic. The roadmap to achieve that – which was presented jointly by the President of the European Commission, Ursula von der Leyen, and the President of the European Council, Charles Michel – did not propose a path leading back to the pre-pandemic status quo, but to one of a transformed character. This is to be based on the green and digital transition, supported by clean technologies and a circular economy, which will help to create jobs

CRM policy in the United States

Due to intensifying geopolitical competition with China, the supply of CRMs has also been an issue in the US. The country is also heavily dependent on China for many other materials. Its strategy to strengthen its position in this regard is a mix of short-term actions, such as stockpiling minerals and developing alternative import options, to medium- and long-term ones, such as investing in research on improving resource efficiency and CRMs substitution as well as boosting domestic capacity along the entire CRMs supply chain. The solutions in this regard include incentivising domestic sourcing, facilitating mining permits and relaxing environmental regulations, and developing new mining, processing and manufacturing capabilities. The US has also entered into alliances with some countries in the effort to diversify its supply chains.

A fundamental difference between the US and the EU policy on CMRs is that the US military, a big public spender, has committed to support domestic mining and extracting activities.
and growth and allow the EU to make the most of the post-pandemic future. To be more resilient and better prepared for other yet unforeseen crises, the EU should also ensure its strategic autonomy through a dynamic industrial policy. In November 2020, the European Council voiced its strong support for this approach, stating that ‘achieving strategic autonomy while preserving an open economy is a key objective of the Union in order to self-determine its economic path and interests … this includes identifying and reducing strategic dependencies and increasing resilience in the most sensitive industrial ecosystems and specific areas, such as … critical raw materials.’

Indeed, CRMs – and a secure access to them – are a necessary prerequisite if the EU is achieve the above strategic goals and become a stronger geopolitical player. This is because they are essential to manufacturing the kind of high-tech and high value-added products that will ensure the EU’s competitiveness and give it proper heft in the rapidly changing modern economy. As the list of CRMs keeps expanding, it is safe to say that they will become even more crucial for the invention of new and the further development of existing key technologies that would propel the EU to economic, digital and defence sovereignty. They are also needed to advance the economic areas that are already undergoing an innovation-driven paradigm shift, such as the space industry, a likely driver of future inventions. The EU should however avoid replacing its reliance on fossil fuels with a new reliance on CRMs.

CRMs are also required for a successful recovery from the crisis based on the twin transition. The Green Deal communication underlined that access to CRMs is imperative to ensure the development and wide use of all the clean technologies that are a prerequisite for Europe’s becoming a low-carbon, climate-neutral continent by 2050. The CRMs are and will be used, for instance, in photovoltaic (solar) panels, wind turbines, electric motors for clean engines of all sizes (from e-bikes to electric drivetrains), Li-on batteries for electric cars, and fuel cells for creating a low-carbon electricity system of the future.

CRMs also underpin all modern digital technologies. For example, CRMs are necessary in advanced manufacturing, robotic systems and the internet of things to achieve the required electronic, magnetic, optical or mechanical properties of components, products and processes. As data become ever more important, the CRMs are needed to develop the future data storage systems, such as the ferroelectric Random Access Memory (RAM) solution. Digitalisation will also be accompanied by increased use of ICT devices and electronic displays, all of which utilise CRMs.

### Table 1 – Evolution of EU reliance on imports, 2011-2020

<table>
<thead>
<tr>
<th>CRM</th>
<th>2011</th>
<th>2017</th>
<th>2020</th>
<th>Percentage point change</th>
</tr>
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<tbody>
<tr>
<td>Indium</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>-100</td>
</tr>
<tr>
<td>Germanium</td>
<td>100</td>
<td>64</td>
<td>31</td>
<td>-69</td>
</tr>
<tr>
<td>Tungsten</td>
<td>73</td>
<td>44</td>
<td>NA</td>
<td>-29</td>
</tr>
<tr>
<td>Cobalt</td>
<td>100</td>
<td>32</td>
<td>86</td>
<td>-14</td>
</tr>
<tr>
<td>Baryte</td>
<td>NA</td>
<td>80</td>
<td>70</td>
<td>-10</td>
</tr>
<tr>
<td>Hafnium</td>
<td>NA</td>
<td>9</td>
<td>0</td>
<td>-9</td>
</tr>
<tr>
<td>Phosphate Rock</td>
<td>NA</td>
<td>88</td>
<td>84</td>
<td>-4</td>
</tr>
<tr>
<td>Fluorspar</td>
<td>69</td>
<td>70</td>
<td>66</td>
<td>-3</td>
</tr>
<tr>
<td>Gallium</td>
<td>NA</td>
<td>34</td>
<td>31</td>
<td>-3</td>
</tr>
<tr>
<td>Coking coal</td>
<td>NA</td>
<td>63</td>
<td>62</td>
<td>-1</td>
</tr>
<tr>
<td>Natural graphite</td>
<td>NA</td>
<td>99</td>
<td>98</td>
<td>-1</td>
</tr>
<tr>
<td>Silicon metal</td>
<td>NA</td>
<td>64</td>
<td>63</td>
<td>-1</td>
</tr>
<tr>
<td>Tantalum</td>
<td>NA</td>
<td>100</td>
<td>99</td>
<td>-1</td>
</tr>
</tbody>
</table>

Source: Author’s calculations based on the [CRM lists](#).
Newest developments: A stronger push

When looking at Table 1 above, one can conclude that progress in reducing the EU’s reliance on CRM imports (for those CRMs for which data exist) has been somewhat limited so far. In token of its recognition that CRMs are indeed an important, strategic issue for the EU, the Commission delivered in September 2020 what is perhaps its most significant policy push since the 2008 Raw Materials Initiative. As announced in the March 2020 industrial strategy, it launched a CRMs action plan in which it proposed 10 actions to make the EU’s raw materials supply more secure and sustainable.

The action plan is focused on four areas: i) developing resilient value chains for EU industrial ecosystems; ii) reducing dependency on primary CRMs through circular use of resources, sustainable products and innovation; iii) strengthening the sustainable and responsible domestic sourcing and processing of raw materials in the EU; and iv) diversifying supply with sustainable and responsible sourcing from abroad, making rules-based open trade in raw materials stronger and removing distortions to international trade.

The first tangible result of the action plan is the establishment of the European Raw Materials Alliance (ERMA), launched in October 2020. The industrial strategy called for the creation of new industrial alliances and complete industrial ecosystems to achieve the twin transition of Europe, based not only on reliable and sustainable access to CRMs but also on their recycling and reuse. Accordingly, ERMA was created as a dedicated industrial alliance to specifically address the numerous challenges faced by the raw materials value chains. Its mission is to close the gaps in existing supply chains, securing access to CRMs and other advanced materials and ‘breaking’ deficiencies such as the lack of technologies, capabilities and skills in the EU. In a first phase, the alliance will work on stepping up urgently needed resilience with regard to the rare earths and magnets value chains, on the one hand, and the raw materials for energy storage and conversion, on the other. It will then expand to other materials, identifying barriers, opportunities and investments, and bolstering innovations and infrastructure. In 2021, the first projects will be evaluated and the implementation phase will begin. ERMA is seeking to involve all relevant stakeholders, including industrial players along the value chain, Member States and regions, trade unions, civil society, research and technology organisations, investors and NGOs. ERMA will be managed by EIT RawMaterials.

To actively support investment in CRMs supply chains, the Commission suggests using the sustainable finance taxonomy. The Taxonomy Regulation identified a list of environmentally sustainable activities, to be done through. One of the six environmental objectives of the regulation, ‘Transition to a Circular Economy’, relates to CRMs. In order for an activity to qualify as covered by the EU taxonomy (which increases its chances for investment, also from the private sector) it should meaningfully contribute to the transition to a circular economy, by way of using natural resources (including sustainably sourced bio-based and other raw materials), and specifically reducing the use of primary raw materials or increasing the use of by-products and secondary raw materials. Delegated acts on this objective are to be adopted by the Commission by 31 December 2021 and will start applying as of 31 December 2022. By way of establishing this taxonomy, the Commission plans to guide public and private investment towards sustainable activities. In this specific context, the aim is to galvanise support for compliant exploration, mining, extraction and processing projects for CRMs, carried out in a sustainable and responsible way. The Commission is seeking to help the sector minimise its impact on the climate and the environment by developing sustainable financing criteria for the mining and the processing sectors. The Platform on Sustainable Finance, established in October 2020, is tasked with advising the Commission on the development of robust and science-based technical screening criteria for the EU taxonomy. The Technical Expert Group (TEG) on Sustainable Finance, which began developing the EU taxonomy in 2018, in a technical annex to its 2020 report recommended that the Platform on Sustainable Finance prioritise the ‘full evaluation of existing sectors selected rather than the immediate expansion of the sectors covered’.

The first group of sectors evaluated by the TEG were those with a high climate-change mitigation
need and potential. The TEG considered aspects of mining and quarrying activities to the extent that they supported activities in manufacturing. However, a full evaluation of the mining and quarrying sector was not undertaken, much to the TEG's regret, due to time constraints and the complexity of the issues. It however recommended that the platform analyse 'the role the sector plays in terms of enhancing availability of the critical materials needed for current and future technologies to create a climate neutral, circular and resource efficient economy, while sourcing raw materials in a sustainable and responsible way, with a view to consider the enabling potential of the sector. The Platform is recommended to ensure that a life cycle approach is applied when assessing the different phases of the value chain for mining is applied. The rationale for applying life cycle analysis is that many metals are essential for low-carbon technologies'.

The EU will also launch research and innovation activities to improve the circular and sustainable use of resources focusing on waste processing (to obtain secondary CRMs), substitution of CRMs with non-critical materials, and developing advanced materials. This will be financed through EU multiannual funding programmes (such as Horizon Europe and the European Regional Development Fund) and national support programmes. Boosting CRMs circularity and recycling is of fundamental importance in the transition to a climate-neutral economy. Research is needed to find ways to use recycling as a way to meet more of the EU's demand for CRMs and to avoid discarding valuable materials in a waste or a landfill. The EU will also support research seeking to reduce the ecological footprint (including from greenhouse gas emissions) of the extractive and the processing industries.

The CRMs contained in existing products, in extractive waste or in landfills all have a potential for recovery or recycling. The EU will start by carrying out an assessment of the amount of secondary CRMs in these stocks and various wastes, and propose viable recovery projects by 2022.

The EU will also step up its efforts to boost domestic sourcing of CRMs. While there is significant potential for extracting many CRMs in Europe, revival of mining is marred by difficulties. The Commission plans to utilise the fact that many EU CRMs resources that can be used in the battery value chain are in regions that are heavily reliant on coal or carbon-intensive industries and are the future sites of battery factories. It is also an interesting opportunity to revisit mining wastes that are rich in CRMs.

The European Parliament has been a long-standing supporter of a thorough and coordinated EU CRMs strategy based on resource efficiency, re-use, recycling and substitution, but also on using the Union’s diplomatic heft to ensure fair and sustainable international supply. The Parliament has also supported the mandatory due diligence checks on importers of conflict minerals. It has added ‘increasing the uptake of secondary raw materials’ to the definition of the activities eligible to support under the new EU taxonomy rules. More recently, in its resolution of 25 November 2020, the Parliament stressed that Europe needs to boost its capacity for all stages of the raw materials value chain, namely mining, recycling, smelting, refining and transforming. It also called for widening the scope of the Critical raw materials action plan and the CRM Alliance to also include an integrated ecosystem for the whole range of materials, metals and minerals required for making the industrial transition.

The policy to revive these economic sectors will be based first on identifying mining and processing projects, investment needs and financing opportunities, while also working on minimising their impact on the climate and the environment. Such projects should become operational by 2025. Coal-mining regions will be prioritised, and the EU will support regional CRMs-focused projects, the transfer of existing mining and engineering skills and, wherever possible, the transition from coal to CRMs exploitation and recovery. Helpful EU support instruments include the Just Transition Mechanism, the InvestEU programme (its sustainable infrastructure window) and the European Skills Agenda. To accelerate the deployment of new projects, Horizon Europe will start in 2021 to research the processes for exploitation and processing of CRMs with reduced environmental impacts.
Under the Better Regulation agenda, the Commission is working with key stakeholders to identify the obstacles before major infrastructure projects. The aim is to accelerate the deployment of new projects and make national permitting procedures in the Member States more efficient, while maintaining the current high standards that ensure that mining takes place under environmentally and socially sound conditions. The Commission will also look into deploying Earth-observation programmes, such as Copernicus and the technology it offers (such as remote sensing), to find new CRMs sites and to monitor environmental performance of mines - also after their closure.

Since covering Europe's needs for CRMs is not fully possible using domestic sourcing, the external aspect of CRMs-related policy will continue to be very important. 'Open strategic autonomy' means that the EU should have well-diversified and secure access to global markets. The EU will seek to forge strategic partnerships with resource-rich third countries. The potential is promising: possible partners range from highly developed mining countries, such as Canada and Australia, to several developing African and Latin American countries, to countries close to the EU, such as Norway and Ukraine, to enlargement candidate countries. The Commission underlines that it is important to integrate the Western Balkans into EU supply chains.

To start the process, the Commission will first discuss priorities with the Member States and industry, including in the above-mentioned countries. This will be followed by launching pilot partnership projects in 2021, perhaps with Canada, some interested African countries or countries from the EU neighbourhood. The partnerships will cover CRMs extraction, processing and refining. To assist some of the above-mentioned countries to sustainably develop their mineral resources and thereby improve their broader economic and social development, the EU will support the dissemination of practices linked to better local governance and responsible mining. The aim is also to tackle environmental and social problems, such as pollution and child labour, often associated with the mining activities in certain countries. The EU will use its external financial instruments, such as development cooperation, neighbourhood funding and the Partnership Instrument Policy Support Facility to leverage private investment, also allowing EU companies to participate on fair terms in projects taking place abroad. The Commission is also considering making a possible horizontal regulatory proposal on due diligence soon.
MAIN REFERENCES


ENDNOTES

1 The list, updated in September 2020, includes: antimony, hafnium, phosphorus, baryte, heavy rare earth elements, scandium, beryllium, light rare earth elements, silicon metal, bismuth, indium, tantalum, borate, magnesium, tungsten, cobalt, natural graphite, vanadium, coking coal, natural rubber, bauxite, fluor spar, niobium, lithium, gallium, platinum group metals, titanium, germanium, phosphate rock, and strontium.

2 The former include borates, chromium, coking coal, fluor spar, magnesite, tungsten, phosphate rock, silicon metal. The latter include cobalt, gallium, germanium, indium and rare earth elements.

3 Presently, China dominates the processing of many CRMs, meaning that even if they are sourced in the EU, they need to be shipped to China and returned to Europe before they can be used.

4 Import reliance is calculated as: (Import – Export) / (Domestic production + Import – Export). The 2014 list did not include this indicator.

5 This is determined on the basis of scope 1 emissions data.

6 For instance, Serbia has deposits of borates, while Albania has platinum deposits.

7 The EU policy of promoting good governance seems to be challenged by China in Africa, where it buys out exports of CRMs, limiting the EU's chances of diversifying the sourcing.

8 To promote responsible sourcing, the Commission has an online portal called Due Diligence Ready!, which provides businesses with guidance on how to verify the sources of the metals and minerals entering their supply chains. It is similar to the OECD scheme called the 'Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-affected and High-risk areas'.

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