



Global Critical Minerals Initiatives From Strategic Declarations to Project Delivery

Introduction

Since the publication of the ILZSG Insight Paper “Global Critical Minerals Initiatives” in 2025, the global critical-minerals policy landscape has entered a more operational phase. During 2025 and early 2026, governments and partner institutions increasingly moved from broad strategic declarations toward project designation, permitting acceleration, public finance, strategic reserves, offtake support, corridor infrastructure and market-making tools. This paper provides an overview of the principal critical-minerals initiatives that have shaped the global policy landscape since early 2025. It retains the broad international perspective of the earlier ILZSG Insight Paper while placing greater emphasis on delivery mechanisms and target-metal relevance.

The most significant delivery mechanisms are reflected in the European Union Critical Raw Materials Act (CRMA) Strategic Projects system, the United States mineral-production and FAST-41 permitting agenda, Canada’s infrastructure and project-enabling measures, Australia’s Critical Minerals Strategic Reserve, India’s National Critical Mineral Mission, the United Kingdom’s Vision 2035, and the October 2025 United States-Japan and Australia-United States critical-minerals frameworks.

The Paper focuses on initiatives with relevance to nickel, copper, lead, zinc and associated co-products and by-products. The Paper does not list every lithium, graphite or rare-earth project. Those materials are included only where they illuminate a broader policy mechanism, such as project designation, strategic reserves, permitting acceleration or international finance. For nickel, copper, lead and zinc, this operational shift is particularly important. These metals sit at the intersection of energy transition, industrial resilience, defense-related supply chains, infrastructure investment and by-product production. Copper is receiving more explicit strategic treatment. Nickel remains central to batteries, alloys and defense-relevant applications. Lead and zinc continue to matter not only as base metals, but also as host systems for by-products such as germanium, indium, antimony, silver and related minor metals.

A further implication is that smelters, refineries, recycling facilities and transport corridors are increasingly being treated as strategic assets. The location, configuration and ownership of processing capacity can determine whether mineral resources contribute meaningfully to secure supply. This is particularly important for by-products, whose availability depends on host-metal extraction, metallurgical recovery routes and commercial incentives.

The central policy challenge is now implementation. Governments have created a more visible delivery

architecture, but the next test is whether project lists, financing announcements and permitting reforms can be translated into permitted, financed, constructed and socially accepted supply chains.

Key messages this Insight Paper intends to convey are:

Project pipelines are becoming more visible. The EU CRMA Strategic Projects lists and the U.S. FAST-41 dashboard illustrate how governments are moving from general supply-chain objectives toward named projects and more trackable delivery channels.

Public finance is becoming more targeted. Canada, Australia, Japan, the United States and the United Kingdom are using, or preparing to use, loans, guarantees, equity instruments, export credit, offtake arrangements and reserve models to reduce project risk.

By-products are now central to critical-minerals strategy. Gallium, germanium, indium, tellurium, antimony, rhenium, molybdenum, silver, cobalt and PGMs are often linked to copper, zinc, lead and nickel systems. This makes base-metal processing strategically important.

Infrastructure is a core policy tool. Transmission lines, ports, rail corridors, power connections and related infrastructure increasingly determine whether mineral resources can become reliable supply.

Implementation is the decisive policy test. The effectiveness of current initiatives will depend on whether public mechanisms can convert project lists and financing commitments into operating assets while maintaining environmental integrity, social license and transparent governance.

This Paper is prepared as an evidence-based analytical review using publicly available materials. Sources are drawn primarily from official government, statutory, regulatory, permitting-dashboard and multilateral materials. Company and secondary sources may be useful for future monitoring, but the core narrative here is based on public policy instruments and official project lists.

The author and the ILZSG does not guarantee the commercial success, technical feasibility, financing, permitting outcome, construction timetable or future production performance of any project, initiative or partnership discussed in the Paper, nor the accuracy of the information herein.

The author and affiliated organizations are not responsible for future changes in project status, government policy, market conditions, financing availability, regulatory approvals, community consultation outcomes, or sponsor decisions. Responsibility for final policy, investment, procurement or project decisions remains with the relevant government authorities, companies, investors and other decision-makers.

Comments or Questions

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Principal Developments at a Glance

Jurisdiction/Regions	Development	Policy significance	Target-metal relevance
European Union	First CRMA Strategic Projects and raw-materials platform	Strategic Projects were selected in the EU and outside the EU; several target-metal projects cover nickel, copper, cobalt, PGMs, germanium and gallium. The EU Energy and Raw Materials Platform adds demand aggregation and market-matching infrastructure.	Nickel, copper and by-/co-products are directly represented in the project lists.
United States	EO 14241, FAST-41 push and 2025 critical-minerals list	The U.S. shifted from general supply-chain strategy to mineral-production acceleration, permitting-dashboard coverage and a new list adding copper and lead.	Copper and lead become explicit critical minerals; nickel, zinc, copper-lead-zinc and by-product projects appear in FAST-41/transparency portfolios.
Canada	First and Last Mile Fund, Sovereign Fund and March 2026 project package	Canada introduced a CAD 1.5 billion infrastructure fund, highlighted an upcoming CAD 2 billion sovereign fund and announced project-level support for infrastructure, geoscience, processing and recycling.	Strong relevance to copper, nickel, cobalt, zinc and mine-enabling infrastructure.
Australia	Strategic Reserve and Australia-U.S. framework	Australia created a government-backed strategic-reserve model and linked it to coordinated financing, offtake and pricing tools with the United States.	Direct target-metal relevance is strongest through processing and by-product projects, especially antimony at Port Pirie; nickel/copper relevance is via the wider financing framework.
Japan	Japan-U.S. critical-minerals framework	Japan and the United States agreed to cooperate using stockpiling, grants, guarantees, loans, equity, offtake and permitting support.	Project selection remains to be defined; the mechanism could apply to nickel, copper and by-product supply chains.
United Kingdom	Vision 2035 replaces the 2022 strategy	The UK replaced the first strategy with Vision 2035, added domestic and recycling ambitions and expanded financing channels through UKEF.	Project relevance is mainly through finance and growth-minerals treatment rather than a new named mine pipeline.
India	National Critical Mineral Mission	India approved a seven-year mission covering exploration, mining, beneficiation, processing and recovery from end-of-life products and tailings.	Potential relevance to copper, nickel and zinc-bearing deposits and tailings; few named target-metal projects are publicly specified.
China	Continued industrial policy and export-control tightening	China's export-control system has expanded from gallium/germanium to graphite, antimony and several 2025 controls involving by-products and rare-earth items.	High by-/co-product relevance: gallium, germanium, antimony, tellurium, bismuth, molybdenum and indium are closely linked to base-metal supply chains.
Multilateral	G7, MSP and UN delivery frameworks	The multilateral agenda moved toward standards-based markets, sovereign tools, project finance and just-transition principles.	Relevant across nickel, copper, lead, zinc and associated co-/by-products, especially through finance and market-design mechanisms.
Africa / corridors	Lobito Corridor and Copperbelt logistics	The corridor has moved from concept to financed infrastructure, intended to lower transit time and cost between the DRC/Zambia Copperbelt and Atlantic export routes.	Direct copper and cobalt corridor relevance; zinc/lead relevance depends on future mine users.
South America	Lithium activity continues, copper policy remains project-specific	Chile's NovaAndino Litio is lithium-only and therefore not a target-metal. Copper developments should be tracked separately where official designation is available since Codelco leads Chile's National Lithium Strategy.	Not a nickel/copper/lead/zinc project except where copper-specific sources are present.

The Delivery Architecture

The current phase of critical-minerals policy can be understood as a delivery architecture composed of six main instruments: strategic project designation, accelerated permitting, public and blended finance, strategic reserves and offtake, enabling infrastructure, and circular-economy and recycling requirements. These instruments are increasingly being used together rather than as separate policy measures.

Strategic project designation creates a public project pipeline and signals that selected projects have value beyond normal market supply. Accelerated permitting aims to reduce uncertainty and make development timelines more visible, while still requiring credible environmental, social and community safeguards. Public and blended finance uses grants, loans, guarantees, export credit, equity and sovereign funds to move projects toward bankability. Strategic reserves and offtake arrangements can reduce price and demand risk by giving producers clearer routes to market. Infrastructure corridors help turning mineral deposits into accessible supply by addressing constraints related to power, rail, roads, ports and grid connections. Recycling and by-product recovery expand the definition of critical supply beyond primary mines and into smelters, refineries, industrial residues and end-of-life products.

Instruments Shaping the Current Landscape

Jurisdiction	Instrument	Current role in the policy landscape	Target-metal relevance
United States	Inflation Reduction Act	Still materially relevant to batteries and domestic processing incentives.	Indirect target-metal relevance via battery and processing supply chains.
United States	Infrastructure Investment and Jobs Act / Bipartisan Infrastructure Law	Remains relevant through mapping, recycling and infrastructure support.	Indirect target-metal relevance.
United States	EO 14017 and EO 13817	Existing foundations; now complemented by EO 14241 and 2025 permitting actions.	Supply-chain and critical-mineral strategy foundation.
United States	Energy Act of 2020	Remains a statutory basis for critical-minerals work and list methodology.	Broad critical minerals; source baseline only.
European Union	European Green Deal and EU Action Plan on CRMs	Still foundational but now operationalized through CRMA.	Broad critical raw materials.
European Union	ERMA, Horizon Europe, EIP-RM	Relevant as finance, innovation and stakeholder-mobilization instruments.	Broad; project flags only where linked to CRMA lists.
China	Made in China 2025, Five-Year Plans, BRI, reserve program	Retained as structural context. Project-level flagging requires separate public project sources.	Nickel, copper, zinc and by-products via industrial policy and overseas investment.

Jurisdiction	Instrument	Current role in the policy landscape	Target-metal relevance
Canada	Critical Minerals Strategy 2022 and 2024 list	Updated with March 2026 mechanisms and project package.	Copper, nickel, zinc and related by-products.
Australia	Critical Minerals Strategy 2023-2030	Now supplemented by strategic reserve and Australia-U.S. framework.	Nickel, copper and associated by-products through finance and offtake tools.
Japan	Strategic Energy Plan and critical-mineral cooperation	Updated with Japan-U.S. 2025 framework.	Mechanism could cover target metals but named target projects remain to be specified.
United Kingdom	Critical Minerals Strategy 2022	Superseded by Vision 2035.	Domestic capability and supply-chain finance relevance.
Multilateral	MSP, GBA, IGF and UN Panel	Maturing; updated with MSP Finance Network, G7 Action Plan and Production Alliance.	Broad relevance across target metals and responsible production.

Analysis of Principal Critical-Minerals Initiatives

1. United States

The United States has shifted from supply-chain diagnosis toward direct mineral-production acceleration. Executive Order 14241, issued in March 2025, treats mineral production as a national priority and directs agencies to identify priority projects, accelerate permitting and use available authorities to support domestic mineral supply.

A second major U.S. development is the final 2025 List of Critical Minerals. The list reportedly contains 60 minerals and adds copper and lead, while retaining nickel and zinc. This is significant for ILZSG/INSG metals because the U.S. policy system now gives more explicit strategic treatment to metals that were historically understood mainly as industrial or infrastructure materials.

The U.S. FAST-41 and Federal Permitting Dashboard system has also become a practical delivery channel. The dashboard identifies covered and transparency projects and provides a more public route for tracking mine permitting. Target-metal projects include copper, nickel, zinc, lead and associated by-product opportunities such as gallium, germanium, molybdenum and silver.

U.S. target-metal project examples

Project	Target metals / by-products	Policy relevance
South32 Hermosa, Arizona	Zinc, manganese	FAST-41 covered project; zinc and manganese mining/processing operation.
Johnson Tract, Alaska	Copper, zinc, gold, silver, lead	FAST-41 covered project; proposed underground operation.
NorthMet, Minnesota	Copper, nickel-copper concentrates	Current FAST-41 transparency project; copper-nickel concentrate production.

Project	Target metals / by-products	Policy relevance
Doe Run, Missouri	Lead, zinc, copper	FAST-41 transparency project; underground mine with tailings disposal.
Blue Copper, Montana	Copper, zinc, gallium, germanium	FAST-41 transparency project; base metals plus semiconductor by-products.
Schell Creek, Nevada	Copper, zinc, molybdenum, silver	FAST-41 transparency project; copper-zinc with molybdenum/silver by-products.
Nikolai Nickel, Alaska	Nickel, cobalt, PGM, copper, chromium	FAST-41 transparency addition in November 2025; advanced exploration project.

2. European Union

The European Union Critical Raw Materials Act is the EU's central implementation framework. It sets 2030 benchmarks for extraction, processing and recycling, seeks to limit excessive dependency on single third-country suppliers and creates a Strategic Projects system intended to accelerate selected projects and improve access to finance.

The first EU Strategic Projects lists are among the most important EU developments since the first wave of critical raw materials policy. The EU list was adopted in March 2025 and the non-EU list in June 2025. The lists include nickel, copper, cobalt, PGM, germanium and gallium projects, as well as external projects that may diversify access to nickel and copper supply. The EU Energy and Raw Materials Platform, including the Raw Materials Mechanism, adds a market-organization layer by aggregating demand and matching buyers with suppliers. This is significant because critical-minerals policy is no longer only about producing raw materials. It is also about connecting potential supply with industrial demand, finance and downstream users.

EU and EU-linked target-metal Strategic Project examples

Area	Project	Target metals / by-products	Policy relevance
EU	Aguablanca, Spain	Nickel, copper, cobalt, PGMs	CRMA Strategic Project. Restart/continuity potential for polymetallic mine supply.
EU	CirCular, Spain	Copper, nickel, PGMs	CRMA Strategic Project involving recovery/recycling of CRM-bearing materials.
EU	GALLICAM / GePETO, France	Nickel, copper, cobalt, germanium, gallium	CRMA Strategic Projects with base-metal and by-product relevance.
EU	Kolmisoppi, Sweden	Nickel, cobalt	CRMA Strategic Project; nickel-cobalt relevance for batteries and alloy supply.
EU	NorthCYCLE, Finland	Nickel, cobalt and battery materials	CRMA Strategic Project with recycling/circular-economy relevance.
EU	Lombador, Semblana and 3rd SILO, Portugal	Copper	CRMA Strategic Project cluster in the Iberian Pyrite Belt.

Area	Project	Target metals / by-products	Policy relevance
EU	POLVOLT, Poland	Nickel, copper, cobalt, PGMs	CRMA Strategic Project; polymetallic and processing relevance.
EU	Rovina Valley, Romania	Copper	CRMA Strategic Project; copper project relevance.
EU	Sakatti, Finland	Copper, nickel, cobalt, PGMs	CRMA Strategic Project; polymetallic mine project relevance.
EU external	CaledoNi, New Caledonia	Nickel	CRMA Strategic Project outside the EU; nickel supply diversification relevance.
EU external	Dumont Nickel, Canada	Nickel, cobalt	CRMA Strategic Project outside the EU; nickel/cobalt project relevance.
EU external	Nussir, Norway	Copper	CRMA Strategic Project outside the EU; European copper supply relevance.
EU external	SMP, Brazil	Nickel, cobalt	CRMA Strategic Project outside the EU; nickel-cobalt processing/supply relevance.

3. China

China remains the most systemically important actor in several refined and processed critical-mineral supply chains. Its policy position is shaped by industrial planning, resource security, strategic reserves, overseas investment, standards, export licensing and processing dominance. For this paper, the most important recent development is the tightening and expansion of export-control coverage for selected by-products and strategic materials.

These controls should be understood primarily as licensing and dual-use control mechanisms, rather than as simple blanket export bans, unless the relevant measure explicitly states otherwise. This distinction matters because licensing systems can still affect availability, transaction risk, timing, inventories and investment incentives even when trade is not fully prohibited.

China's by-product policy is especially relevant to zinc, copper, lead and nickel systems. Germanium, gallium, indium, tellurium, bismuth, molybdenum and antimony often depend on host-metal mining and refining. Security of supply for these materials therefore depends not only on mine production, but also on whether smelters and refineries are configured and incentivized to recover them.

By-product implications for target-metal supply chains

Material group	Host-metal / processing link	Policy implication
Gallium / germanium	Frequently associated with bauxite, zinc and coal-related streams; germanium also linked to zinc and copper smelting/refining contexts.	Controls increase the strategic value of processing capacity and traceability for base-metal by-products.
Antimony	Often produced in polymetallic systems and increasingly treated as a defence and battery/materials input.	Relevant to lead-zinc and smelting by-product analysis; Australia's Port Pirie case illustrates this link.
Indium, tellurium, bismuth, molybdenum	Commonly connected to zinc, copper, lead and polymetallic refining streams.	Controls highlight the need to analyse base-metal refineries as critical-mineral assets, not only mines.

4. Australia

Australia's Critical Minerals Strategy 2023-2030 remains the policy baseline, but the delivery layer has deepened. The Critical Minerals Strategic Reserve introduces a government-backed model for strengthening offtake, stockholding and price-risk management. The Australia-United States framework signed in October 2025 adds a bilateral mechanism for coordinating finance, permitting, offtake and strategic supply-chain tools.

Australia's target-metal relevance is strongest through finance and processing tools, and through associated by-products. The Nyrrstar Port Pirie antimony demonstration is particularly relevant for this paper because antimony can be recovered through a lead-smelter context and has been identified as a strategic reserve priority. It illustrates how base-metal metallurgy can become central to critical-minerals security.

Australia target-metal / by-product example

Project / mechanism	Target metals / by-products	Policy relevance
Nyrrstar Port Pirie antimony demonstration	Antimony as lead-smelter by-product	Identified under Australia-U.S. framework; antimony designated as strategic reserve priority.

5. Canada

Canada's Critical Minerals Strategy has become more operational through infrastructure funds, project finance, geoscience and processing support. In March 2026, Canada introduced or highlighted the First and Last Mile Fund, a planned Critical Minerals Sovereign Fund and a package of project-level measures covering grid infrastructure, mine enabling works, processing, separation technologies and recycling.

For nickel, copper and associated by-products, the Canadian package is significant because it recognizes that deposits often require power, transmission, roads, processing capacity and technology demonstration before they can become reliable supply. Support linked to Highland Valley Copper, Red Chris, nickel/cobalt recovery from residues and pilot-scale separation reflects this broader understanding of project delivery.

Canada target-metal project examples

Project / mechanism	Target metals / by-products	Policy relevance
Highland Valley Copper Mine Life Extension infrastructure	Copper	March 2026 Canadian support for BC Hydro upgrades linked to mine-life extension.
Red Chris / Northwest Transmission Line upgrades	Copper; associated by-products depending on mine plan	Infrastructure support to enable expanded power capacity for Red Chris and regional projects.
Exterra low-carbon nickel/cobalt from asbestos residues	Nickel, cobalt	Canadian project support for secondary-resource processing.
University of Alberta separation pilot	Copper, nickel, cobalt	Canadian support for pilot-scale separation technology.

6. Japan

Japan's long-standing critical-minerals approach combines stockpiling, overseas resource diplomacy, state-backed finance and technology partnerships. The October 2025 United States-Japan framework adds a more explicit delivery architecture, including grants, guarantees, loans, equity, stockpiling, offtake arrangements and permitting support.

For nickel, copper, lead and zinc, the framework is best understood as a mechanism rather than a named project list. Its importance lies in the way it can support project finance, refining capacity, processing, recycling and secure offtake for supply chains that Japan and the United States identify as strategically important.

7. United Kingdom

The United Kingdom's first Critical Minerals Strategy has been replaced by Vision 2035. The newer strategy places greater emphasis on domestic capability, recycling, international partnerships and finance. It also expands the potential role of UK Export Finance and other public tools in supporting critical-minerals supply chains.

The UK is not yet presenting a target-metal project pipeline comparable to the EU CRMA Strategic Projects system. Its importance for this paper is therefore mainly as a financing, standards, recycling and partnership mechanism that could support copper, nickel, lead, zinc and associated by-product supply chains where projects meet UK strategic and commercial priorities.

8. India

India's National Critical Mineral Mission is one of the most important new frameworks in the global landscape. Approved in January 2025 for a seven-year period, it covers exploration, mining, beneficiation, processing, recovery from end-of-life products, tailings and fast-track approvals. It also aims to support overseas acquisition and stronger domestic supply-chain capability.

The target-metal relevance is substantial, although less project-specific than the EU and U.S. systems. Copper, nickel and zinc-bearing deposits, mine tailings and secondary recovery could become important areas of implementation as India seeks to expand domestic processing and reduce supply risks for industrial and energy-transition materials.

9. South America and Africa

South America remains highly active in critical-minerals policy, particularly in lithium and copper. Chile's NovaAndino Litio joint venture is an important example of policy implementation in lithium, but it is not treated as a target-metal project in this paper because it does not directly concern nickel, copper, lead, zinc or associated by-products.

For target metals, Africa's clearest implementation mechanism is corridor infrastructure. The Lobito Corridor is strategically important because it connects the DRC-Zambia Copperbelt with the Atlantic via Angola. For copper and cobalt, corridor infrastructure can be as important as mine development because transport cost, reliability and export access shape whether mineral resources can reach global markets.

Africa and South America examples

Area	Project / mechanism	Target metals / by-products	Policy relevance
Africa corridor	Lobito Corridor	Copper and cobalt corridor; potential wider base-metal logistics	Rail/logistics corridor connecting Angola, DRC and Zambia; supports Copperbelt access to Atlantic trade routes.
South America	NovaAndino Litio / Salar de Atacama	Lithium only	Significant policy implementation but excluded from target-metal elaboration.

10. Multilateral Collaboration

The multilateral landscape has become more operational. The UN Secretary-General's Panel on Critical Energy Transition Minerals provides a normative framework for justice, equity, transparency, human rights, environmental protection and value addition. The G7 Critical Minerals Action Plan and standards-based markets agenda move the discussion toward production incentives, standards and resilient supply. The Minerals Security Partnership Finance Network adds a project-finance channel linking governments, development finance institutions and private capital.

For nickel, copper, lead and zinc, multilateral initiatives matter because project delivery is affected by standards, social license, finance, due diligence, offtake and infrastructure. They also matter for by-products, where diversified supply requires cooperation across host-metal mining, smelting, refining and recycling systems.

Consolidated Project and Mechanism List: Target Metals Only

This list named projects or enabling mechanisms that are directly related to nickel, copper, lead, zinc or associated co-products and by-products. Lithium-only projects are not elaborated, except where they help define the boundary of the paper. The register is intended as a policy-monitoring tool, not a commercial ranking of projects.

Area	Project / mechanism	Metals / by-products	Policy relevance
EU	Aguablanca, Spain	Nickel, copper, cobalt, PGMs	CRMA Strategic Project. Restart/continuity potential for polymetallic mine supply.
EU	CirCular, Spain	Copper, nickel, PGMs	CRMA Strategic Project involving recovery/recycling of CRM-bearing materials.
EU	GALLICAM / GePETO, France	Nickel, copper, cobalt, germanium, gallium	CRMA Strategic Projects with base-metal and by-product relevance.
EU	Kolmisoppi, Sweden	Nickel, cobalt	CRMA Strategic Project; nickel-cobalt relevance for batteries and alloy supply.
EU	NorthCYCLE, Finland	Nickel, cobalt and battery materials	CRMA Strategic Project with recycling/circular-economy relevance.

Area	Project / mechanism	Metals / by-products	Policy relevance
EU	Lombador, Semblana and 3rd SILO, Portugal	Copper	CRMA Strategic Project cluster in the Iberian Pyrite Belt.
EU	POLVOLT, Poland	Nickel, copper, cobalt, PGMs	CRMA Strategic Project; polymetallic and processing relevance.
EU	Rovina Valley, Romania	Copper	CRMA Strategic Project; copper project relevance.
EU	Sakatti, Finland	Copper, nickel, cobalt, PGMs	CRMA Strategic Project; polymetallic mine project relevance.
EU external	CaledoNi, New Caledonia	Nickel	CRMA Strategic Project outside the EU; nickel supply diversification relevance.
EU external	Dumont Nickel, Canada	Nickel, cobalt	CRMA Strategic Project outside the EU; nickel/cobalt project relevance.
EU external	Nussir, Norway	Copper	CRMA Strategic Project outside the EU; European copper supply relevance.
EU external	SMP, Brazil	Nickel, cobalt	CRMA Strategic Project outside the EU; nickel-cobalt processing/supply relevance.
United States	South32 Hermosa, Arizona	Zinc, manganese	FAST-41 covered project; zinc and manganese mining/processing operation.
United States	Johnson Tract, Alaska	Copper, zinc, gold, silver, lead	FAST-41 covered project; proposed underground operation.
United States	NorthMet, Minnesota	Copper, nickel-copper concentrates	Current FAST-41 transparency project; copper-nickel concentrate production.
United States	Doe Run, Missouri	Lead, zinc, copper	FAST-41 transparency project; underground mine with tailings disposal.
United States	Blue Copper, Montana	Copper, zinc, gallium, germanium	FAST-41 transparency project; base metals plus semiconductor by-products.
United States	Schell Creek, Nevada	Copper, zinc, molybdenum, silver	FAST-41 transparency project; copper-zinc with molybdenum/silver by-products.
United States	Nikolai Nickel, Alaska	Nickel, cobalt, PGM, copper, chromium	FAST-41 transparency addition in November 2025; advanced exploration project.
Canada	Highland Valley Copper Mine Life	Copper	March 2026 Canadian support for BC Hydro

Area	Project / mechanism	Metals / by-products	Policy relevance
	Extension infrastructure		upgrades linked to mine-life extension.
Canada	Red Chris / Northwest Transmission Line upgrades	Copper; associated by-products depending on mine plan	Infrastructure support to enable expanded power capacity for Red Chris and regional projects.
Canada	Exterra low-carbon nickel/cobalt from asbestos residues	Nickel, cobalt	Canadian project support for secondary-resource processing.
Canada	University of Alberta separation pilot	Copper, nickel, cobalt	Canadian support for pilot-scale separation technology.
Australia	Nyrstar Port Pirie antimony demonstration	Antimony as lead-smelter by-product	Identified under Australia-U.S. framework; antimony designated as strategic reserve priority.
Africa corridor	Lobito Corridor	Copper and cobalt corridor; potential wider base-metal logistics	Rail/logistics corridor connecting Angola, DRC and Zambia; supports copperbelt access to Atlantic trade routes.
South America	NovaAndino Litio / Salar de Atacama	Lithium only	Significant policy implementation but excluded from target-metal elaboration.

Implications for Nickel, Copper, Lead and Zinc

The developments reviewed in this paper have four specific implications for the ILZSG/INSG/ICSG metals family.

1. Copper is being reclassified from infrastructure metal to strategic mineral

Copper's inclusion in the final 2025 U.S. critical-minerals list, its presence in EU Strategic Projects and its role in African corridor infrastructure show that copper is increasingly treated as a strategic input for electrification, defense, grid expansion, industrial resilience and digital infrastructure.

2. Nickel remains a battery, alloy and defense-risk mineral

Nickel appears repeatedly in CRMA project lists, FAST-41 project additions and Canadian secondary-resource processing. The most policy-relevant nickel projects are increasingly those that can demonstrate credible permitting pathways, processing access, low-carbon credentials, offtake and alignment with public-finance criteria.

3. Lead and zinc matter through both primary metal and by-product systems

Lead and zinc are sometimes less visible in energy-transition narratives, but they remain important for batteries, galvanizing, infrastructure, defense, chemicals and by-product recovery. Lead's addition to the U.S. 2025 critical-minerals list and the presence of zinc and lead-zinc projects in FAST-41 show that these metals should remain inside critical-minerals monitoring frameworks.

4. Smelters and refineries are now critical-minerals assets

The by-product focus of China export controls, Australia's Port Pirie antimony example and Canada's processing pilots point to a central conclusion: critical-minerals security is often determined at the smelter, refinery and separation stage. Mine output matters, but the ability to recover, refine and certify minor metals can be equally important.

Risk Points

1. Permitting speed and social license

Accelerated permitting can reduce timelines and improve investor visibility. However, it may face legal, indigenous, environmental or community challenges if safeguards are weakened or if affected communities are not engaged early and transparently.

2. Financing announcements and bankable projects

Funds, guarantees, reserves and public commitments are important, but project delivery depends on orebody quality, cost inflation, power, water, transport, offtake, permitting and price risk. A project should not be treated as secure supply until it has moved through permitting, financing, construction and commissioning.

3. By-product dependency

Gallium, germanium, indium, tellurium, antimony and related minor metals cannot usually be expanded independently of host-metal mining and refining. Supply security therefore depends on suitable processing capacity, recovery incentives and traceable refining routes.

4. Fragmentation of standards

Competing national standards, subsidy conditions and local-content rules may complicate trade even where jurisdictions share the goal of supply-chain resilience. Greater interoperability of standards would support investment and reduce compliance complexity.

5. Overemphasis on mining without processing

New mines alone will not resolve concentration risks if refining, smelting, chemicals and precursor capacity remain concentrated. Processing, recycling and by-product recovery should be treated as core elements of supply-chain resilience.

6. Data quality and transparency

Many public documents identify projects but omit capacity, capex, timelines, financing closure, operating assumptions and commercial offtake terms. This limits the ability to distinguish policy ambition from deliverable supply.

Policy Recommendations

Governments and intergovernmental bodies are recommended to maintain a clear distinction between announced initiatives, selected projects, permitted projects, financed projects, commissioned assets and commercially producing supply. This would improve transparency and reduce the risk of overstating supply-chain resilience.

Project support should prioritise not only mining capacity, but also processing, refining, recycling, by-product recovery and enabling infrastructure. In many critical-minerals supply chains, midstream and infrastructure assets are the binding constraint.

Public finance should be linked to measurable delivery milestones, including permitting progress, financing closure, community engagement, environmental safeguards, offtake arrangements and commissioning timelines.

By-product recovery should be integrated into base-metal policy. Nickel, copper, lead and zinc systems can support supply of several critical minor metals, but only where metallurgical facilities are configured and commercially incentivised to recover them.

International cooperation should focus on interoperability of standards, responsible sourcing, transparent project data and complementary financing tools. Without coordination, national initiatives may increase fragmentation even as they seek to improve resilience.

A rolling project register should be maintained for nickel, copper, lead, zinc and associated by-products. This register should distinguish between projects, enabling infrastructure, financing mechanisms and policy frameworks.

Conclusion

The global critical-minerals landscape has moved into a more concrete implementation phase. The decisive policy instruments are no longer limited to strategies and mineral lists. They increasingly include project pipelines, public-finance tools, strategic reserves, offtake arrangements, accelerated permitting systems, processing capacity, recycling requirements and enabling infrastructure.

For nickel, copper, lead and zinc, this shift is material. These metals, together with their associated co-products and by-products, are central to industrial resilience, energy transition, strategic autonomy and defense-relevant supply chains. Future monitoring should therefore distinguish clearly between policy announcements, selected projects, permitted projects, financed projects, commissioned assets and commercially producing supply.

The next phase will test whether governments and partner institutions can convert the emerging delivery architecture into resilient supply while maintaining environmental integrity, social license, transparency and international cooperation. The outcome will determine whether critical-minerals policy strengthens supply-chain resilience or simply redistributes risk across jurisdictions and stages of the value chain.

Sources

Source	links
EU Critical Raw Materials Act	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32024R1252 ; https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en
EU CRMA Strategic Projects - selected projects	https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/strategic-projects-under-crma/selected-projects_en
EU CRMA Strategic Projects - EU list	https://single-market-economy.ec.europa.eu/document/download/e9c90c91-7492-4047-bc51-d0c9d5e89a2f_en?filename=C_2025_1904_1_EN_annexe_acte_autonome_part1_v2.pdf
EU CRMA Strategic Projects - outside-EU list	https://single-market-economy.ec.europa.eu/document/download/60c576a5-435e-43e6-83de-c81f3652259b_en?filename=C_2025_3491_1_EN_annexe_acte_autonome_part1_v3.pdf
EU Energy and Raw Materials Platform	https://energy.ec.europa.eu/topics/energy-security/eu-energy-and-raw-materials-platform_en ; https://single-market-economy.ec.europa.eu/news/registration-opens-raw-materials-mechanism-under-eu-energy-and-raw-materials-platform-2025-11-18_en
EU Battery Regulation and recycling rules	https://environment.ec.europa.eu/news/new-rules-boost-recycling-efficiency-waste-batteries-2025-07-04_en
U.S. Executive Order 14241	https://www.whitehouse.gov/presidential-actions/2025/03/immediate-measures-to-increase-american-mineral-production/
U.S. 2025 Critical Minerals List	https://www.usgs.gov/news/science-snippet/interior-department-releases-final-2025-list-critical-minerals
U.S. FAST-41 current transparency projects	https://www.permitting.gov/projects/current-transparency-projects
U.S. FAST-41 current covered projects	https://www.permitting.gov/projects/current-fast-41-portfolio
U.S. FAST-41 project additions	https://www.permitting.gov/newsroom/press-releases/permitting-council-adds-three-new-critical-mineral-mining-projects-fast-41 ; https://www.permitting.gov/newsroom/press-releases/permitting-council-adds-four-new-critical-mineral-mining-projects-fast-41 ; https://www.permitting.gov/newsroom/press-releases/permitting-council-adds-two-new-critical-mineral-mining-projects-fast-41-0
Australia-U.S. Critical Minerals Framework	https://www.industry.gov.au/publications/united-states-australia-framework-securing-supply-mining-and-processing-critical-minerals-and-rare-earths
Australia Critical Minerals Strategic Reserve	https://www.industry.gov.au/mining-oil-and-gas/minerals/critical-minerals/critical-minerals-strategic-reserve ; https://www.industry.gov.au/news/strategic-reserve-secure-australias-critical-mineral-supply
Australia Critical Minerals Strategy	https://www.industry.gov.au/publications/critical-minerals-strategy-2023-2030
Australia Port Pirie antimony	https://www.minister.industry.gov.au/ministers/timayres/media-releases/governments-investment-delivers-strengthened-critical-mineral-supply-chain
U.S.-Japan Critical Minerals Framework	https://www.whitehouse.gov/briefings-statements/2025/10/united-states-japan-framework-for-securing-the-supply-of-critical-minerals-and-rare-earths-through-mining-and-processing/
UK Vision 2035 Critical Minerals Strategy	https://www.gov.uk/government/publications/uk-critical-minerals-strategy/vision-2035-critical-minerals-strategy
UK Critical Minerals Supply Finance	https://www.gov.uk/government/news/new-government-guarantee-to-strengthen-uk-critical-minerals-supply-chains ; https://www.gov.uk/government/publications/uk-export-finance-leading-with-finance-product-brochure/uk-export-finance-leading-with-finance-all-products
India National Critical Mineral Mission	https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2097309
India NCMM exploration and tailings	https://www.pib.gov.in/PressReleasePage.aspx?PRID=2120525&lang=2&reg=3 ; https://www.pib.gov.in/PressReleasePage.aspx?PRID=2115222
Canada March 2026 critical-minerals package	https://www.canada.ca/en/natural-resources-canada/news/2026/03/government-of-canada-invests-to-unlock-canadas-critical-minerals-advantage.html ; https://www.canada.ca/en/natural-resources-canada/news/2026/03/canada-charts-a-decisive-path-for-mining-at-pdac-2026.html
Canada critical-minerals project backgrounder	https://www.canada.ca/en/natural-resources-canada/news/2026/03/backgrounder-government-of-canada-invests-to-unlock-canadas-critical-minerals-advantage.html
Canada Critical Minerals Strategy progress	https://www.canada.ca/en/campaign/critical-minerals-in-canada/canadas-critical-minerals-strategy/canadas-critical-minerals-strategy-progress-update.html
China gallium/germanium export controls	https://english.mofcom.gov.cn/News/PressConference/art/2023/art_36fb2d80e4b4453891bb8fc83e2b3c4e.html ; https://english.mofcom.gov.cn/News/PressConference/art/2023/art_cd46d6e56bb6486a928ea2f16182ae90.html
China antimony export controls	https://english.mofcom.gov.cn/News/PressConference/art/2024/art_1f1c8a333816408d944cd9a4d1c4b370.html ; https://www.mofcom.gov.cn/zwgk/zcfb/art/2024/art_a4711acb06364199a3c5a06d7f2be6d8.html
China 2025 export controls	https://www.mofcom.gov.cn/zwgk/zcfb/art/2025/art_e623090907fc4e1092f0a4db72f57b95.html ; https://english.mofcom.gov.cn/News/SpokesmansRemarks/art/2025/art_c202dcc0433d476db52b1e7f7fe53926.html
UN Critical Energy Transition Minerals Panel	https://www.un.org/en/climatechange/critical-minerals
G7 Critical Minerals Action Plan	https://www.g7.utoronto.ca/summit/2025kananaskis/250617-critical-minerals.html
G7 standards-based markets and Production Alliance	https://g7.utoronto.ca/energy/2025-roadmap-critical-minerals-standards.html ; https://www.canada.ca/en/campaign/critical-minerals-in-canada/our-critical-minerals-strategic-partnerships/critical-minerals-production-alliance.html
MSP Finance Network	https://2021-2025.state.gov/joint-statement-on-establishment-of-the-minerals-security-partnership-finance-network/
Codelco-SQM NovaAndino Litio Lobito Corridor	https://www.codelco.com/en/prensa/2025/chile-da-un-paso-historico-se-materializa-novaandino-litio-la-sociedad ; https://www.dfc.gov/media/press-releases/dfc-announces-investments-supporting-development-along-lobito-corridor ; https://international-partnerships.ec.europa.eu/policies/global-gateway/connecting-democratic-republic-congo-zambia-and-angola-global-markets-through-lobito-corridor_en