



VINCA process

3rd Force in Metallurgy

Innovative high-recovery non-toxic metal extraction

Winner: Most Promising Mining Technology Startup 2022 (Unearthed Aspermont Future of Mining)

September 2022

KEY INDUSTRY DYNAMICS

MINING FACES MULTIPLE CHALLENGES TO A “JUST TRANSITION”

Deeper and
more complex
ore bodies

Scale of impact

Sustainable
license
to operate

MINING DELIVERS COUNTLESS OPPORTUNITIES

Poverty
alleviation;
skills & training

Green energy’s
“just transition”
infrastructure

Global
Industrial
developments

MINING INDUSTRY IS IN URGENT NEED OF SUSTAINABLE, FUTURE FACING, MINERAL EXTRACTION PROCESSES

OUR VISION

Redefining metal extraction

Achieve adoption by all new precious polymetallic ore bodies by 2030

Develop Novel Chemistry
Removing need of CN/Hg/Smelting (POX/Roasting)

Develop JV Mineral Processing HUBS
“at-source”

Enhance
Community
Engagement

Achieve a “JUST”
Transition

Lower
Energy

Lower
Costs

Unlock
On-site
Value

Achieve 100%
Closed Loop
Recycling

Simplify
Permitting

Reduce
Smelter
Reliance

Improve
Waste
Management

In-house
Solutions

OUR MISSION

Cleaner Mining

- » Higher Recoveries
- » Lower Emissions
- » Cleaner Outcomes
- » Enhanced Economics
- » Better Livelihoods

HIGH GLOBAL IMPACT

Delivering a cutting-edge novel and clean mineral processing technology which changes the way the metal recovery industry operates, for the benefit of all communities and stakeholders

1

Unlock value from increasingly scarce and complex precious and base metal ore bodies, in a faster and cleaner (non-toxic) manner, leaving dry stable inert tailings

2

Displace highly polluting smelters; roasters; high-pressure oxidation autoclaves and toxic chemicals with a rapid, high-recovery extraction processes

3

Enhance polymetallic circuit recovery rates and costs, while transforming interfering metal impurities and solids waste into saleable end-products

4

Safeguard scarce water and energy resources

5

Alleviate poverty and improve community livelihoods via more effective and environmentally-friendly lower-impact mineral recovery processes; enabling additional skills; employment; education & downstream business developments

VINCA

Process Advantages

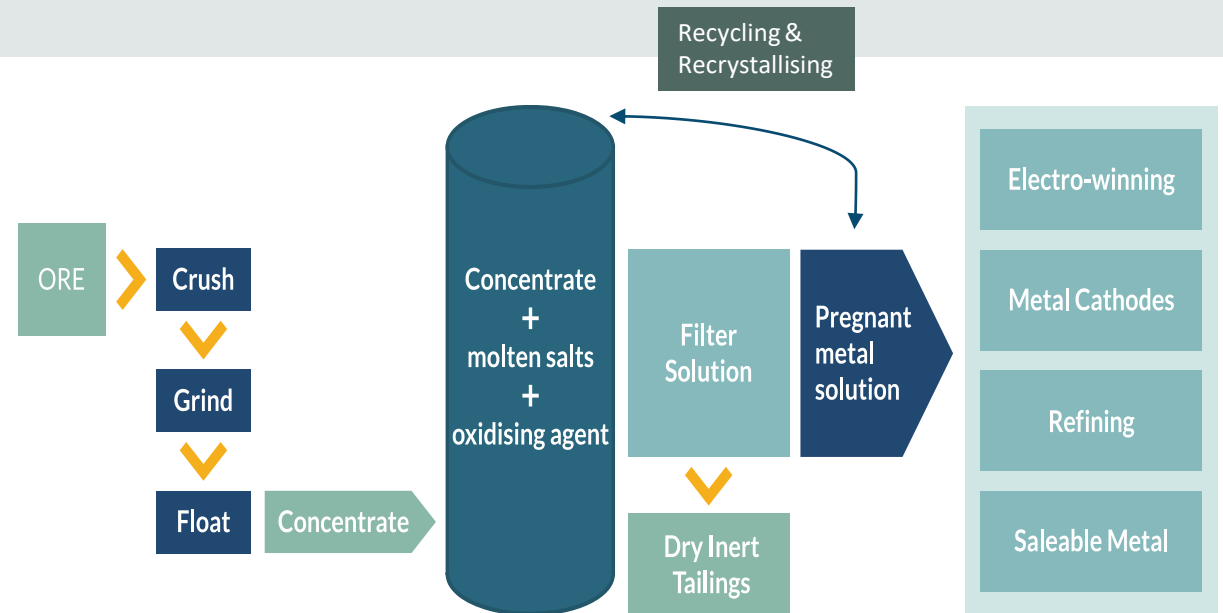
Ground-breaking

non-toxic alternative to cyanide / mercury leaching
and smelting / pressure oxidation / roasting



VINCA Advantages

- Novel molten salt chemistry; simple flow sheet design
- High recoveries & fast kinetics: delivering better economics
- No toxic chemical use
- No high-pressure, high-energy pre-treatments
- Dry, inert, solid resaleable circular economy tailings
- Safe, stable and modular
- Easier permitting & improved community engagements
- Minimal (recycled) water use
- Reduces smelting & roasting & pox reliance



Multi-metal recoveries (>90%):
Au, Ag, Pd, Pt, Co, Cu, Ni, Zn

HIGH METAL RECOVERIES

success breeds success

Fast kinetics & no passivation interference



99%

Au: 99%

97%

Ag: 97%

99%

Pt: 99%; Pd: 95%; Ru: 92%

98%

Co: 98%

99%

Cu: 99%; Ni 98%

VINCA versus TRADITIONAL ROUTES

TRADITIONAL METAL RECOVERY ROUTES FACE MULTIPLE CHALLENGES

TOXIC
CHEMICALS,
GASES &
SLAG WASTES

HIGH
ENERGY
USAGE

SCARCE
& UNSAFE
WATER
SUPPLIES

VINCA UNLOCKS GREATER OPPORTUNITY & DELIVERS CLEANER OUTCOMES

NON-TOXIC
EXTRACTION
&
RE-USABLE
WASTE

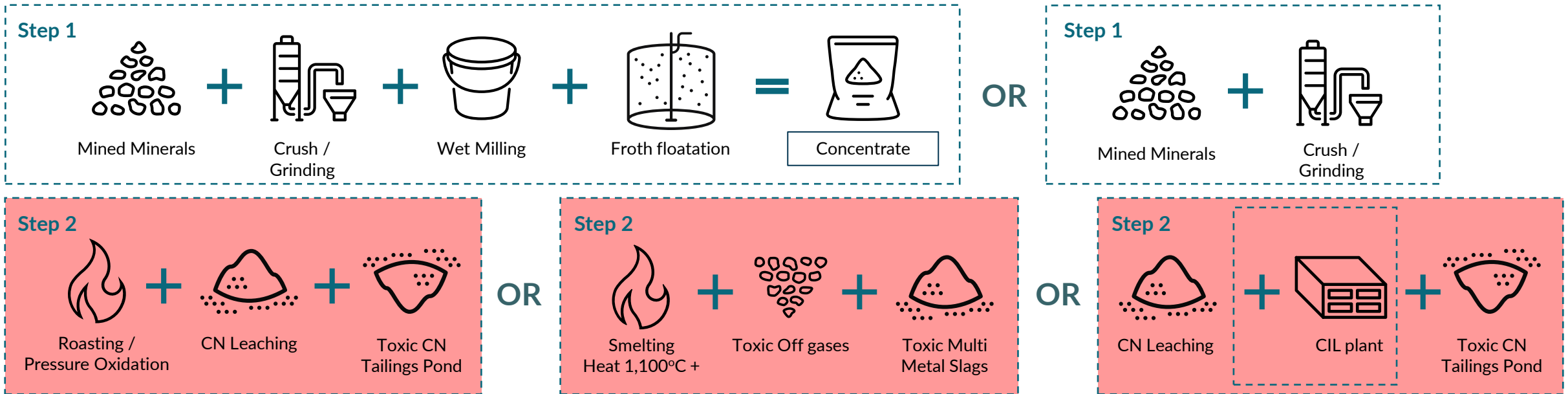
MULTI
METAL
RECOVERY
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LIMITED
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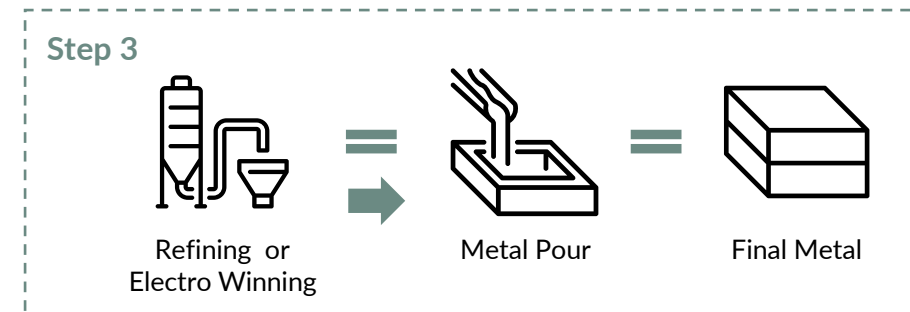
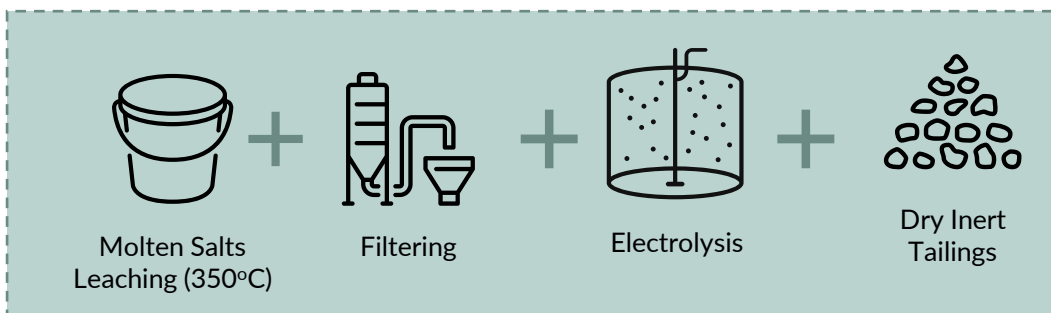
MINING INDUSTRY IS IN URGENT NEED OF A SUSTAINABLE, FUTURE FACING METAL EXTRACTION PROCESS

Metals Recovery: Vinca versus traditional routes to market

Traditional Metal Recovery Routes: high energy intensities and/or hazardous chemicals use



The Vinca Recovery Route



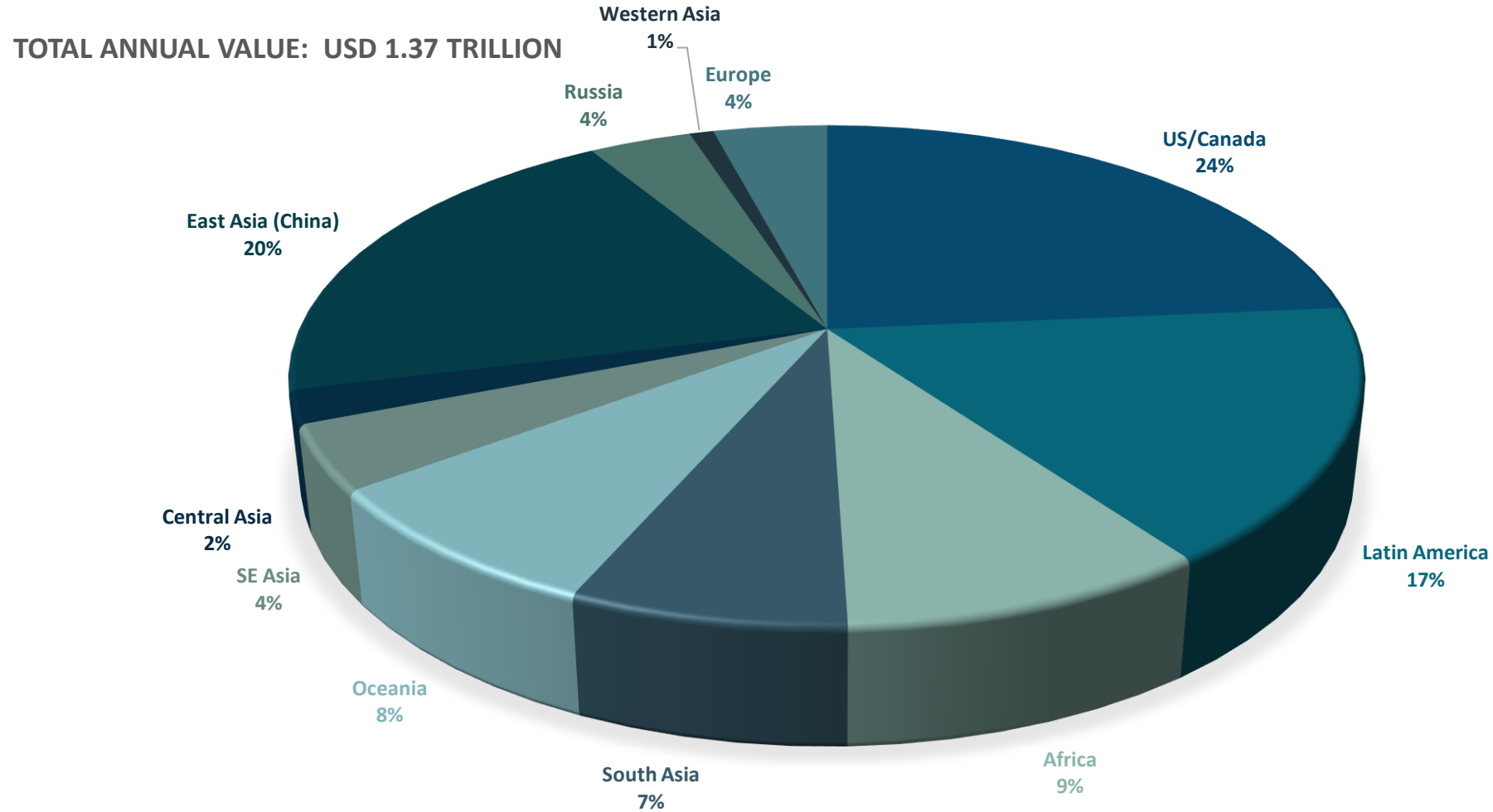
CLEANER MINING

How VINCA compares to traditional extraction processes

VINCA Advantages	Vinca	Smelters (PyroMet)	Acids (CN; Hg) (HydroMet)
• Multiple mixed metal capture in a simple flow sheet	+	-	-
• No toxic chemical inputs or toxic outputs	+	-	-
• No high-pressure, high-energy (pre) treatments	+	+	-
• High recoveries	+	+	-
• Fast extraction kinetics	+	+	-
• Minimal water consumption	+	+	-
• Inert solid tailings waste / reduced disposal & site reclamation costs	+	-	-
• Environmentally safe	+	-	-
• Easier permitting & improved community engagements	+	-	-

SIZE OF THE PIE

Global Mining Investments



ALIGNMENT WITH SOCIETAL GOALS

Sustainable Materials
Responsible Sourcing
Circular Economy



GOAL 1



Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all



GOAL 2



Industry, Innovation and Infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation



GOAL 3



Sustainable Consumption & Production

Achieve sustainable management & efficient use of natural resources



GOAL 4



Climate Action

Take urgent action to avert climate change and negative impacts to local environments



COLLABORATION OPPORTUNITIES

HELP US TO HELP CRITICAL
MINERAL SUPPLY SECURITY AND
INDUSTRY SOCIAL LICENCE

PROMOTE
CLEANER
MINING
PRACTICES
& POLICIES

DEVELOP
STATE &
INDUSTRY
HUB
PARTNERSHIPS

GENERATE
PATIENT
CAPITAL
SUPPORTERS

MEET THE TEAM

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Process Metallurgy & Engineering
Materials Science

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