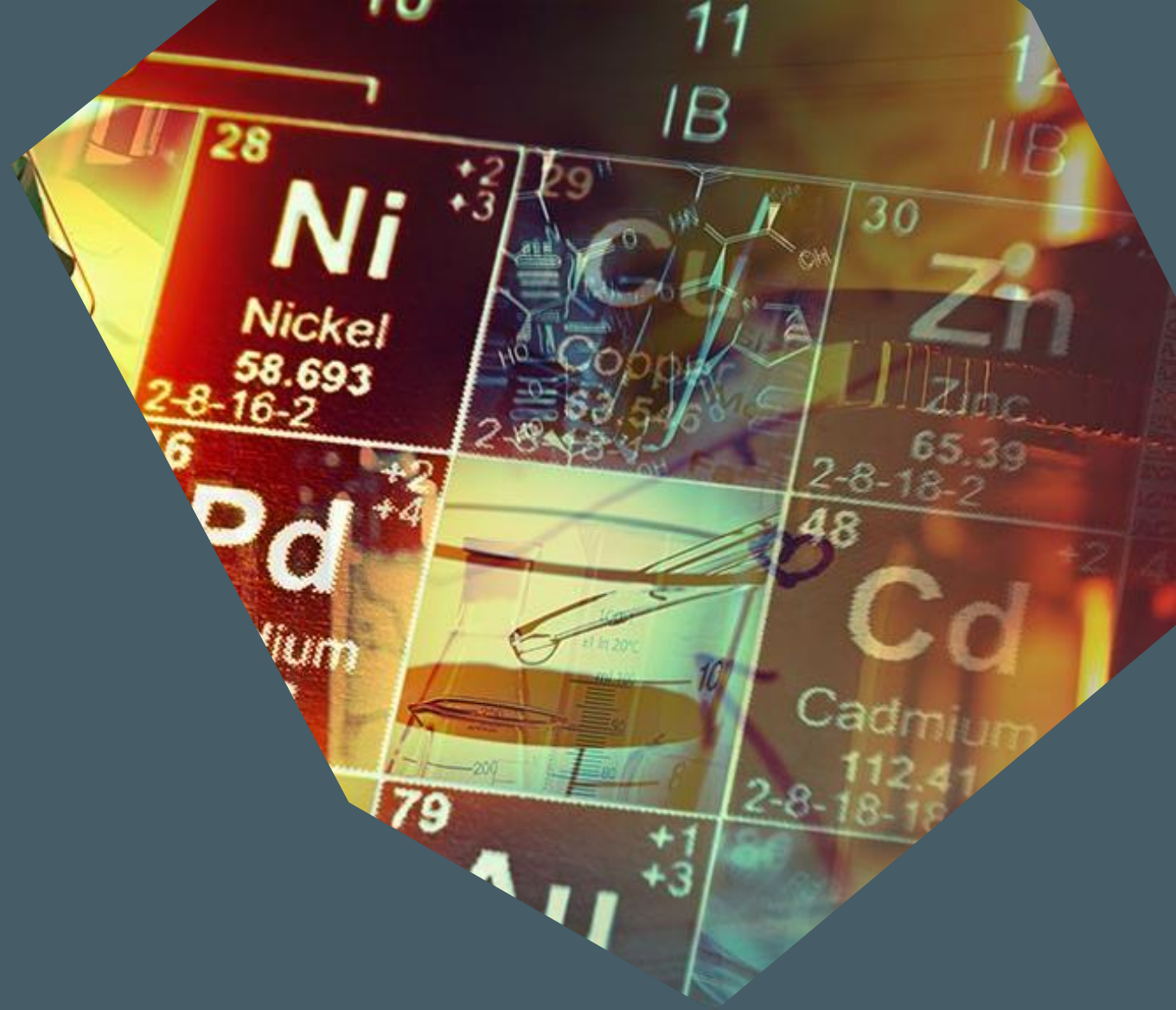
Critical Materials Collective

Overview



World Business Council *for Sustainable Development*

WBCSD's Critical Materials Collective brings together **cross-value chain stakeholders** to take action—**building real-world pilots that can scale** to the broader market becoming the go-to platform to:

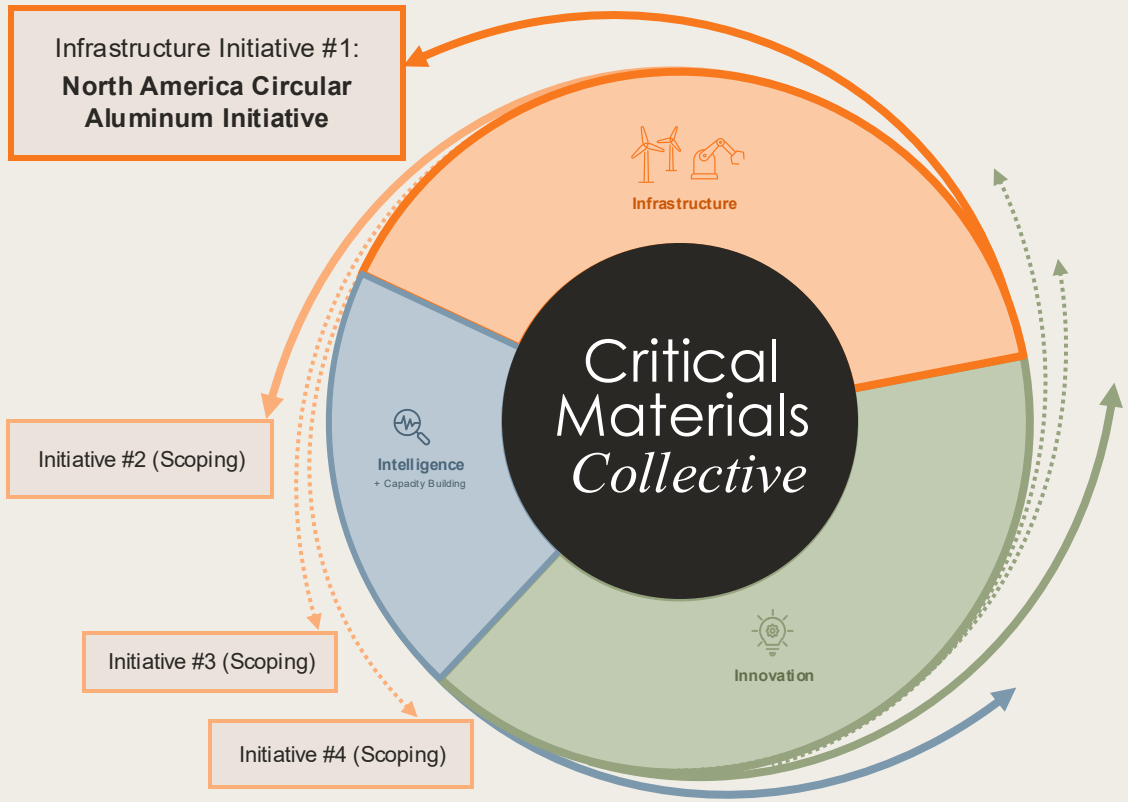
1. Drive public-private action across industries to advance circularity and create a measurable impact on climate, nature, and social equity
2. Create demand for circular solutions and leverage pooled purchasing power to accelerate adoption
3. Develop scalable solutions that help meet the growing demand for high-quality, low-carbon secondary materials

Mission

Accelerating the circular transition by driving **collaborative action along value chains** to provide **high-quality, low-carbon secondary materials** – starting with aluminum, rare earth elements, and copper

Vision

The **platform for operationalizing circularity opportunities** to drive climate impact, supply chain resilience, and value **by unlocking high-quality recycled materials**



Executive Committee Members

2025 Members

Focused set of components drive opportunity identification

- → Projects must address recognized bottlenecks or pain points not being solved elsewhere
- → Require collective action
- → Deliver measurable progress on emissions reductions and in addressing urgent regulatory or supply-demand pressures

Materials

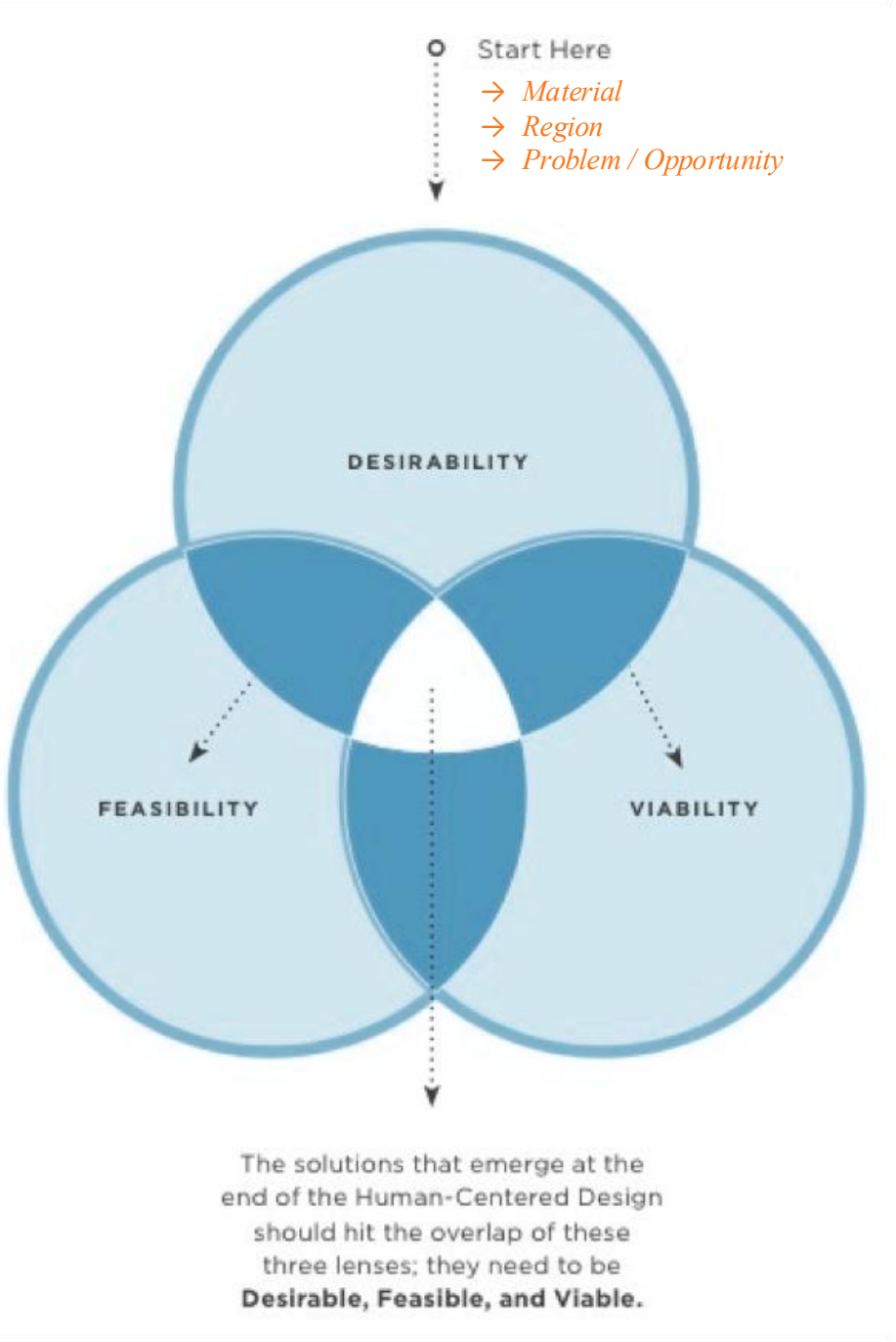
Aluminum
Copper
Stainless Steel
Battery Materials
Rare Earth Elements
Plastics
Glass
Others

Initiatives

Scale advanced sorting technology
Scale/develop dismantling technology
Pilot advanced recycling technology
Develop slag recovery technology
Increase collection of select products
Avoid mix of production scrap sources
Others

Regions

North America
South America
Europe
MEA
Asia Pacific
China
Others



How We Work

The Collective's approach prioritizes **pilot initiatives grounded in a specific material, region, and a clearly defined problem or opportunity**. This focus ensures that efforts are actionable, measurable, and capable of informing broader system change.

To assess new pilot initiatives, hypotheses are formed and tested with members for input and confirmed interest, performing an initial business case review. Each potential initiative is de-risked using **desirability**, **viability**, and **feasibility** criteria.

The Collective only moves forward with initiatives that demonstrate the potential for meaningful, real-world impact—whether by **advancing infrastructure**, **unlocking intelligence**, or **driving innovation**.

While 75% of all aluminum ever produced is still in use, ~71% of all collected and recovered scrap[1] is mixed and downcycled–limiting its reuse in high-performance applications like EVs, advanced electronics, and green infrastructure.

Approach

Newly released advanced sorting technologies—including XRT/XRF and LIBS—can enable alloy-level separation of typically downcycled shredded scrap (Zorba/Twitch), significantly increasing the volume and quality of recycled aluminum available for high-value applications.

When paired with offtaker demand aggregation, these technologies can make infrastructure investments more viable and scalable, unlocking new secondary material pools and circular business models across the value chain.

Key Drivers / Reasons to Believe

→ Rising demand for high-quality recycled aluminum to meet recycled content goals, support decarbonization targets, and enable the energy transition

→ Onset of advanced sorting technologies that allow for alloy-level separation

→ Declining demand for low-grade cast alloys, driven by the rise of EVs

→ Need for resilient, localized intelligent supply chains; tariffs increasing appeal of domestic recycling

Problem

Current aluminum recycling systems lack precision. **Most mixed scrap is downcycled into low-grade cast alloys** due to insufficient economics, fragmented demand, and limited investment in advanced infrastructure.

Without intervention, **12.4 million tons of aluminum scrap could go unrecycled by 2050**—material that could otherwise support decarbonization and circularity goals.

Opportunity: North America Aluminum Pilot

The North America Aluminum Initiative aligns corporate offtakers, recyclers, and technology providers to launch real-world trials of advanced sorting solutions with the aim of unlocking new secondary material pools through improved separation.

This pilot aims to:

- Aggregate demand for compositionally specific, high-performance recycled aluminum
- Test XRT/LIBS technologies for alloy separation at recycling sites
- Create replicable models for regional scaling
- Generate insights transferable to other critical materials (e.g., copper, REEs)

Source: Press search, company announcements, McKinsey; International Aluminium Institute
1: Only for 1xxx, 5xxx, 6xxx, and 7xxx series - excludes e.g., 3xxx series with higher recycling rates

Thank *You*

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