CEPS POLICY BRIEF

HOW THE EU CAN PURSUE STRATEGIC COOPERATION ON SECONDARY RAW MATERIALS WITH THE WESTERN BALKANS

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SUMMARY

Europe's green and digital transitions are increasing demand for critical raw materials (CRMs), just as geopolitical risks and trade tensions are reshaping global supply chains. In recent years, the EU has taken steps to secure and diversify supplies through building strategic partnerships with resource-rich countries, which also includes recovering CRMs from mine waste and tailings. The Western Balkans region stands out as a natural partner, given their already close integration with EU markets and transport networks, and their legacy of old industrial sites and mine tailings.

Such a partnership could lead to several mutual benefits – for the EU, more resilient and circular CRM value chains which correspond with its strategic autonomy and sustainability objectives, and for the Western Balkans, by rehabilitating legacy sites and advancing green and circular policies tied to the Green Agenda and the enlargement framework.

This CEPS Policy Brief dives into three priority areas for EU-Western Balkans cooperation on secondary raw materials that policymakers should pay more attention to:

- Upgrading exploration and geological data through a joint EU-Western Balkans initiative to systematically map mining waste and harmonise datasets with international standards. This would help address the current lack of a comprehensive regional overview of secondary CRM potential and identify viable projects.
- The partnership should drive innovation, capacity building and pilot projects by linking local actors more closely to EU instruments and initiatives such as Horizon Europe, EIT RawMaterials and relevant industrial alliances.
- The EU and Western Balkans could use the EU accession process to advance regulatory and administrative alignment on mining, waste management and water protection with the EU acquis, and on adopting international standards and certification for environmental, social governance (ESG) and due diligence to ensure long-term access to the EU market, as well as lower compliance risks. In parallel, EU investment instruments should then be used to de-risk projects that meet high ESG standards.

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INTRODUCTION

Geopolitical pressures, the rising demand for critical raw materials (CRMs) and growing trade restrictions have forced Europe to diversify its CRM sources. These materials are utterly vital for the EU's competitiveness, for delivering the green and digital transitions, as well as for its growing defence industry. The CRM political agenda gained momentum with the 2024 Critical Raw Materials Act (CRMA) and has since been reinforced by the RESourceEU Action Plan, adopted in December 2025.

To meet growing demand, the EU will need to explore the full spectrum of options, including recovering materials from unexploited sources such as extractive waste and strengthening partnerships with other countries. This is particularly important given how difficult it is to begin new mining projects, including in Europe.

Enter the Western Balkans. It's a resource-rich region within Europe, with a long mining tradition and is strongly integrated into European trade and transport corridors. As such, the region is well positioned to benefit from the EU's efforts to diversify and secure its CRMs supplies. However, new mining activities often face difficulties in securing social buy-in and earning public trust, reflecting long-standing concerns about industrial pollution and weak environmental and social safeguards in parts of the region.

Decades of industrial activity have left a legacy of old industrial sites and mine tailings containing significant quantities of – among others – copper, lead, zinc, nickel and lithium. If sustainably recovered, this secondary raw material potential could deliver many mutual benefits.

For Western Balkan economies, joint initiatives could assist in the development of industrial clusters around these sites in line with circular economy principles, creating new opportunities for green industrial development, as well as supporting environmental rehabilitation and helping to overcome the entrenched perception of old industrial sites being an environmental burden. For the EU, cooperation would support its efforts to diversify its access to CRMs and contribute to achieving strategic autonomy and its sustainability objectives.

This CEPS Policy Brief explores the opportunities that would arise from recovering CRMs from decommissioned sites and mine tailings in the Western Balkans. It outlines recent evidence on the region's potential and identifies potential pathways for EU-Western Balkans cooperation in this field that policymakers should absolutely explore further.

EXTRACTIVE WASTE AND STRATEGIC PARTNERSHIPS IN THE EU POLICY FRAMEWORK ON CRMS

The emerging policy framework on CRMs increasingly relies on two key levers, namely making better use of domestic resources (including extractive waste) and deepening strategic partnerships with third countries.

The CRMA explicitly recognises how old industrial sites and decommissioned mines could be a valuable complementary source of CRMs and includes provisions on recovering CRMs from closed extraction facilities. To build a comprehensive picture of this potential, the Act (specifically Article 27) introduces obligations on Member States to collect information about extractive facilities (i.e. location, legal operator, waste quantities and estimated amounts of recoverable critical raw materials) and make this information available to the public as of 2026 in the form of a database. Member States should also implement measures that would make it feasible to recover CRMs from reported closed facilities.

In recent years the EU has stepped up its efforts in raw materials diplomacy, resulting in 15 strategic partnerships with countries including Australia, Canada, Kazakhstan, Serbia and Uzbekistan. These partnerships are based on non-binding cooperation frameworks (such as through Memorandum of Understanding (MoU)), which aim to develop joint projects and initiatives for establishing mutually beneficial value chains for raw materials.

Using CRMs from secondary sources and extraction waste is included in some of these frameworks.

For instance, the MoU with Uzbekistan includes the mapping the potential of extracting minerals from mining waste, and supporting research and innovation (R&I) activities in the field of extracting, processing and recycling CRMs as two areas of potential cooperation. The MoU with Kazakhstan, and its 2023-2024 roadmap both include pledges to collaborate on mapping and managing industrial mining waste and extracting CRMs, with each partner actively sharing their experiences on digitalising geological information and resource classification. Additionally, there will be cooperation on managing mining waste and extracting CRMs. This partnership with Kazakhstan has led to a joint project backed by the European Bank for Reconstruction and Development (EBRD) to map lithium and tungsten potential from secondary sources.

It's also important to note that the new Growth Plan for the Western Balkans explicitly envisions the development of strategic partnerships on sustainable raw materials value chains (exploration, extraction, manufacturing and recycling) as a key element for

integrating industrial supply chains between the EU and the region (though with a focus on battery projects).

Finally, the concept of 'strategic projects' is one of the key pillars of the CRMA. Through the first round of applications, 60 projects were selected as strategic – 47 within the EU and 15 outside – covering all value chain stages: extraction, processing, recycling and substitution. Notably, two of these projects focus on recovering materials from extraction waste: i) the Chvaletice Manganese Project in the Czech Republic, which aims to recover and process battery-grade manganese from the tailings of a decommissioned mine and ii) the REEMap project in Sweden, which seeks to develop an integrated solution for extracting and processing rare earth elements from mine tailings associated with iron ore production.

SECONDARY CRM POTENTIAL IN THE WESTERN BALKANS

For much of the 20th century, mining and heavy industry underpinned economic development in the Western Balkans, with large state-owned mining and coal complexes providing employment and export revenues. The collapse of the former Yugoslavia in the 1990s, regime change, market fragmentation and state (re-)building were followed by a sharp economic decline and the rapid closure of many mines and smelters – often without proper remediation. This left a substantial legacy of abandoned or poorly maintained mine tailings and slag piles, threatening local ecosystems and surrounding communities due to their detrimental impact on water, land use and health.

This legacy, together with a long historical experience with industrial pollution, insufficient environmental safeguards and limited transparency in the governance of extractive projects, has eroded social acceptance for new extractive projects as potential sources of development. **Consequently, launching new large-scale mining projects has been politically and socially contentious across the region** – as seen in the opposition to a proposed copper and gold mine in North Macedonia, lithium mining in Bosnia and Herzegovina and Serbia's high-profile Jadar lithium project.

This is why attention is shifting towards the above ground mining legacy, notably mine tailings and slag piles. Beyond being an environmental burden, they hide a sizeable – and largely untapped – source of secondary raw materials, including copper, zinc, lead, silver, gold and rare earth elements, which – thanks to technological developments – could be recovered. Recent technical assessments[1] have indicated that tailings and slags in the Western Balkans contain around 344 million tonnes of secondary raw materials. This

[1] Estimates based on S. Uysal, Secondary Raw Materials as Critical Mineral Resources for Western Balkans, January 2025, forthcoming.

covers both CRMs – particularly copper, antimony and selected rare earth elements – and sizeable volumes of zinc, lead, gold and silver.

At site level, estimates suggest that in Serbia, the Bor copper complex alone holds around 80 million tonnes of tailings and slag, with an estimated value of EUR 6.6 billion[2] (about EUR 2 billion for copper alone). Coal-ash landfills at the Nikola Tesla and Kostolac power plants – and other similar sites in North Macedonia – contain some of the largest identified reserves of rare earth prospects in the region. In Kosovo, the Trepça-Trepča complex offers multiple high-value waste deposits; Gornje Polje III tailings have an estimated metal value of EUR 1 billion, with copper and antimony among the EU's priority critical materials, while tailings at Žitkovac have an additional EUR 2.1 billion, predominantly in gold.

Bosnia and Herzegovina and Montenegro also contribute mainly through high-grade red mud deposits at Dobro Selo, Birač, and Zvornik in the former, and Podgorica in the latter. In Albania, copper tailings are estimated to be around EUR 160 million in value, with chromite tailings providing an another relatively low-cost, fast recovery opportunity that may also yield nickel and cobalt as by-products.

By building on existing waste deposits, such projects can offer a much faster route to securing new supplies of raw materials. Reprocessing these deposits could support a shift to a more circular use of resources, rehabilitate the local environment and reduce dependence on entirely new mining projects.

BARRIERS TO RECOVERING SECONDARY CRMS IN THE WESTERN BALKANS

Regardless of the potential, though, the region's secondary sourcing potential is constrained by a series of technical, economic, regulatory and social bottlenecks.

A key barrier is the lack of a comprehensive and up-to-date overview of the Western Balkan's secondary CRM potential. In many closed and abandoned mines, there's only been partial or unfinished geological exploration, with information on tailings and slag deposits still relying heavily on historical records rather than modern sampling and resource classification. Consequently, the region lacks standardised assessment and accurate mapping of where secondary CRM recovery is not only most viable but would also result in the highest level of environmental rehabilitation.

Legacy mining and industrial waste deposits are also chemically complex and highly heterogeneous, which might make it more complicated to apply standard recovery

[2] All monetary figures have been converted from USD to EUR for comparability and provide the indicative value of metal estimates, not the actual recoverable value of future projects.

technologies, instead requiring sophisticated, site-specific, multi-step processing. While a range of promising CRM recovery approaches from extractive waste is being explored worldwide, many remain at the laboratory or pilot stage. Another factor is that secondary CRM recovery can – like conventional mining – be an energy-intensive process, depending on the technologies applied and the energy mix.

Economic factors in the region, such as underinvestment and the smaller size of national markets, hinder the development of CRM recovery. Firms often lack the capital needed to upgrade operations, modernise equipment and improve productivity, particularly smaller operators that struggle to access affordable, long-term finance. In many locations, uneven transport connectivity to major waste sites and limited digital infrastructure, alongside underdeveloped processing facilities, further constrain the economic viability of recovery operations.

Administrative bottlenecks, particularly slow and fragmented permitting procedures, create additional uncertainties. For many old waste sites, ownership and legal responsibilities remain unclear, while weak environmental monitoring and environment, social and governance (ESG) enforcement raise further risks for launching new projects and deter long-term investment.

This, together with past environmental damage and general low trust in institutions, contributes to high levels of public scepticism and social concerns around mining-related activities. **This means that resolving the technical, data and infrastructure barriers alone won't be sufficient, as wider social concerns call for more transparent decision-making, stronger community engagement and broader social acceptance of CRM recovery initiatives**.

MAKING PROGRESS TOWARDS A GREEN AGENDA IN THE WESTERN BALKANS

Despite the barriers outlined above, the Western Balkans is gradually becoming more supportive of circular economy approaches. In recent years, governments in the region have taken steps to develop green policies and align with the EU's broader climate and industrial priorities. Inspired by the EU's Green Deal, regional leaders signed the Sofia Declaration on the Green Agenda for the Western Balkans in 2020, committing to taking action on climate, energy, mobility, circular economy, depollution, agriculture and biodiversity. Its implementation is being supported primarily through the Instrument for Pre-Accession (IPA III) Assistance and Economic and Investment Plan (EIP), together allocating EUR 9 billion in grants and aiming to mobilise up to EUR 20 billion in investments via the Western Balkans Guarantee Facility.

These commitments have driven the development of national circular economy roadmaps and white papers in all six Western Balkan countries. The roadmaps for Albania and North Macedonia specifically mention the opportunities of recovering mining waste, also acknowledging that adopting circularity solutions can contribute to their environmental sustainability goals while also providing valuable material that can be utilised as commodities.

At the same time, a recent assessment by the European Commission's Joint Research Centre (JRC) suggests that while there's been progress in adopting green legislation across the region, implementation remains uneven and still at an early stage. Many governments have adopted provisions (including on energy and climate), but the overall framework remains incomplete and, in parts, outdated, and many measures are yet to be enforced.

This is where the EU accession framework becomes relevant.

As part of the EU accession process, Western Balkan countries are already committed to gradually adopting the EU *acquis*, notably including reforms under Chapter 20 (Enterprise and Industrial Policy) and Chapter 27 (Environment). Chapter 20 entails 'softer' requirements centred on aligning industrial and business policies with the EU, with a focus on creating an industrial climate conductive to competitiveness, innovation and sustainable growth.

This is complemented by Chapter 27, which requires strict technical and legally binding compliance with specific environmental laws – covering water and air quality waste management and biodiversity conservation. These chapters shape the regulatory framework for mining and other key areas relevant for re-mining and secondary raw materials, such as industrial pollution control, environmental permitting and the modernisation of industrial processes.

Progress on fundamental areas, like the rule of law and judicial independence, is also essential for building trust in raw materials-related projects. **By linking EU-Western Balkans cooperation on raw materials to tangible improvements in governance and environmental safeguards, both sides can reinforce public trust and help ensure that economic modernisation goes hand in hand with societal wellbeing**. These dynamics underline the need for more coherent green industrial policies in the Western Balkans so that secondary raw materials, circular economy initiatives and decarbonisation are integrated into in long-term strategies for diversification, quality jobs and social cohesion.

In parallel, recent policies and innovations in the region are encouraging a more supportive environment for secondary raw materials. Against this backdrop, the Single

Market Highway initiative aims to deepen industrial cooperation between the EU and the Western Balkans on CRMs, batteries and related value chains. The recently established EIT RawMaterials Regional Innovation Centre in Albania supports technological innovation, skills and project development on raw materials in the region, while also preparing an inventory of primary and secondary resources, including mining waste.

OPPORTUNITIES FOR EU-WESTERN BALKANS COOPERATION ON SECONDARY RAW MATERIALS

Cooperation between the EU and the Western Balkans on secondary raw materials won't materialise through directly implementing the CRMA, which will only happen once there is full alignment with the EU *acquis* during the EU accession process.

Nevertheless, **the CRMA encourages political momentum and sends a clear signal that securing sustainable supply chains is now a central EU priority**. This opens the window for partners in the region to advance voluntarily – with EU support – on many of the CRMA's core objectives, particularly those related to circularity, extractive-waste management, sustainable production and better environmental and social benefits around legacy sites.

Existing Strategic Partnerships offer relevant templates for structured cooperation, for example the MoU signed with Serbia (although a detailed roadmap is still pending) or those with Kazakhstan and Ukraine (which both already have a roadmap). These partnerships highlight that extractive waste and secondary raw materials can be framed as priority areas – provided they're backed by concrete implementation mechanisms and meaningful private sector and local stakeholder involvement.

Considering this and the challenges and barriers identified earlier, this Policy Briefs recommends that policymakers **concentrate their efforts on three emerging areas** where EU-Western Balkans cooperation could be most impactful.

1) Exploration, resource mapping and geological data upgrade

A **prerequisite is the systematic exploration, mapping and assessment of secondary CRM deposits and extractive waste sites in the Western Balkans**. Despite several initial studies, the region still lacks a comprehensive and standardised overview of the scale, composition and recoverability of minerals contained in legacy waste sites. Many countries don't maintain an up-to-date inventory of closed or abandoned mines, nor do they possess sufficiently detailed geological data to identify which sites offer the highest potential for re-mining or environmental remediation.

That's why **strengthening the use of Earth Observation (EO) services, including Copernicus technologies, would provide further support for exploring and monitoring active, closed and abandoned mining areas**. Following the EU-Ukraine roadmap, this could be done by establishing an 'Earth Observation Platform for Raw Materials' in the Western Balkans, which would also be complemented by case studies that demonstrate the added value of Copernicus data for mapping tailings and assessing environmental footprints.

Alongside this, **improving data quality, standardisation and harmonisation is equally crucial**. Aligning datasets with international classification systems such as UNFC – already required under the CRMA for reporting on extractive-waste facilities – would improve both reliability and comparability. Digitised and modern resource-data management systems would also strengthen transparency and investor confidence.

EuroGeoSurveys (EGS) can play a central role by supporting geological-data harmonisation, providing targeted capacity building for national geological surveys, and the integration of regional datasets into EU-wide resource data infrastructures. Through their coordinating role in projects such as FUTURAM, FRAME and EGDI, EGS can help the Western Balkans adopt compatible methodologies and achieve cross-border data comparability, thus improving transparency and investor confidence.

As also argued by ELIAMEP, the region would benefit from an **EU-supported geological modernisation initiative** to build survey capacities and the transparency needed to unlock investment in secondary raw material opportunities.

2) Innovation, skills and project development

Cooperation should also focus on **strengthening Western Balkans innovation ecosystems, supporting capacity building and identifying a pipeline of viable projects with robust environmental and social standards**.

Greater integration into Horizon Europe and other EU R&I programmes can support joint research and demonstrate sustainable extraction, processing and recycling technologies, including advanced methods for re-mining and valorising extractive waste. Valorising secondary raw materials and re-mining could also be explored and supported under **Western Balkans smart specialisation strategies** – policy initiatives developed with the JRC aimed at fostering innovation in areas where there are regional strengths.

Stronger, more active participation of Western Balkans stakeholders in the European Raw Materials Alliance (ERMA) and European Battery Alliance (EBA), could facilitate matchmaking between local project promoters and European investors, and help in identifying and developing joint sustainable raw materials projects – which the Growth

Plan for the Western Balkans prioritises. An initial focus on selected pilot projects with high potential – such as reprocessing copper-rich tailings at Bor (Serbia) or integrated remediation and re-use of legacy tailings at Trepça-Trepča (Kosovo) – could demonstrate the feasibility of such projects and attract private investments in re-mining opportunities.

Technology transfer and knowledge exchange are also important. Thinking about joint projects, cooperation could support voluntary technology transfer, particularly recovery technologies and sustainable practices for circularity. Skills upgrading and professional development should be supported through EIT RawMaterials programmes and initiatives like the **Raw Materials Academy**, for example by offering targeted workshops and technical-assistance activities (e.g. on secondary mining legislation), which would help strengthen both industrial and administrative capacities.

Importantly, **innovation and technology transfer efforts should also extend beyond re-mining technologies towards developing mid- and downstream segments of the value chain**, including activities that can generate higher value such as manufacturing capacity for clean technologies. A centralised raw material processing facility, realised through regional collaboration, could help achieve economies of scale, retain value in the region and facilitate integration into EU value chains.

3) EU regulatory alignment and investment support

Closer cooperation on secondary CRMs should also focus on regulatory and administrative alignment. This includes bringing mining legislation, permitting rules, waste management requirements, water protection and industrial emissions standards gradually closer to the EU *acquis* – in practice, primarily advancing negotiations for Chapter 27 (environment) and related chapters as well as horizontal rule-of-law reforms.

As highlighted by ELIAMEP, **integrating raw materials cooperation, currently mostly framed under MoUs, into the relevant chapters of the EU accession framework** where reforms become binding, monitored and linked to financial support could improve credibility, strengthen incentives, deliver administrative and governance improvements and tie progress to measurable benchmarks.

Regulatory alignment also requires **adopting recognised international standards and certification schemes for sustainable sourcing and due diligence**. This is increasingly relevant as EU market access rules evolve under the Batteries Regulation and the CRMA, including reporting requirements for extractive-waste sites. Supporting Western Balkans authorities and operators in applying these standards will help ensure long-term access to the EU market and reduce compliance risks.

Strengthening administrative and institutional capacity is important. Public authorities need enhanced technical expertise and capacity for permitting, conducting environmental impact assessments, inspection and enforcement. **The targeted use of TAIEX, Twinning and other EU technical-assistance initiatives can support the development of modern, transparent permitting systems** and improve oversight of mining and remining activities, which would contribute to building public trust.

Alongside regulatory reforms, turning cooperation into concrete projects requires the **better use of existing EU investment instruments**.

Under the Growth Plan for the Western Balkans, the Reform and Growth Facility (RGF) will provide up to EUR 6 billion in funding (EUR 2 billion in grants, EUR 4 billion in soft loans) between 2024-27, with disbursements conditional on reform agendas and partly channelled via the Western Balkans Investment Framework (WBIF). While raw materials projects are not explicitly listed as WBIF eligible projects, the framework is explicitly meant to 'facilitate the integration of industrial value chains, including critical raw material value chains, between the Western Balkans and the EU' and focuses on sustainable production and efficient resource use. This role is further reinforced in the RESourceEU Action Plan, which notably references using WBIF for CRM projects in enlargement countries.

Beyond the RGF, the EIP provides the strategic framework guiding investments through IPA III (the EU's main financial instrument for the Western Balkans) and the Western Balkans Guarantee Facility, which mobilise private capital for green and circular-economy investments. Together with the European Critical Raw Materials Centre and CRM financing hub announced in the RESourceEU Action Plan, these channels can support waste-management improvements, recycling infrastructure, environmental remediation and circular economy actions that underpin re-mining.

The Centre and the hub will coordinate de-risking tools such as InvestEU and the Innovation Fund towards a pipeline of viable projects, including recycling and secondary CRM projects in partner countries. Finally, involving multilateral development banks, particularly the European Investment Bank and EBRD, can be another lever to de-risk projects and draw in private investment.

CONCLUSIONS

As the EU steps up its efforts to diversify its raw materials supply and strengthen value-chain resilience, closer cooperation with its Western Balkans neighbours on secondary raw materials from legacy mining and industrial waste offers a mutually beneficial pathway. It reflects the growing role of extractive waste in the EU's CRM strategy and gives the Western Balkans an opportunity to both address long-standing environmental and health risks around legacy sites, as well as to advance circular resource use, ultimately contributing to region's efforts to join the EU.

However, realising this potential won't happen automatically. It requires a shared agenda that focuses on enhanced geological exploration and data, provides targeted support for innovation, skills and pilot projects, and aligns regulatory and investment frameworks that can unlock economically viable, low-impact, and socially accepted re-mining projects.

Done well, such cooperation can strike a balance between the EU's climate and industrial objectives and local environmental rehabilitation and green industrial development in the Western Balkans.

If policymakers focus their attention on the three areas specifically highlighted in this Policy Brief, it could be a win-win for all sides.

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