

pH7TECHNOLOGIES.CA

**ENABLING
THE GLOBAL
TRANSITION TO
RENEWABLE
ENERGY.**



CRITICAL METALS: PAVING THE ROAD TO GREEN ENERGY.

pH7 Technologies has created an innovative process for extracting critical metals that will enable the transition to renewable energy in an environmentally and economically sustainable method.

Our innovative technology enables efficient metal extraction from primary and secondary resources with difficult substrates which are uneconomical or infeasible to extract by applying current pyro- or hydrometallurgical approaches. This disruptive process produces high-quality metal products, including platinum group metals (PGMs), copper, nickel, cobalt, etc.

Working closely with industry partners around the world, our technology transforms existing metal extraction and recycling operations into more sustainable processes. Our technology empowers mines, recyclers and original equipment manufacturers (OEMs) to maximize their critical metal production while minimizing environmental footprint, achieving sustainability objectives and increasing revenue.

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**The energy transition is
no longer a question of if,
it's a question of when.**

- Mohammad Doostmohammadi, Founder and CEO.





pt7 Technology



REVOLUTIONARY TECHNOLOGY FOR A BRIGHTER FUTURE.

pH7's closed-loop critical metals processing technology helps improve both environmental and economic outcomes compared to existing processes.

The benefits of pH7's innovative solution include:

- **Grow the circular economy.**
- **Secure supply of PGMs, copper, nickel, cobalt, and other critical metals.**
- **Reduce greenhouse gas emissions by up to 99%.**
- **Increase energy efficiency by up to 95%.**
- **Minimize water consumption.**
- **Eliminate wastewater.**
- **Increase overall production.**

Through state-of-the-art R&D and collaboration with academia, pH7 has designed new innovative methodologies for the sustainable extraction of critical metals.

By combining organic, inorganic, and electro-chemistry, pH7's **proprietary closed-loop process** extracts critical metals from primary and secondary resources in a sustainable manner. This disruptive technology increases the supply of critical metals with near-net-zero emissions while reusing chemistry to minimize water consumption and eliminate wastewater.

This process not only extracts and recovers critical metals from primary and secondary resources but also extracts these metals from waste materials that would otherwise be sent to landfills due to the high cost of extraction using traditional methods.



The sustainable future we envision requires more critical metals than we have access to currently. Through innovation and collaboration, we are bringing our technology and expertise to help increase the production of critical metals and make existing processes more sustainable and cost-effective. This will be the key in creating a secure supply of critical metals that will help drive the global energy transition.

Mohammad Doostmohammadi, Founder and CEO





At pH7 we are transforming the economics for the metals and mining industry by allowing for the recovery of metals from materials that cannot be processed efficiently by conventional processes. Our financial model is accretive for our business partners and generates a new revenue stream and improved cashflows from orphaned materials. We are proud that our business generates strong financial fundamentals for our stakeholders and benefits our environment and society.

Dan Parmar, CFO, pH7 Technologies





**PGMs FUELING
THE PATH TO
NET ZERO.**

Platinum group metals (PGMs) are essential to energy transition as they play a vital role in various aspects of hydrogen technology including fuel cells, electrolyzers, and hydrogen transportation.

Forecasts have shown that the widespread use of hydrogen will lead to skyrocketing global demand for PGMs, which will soon outpace the supply and result in a higher price tag. This will potentially cause a bottleneck in innovation in the hydrogen industry, and a need to find alternative ways to sustainably secure the supply of PGMs to drive the development of green energy.




SUSTAINABLE PGM EXTRACTION.

pH7's **proven, sustainable extraction technology** enables companies to source PGMs from recycled materials using a more economical and environmentally friendly approach. The process extracts PGMs from end-of-life materials, including spent catalysts, fuel cells, and medical and dental equipment, converting them into catalysts for clean energy applications.

The technology meets strict environmental regulations and can help accelerate the global transition to green energy by increasing the supply of sustainably sourced PGMs, with positive outcomes that:

- **Reduce the environmental impact of the mining and mineral industry.**
- **Minimize groundwater contamination by eliminating wastewater discharge.**
- **Increase energy efficiency by creating a source of clean energy.**

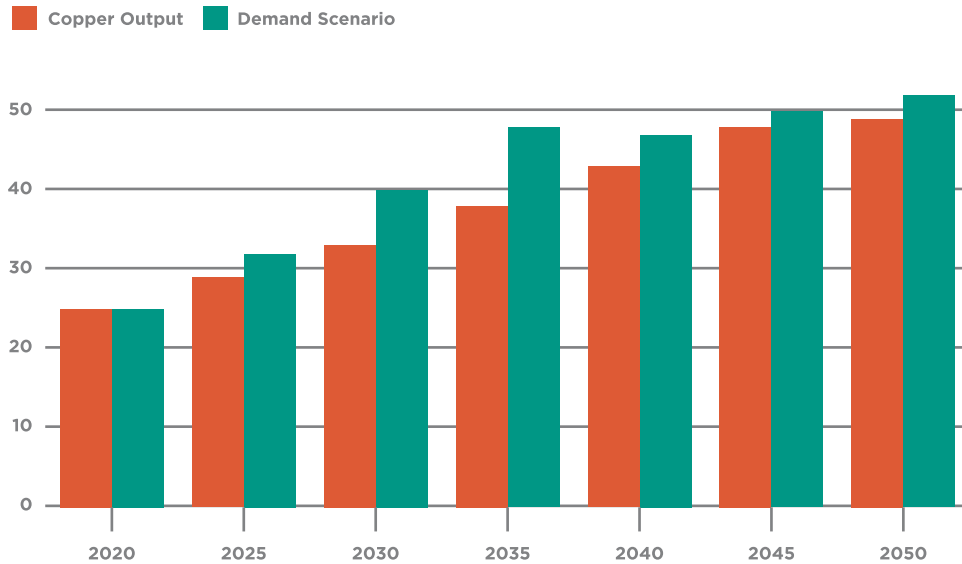


A large-scale open-pit copper mine with terraced levels and a yellow haul truck on a dirt road. The image shows a vast, multi-tiered excavation site with dark, rocky walls. A wide, unpaved dirt road winds through the site, with a yellow haul truck carrying a load of dark material. The sky is overcast, and the overall scene is industrial and rugged.

**COPPER'S
CRITICAL ROLE
IN THE ENERGY
TRANSITION.**

Already a \$200 billion market globally, copper is the most widely used, high-demand critical metal due to its malleability, superconductivity, and affordability.

Copper is a crucial driver of electrification and the development of renewable energies, offering a multitude of applications including electric grids, solar and wind power, batteries for energy storage and electric vehicles. Electrification alone is projected to increase annual copper demand to 36.6 million metric tonnes by 2030, creating an expanding deficit of 20%, or 6.5 million metric tonnes year over year.¹



INNOVATIVE TECHNOLOGY TO INCREASE COPPER PRODUCTION.

pH7's **heap-leaching closed-loop process** offers a sustainable approach to copper extraction that will help address this impending global deficit and ensure a smoother transition to renewable energy and electrification.

Incorporating pH7's innovative technology in an existing copper mine will not only increase copper production but also increase revenue through the extraction of previously unextractable copper (i.e., lower than cut-off grade). The solution also helps achieve a net zero footprint with near-zero emissions and water consumption.

With this technology, we can leverage an untapped reserve of over 43 million tonnes of copper in mining waste dumping sites globally – equivalent to over ten years of supply, bringing our mining partners a cutting-edge solution that allows for strong business benefits, long-lasting impact, and positive environmental outcomes.²

¹ Copper-processing technologies: Growing global copper supply | McKinsey

² Thomas Biesheuvel, 2022, Copper's Biggest Mystery Is Finally Cracking, BNN Bloomberg





**CREATING A
CIRCULAR
ECONOMY.**

SUSTAINABLE METAL EXTRACTION FROM E-WASTE.

E-waste offers an incredible opportunity for the extraction of valuable critical metals. Currently, e-waste is one of the fastest-growing forms of waste being produced globally. Only a minor fraction (17.4% in 2019) of e-waste is collected and properly recycled in the world. The growing amount of e-waste ending up in dumpsites could be a valuable source of critical metals that can be recycled and repurposed.³

A tonne of e-waste (end-of-life printed circuit boards) could contain up to 800+ times of gold and 40+ times of copper extracted from one ton of ore deposits in the US.

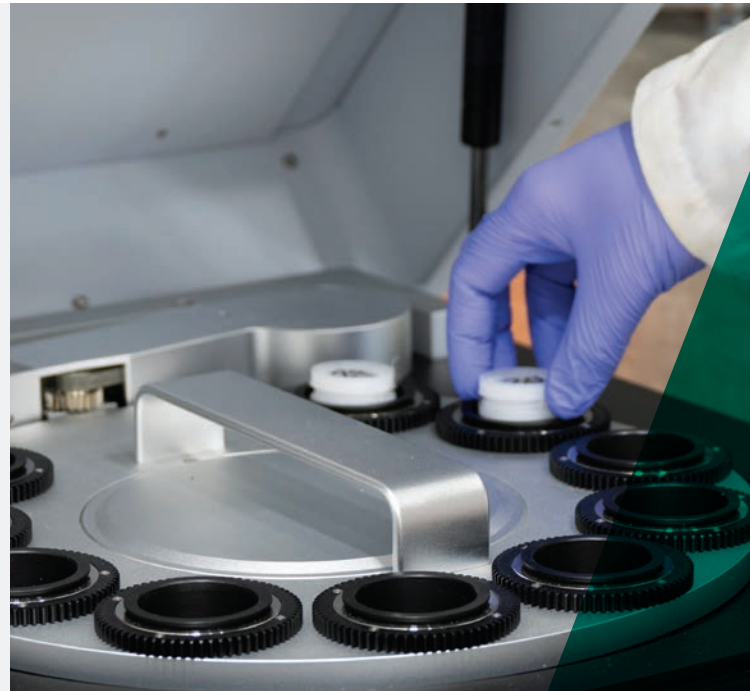
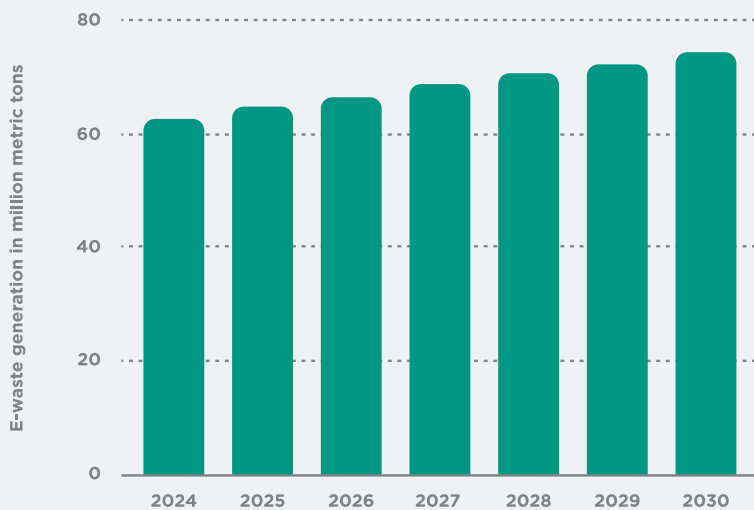
Recycled metals extracted from e-waste have the potential to participate in a circular economy that can be used in numerous industries including increasing the supply of critical metals for the transition to renewable energy.

pH7's proprietary clean technology, which has been designed to extract critical metals can offer an innovative and sustainable option to help reduce waste and emissions with increased extraction efficiency.

The e-waste solution developed by pH7 is most applicable on pre-treated materials that have been through some level of grinding and separating, or heat treatment. This could allow for the expanded extraction of main elements such as gold, silver, palladium, and copper, as well as additional base metals such as tin, nickel and zinc.

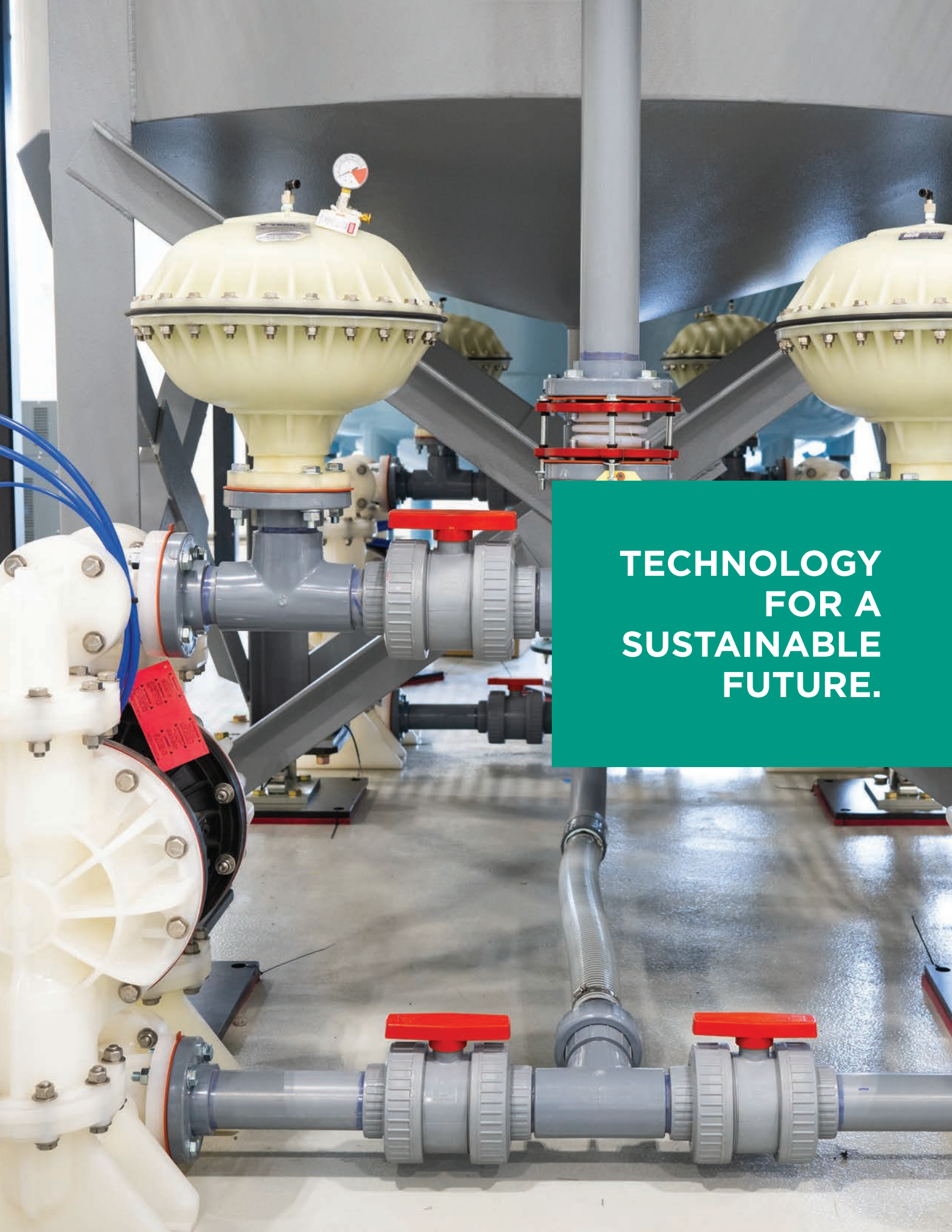
pH7's process does not only offer the opportunity to replace high-polluting smelters but more importantly, has the potential to make their processes more sustainable and profitable.

Projected electronic waste generation from 2024 to 2030



³ Hanif Jafari, 2023, Circular Economy in Action: Efficient Metal Extraction from PCBs





**TECHNOLOGY
FOR A
SUSTAINABLE
FUTURE.**

Operating from the heart of Vancouver’s fast-expanding cleantech ecosystem, pH7 Technologies is determined to tackle one of the biggest climate solution questions we face today – how can we make our vision of a clean, green future a reality? To us, the answer lies in sustainable critical metals extraction.

Founded in 2020, the pH7 team is driving some of the most ground-breaking advances in critical metals extraction through our proprietary sustainable closed-loop extraction process. Rooted in values of innovation, collaboration, and energy, we are determined to create a more habitable and sustainable planet for future generations by developing technology that will leave a positive impact on the way we innovate, develop and operate clean energy systems.

Our mission is to find a way to help our partners adopt new cost-effective, environmentally friendly metal extraction approaches while ensuring that we secure the supply of critical metals needed for the ongoing global energy transition. This goal wouldn’t be possible without our team, which extends to our partners, investors, customers, and suppliers. Together, we are working towards building a better future for all.



We are at a pivotal moment in time where what we do today determines the future and the legacy we leave for future generations. The cutting-edge technologies we build here at pH7 will be a key part of this movement, enabling us to accelerate on the path towards net-zero and reduce our global carbon footprint.

Mohammad Doostmohammadi, Founder and CEO



THE pH7 TEAM.

pH7's enthusiastic, dedicated and impact-focused team works to create a more habitable and sustainable planet for future generations.



pH7 MILESTONES & AWARDS.

2024 SET 100

Recognized on the Start Up and Energy Transition Award's list of the most promising climate tech and energy start-ups advancing innovative solutions and technologies to meet the urgent demands of our planet.



2024 Global CleanTech 100

One of 13 Canadian companies named in the annual CleanTech 100 list by the Cleantech Group for creating sustainable solutions to change the course of the climate crisis.



2023 Foresight 50

Recognized in Foresight Canada's annual Foresight50 list for being among Canada's most investible and inspiring cleantech ventures driving the transition to net zero.



2023 Clean50 and Clean16

Named a 2024 Clean50 honouree and Clean16 R&D award winner in the research and development category for its innovative and proven cleantech solutions for critical metal extraction.



OUR ROADMAP.



2020

- Founded with the mission to increase the supply of critical metals necessary for energy transition.

- Establish a state-of-the-art R&D lab in Vancouver, BC.
- Collaborate with Simon Fraser University.

2021

- Develop PGM pilot operation.
- Secure grant funding from the Government of Canada.

2022

- Close an oversubscribed Series A round.
- Generate first revenue through the pilot operation.

2023

- Secure support from Export Development Canada.
- Develop a prototype for sustainable and economical copper extraction.
- Commercialize the PGM extraction process.

2024

- Expand internationally in the PGM process.
- Grow the process into the copper mining industry.
- Develop e-waste pilot operation.

2025



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AND LEARN MORE.**



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