

# SAFETY FIRST

Sandvik's objective is zero harm to our people, the environment we work in, our customers and our suppliers.



PROTECTIVE  
EQUIPMENT



FIRST AID  
KIT



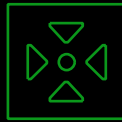
ALARM



EMERGENCY  
NUMBER



EMERGENCY  
EXIT



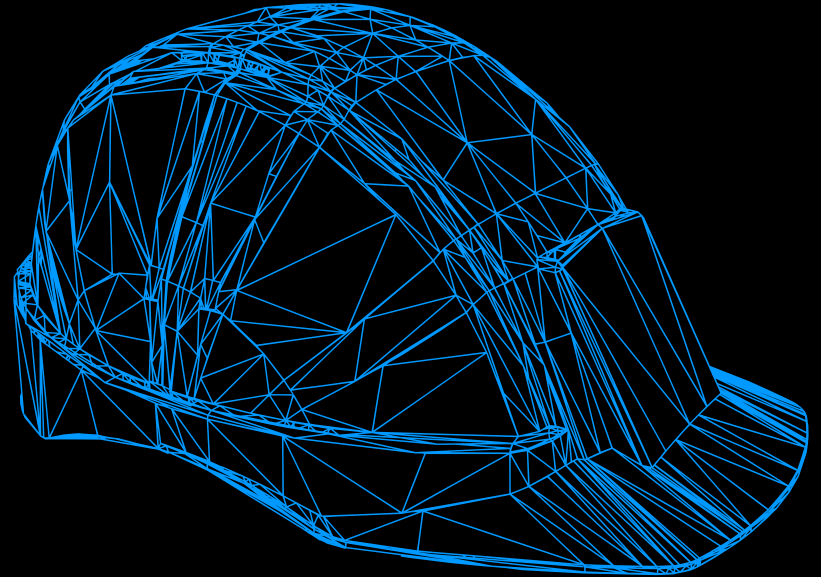
ASSEMBLY  
POINT



PSYCHOLOGICAL  
SAFETY



HEALTH &  
WELL-BEING



ROCK TOOLS

# CARBIDE RECYCLING PROGRAM

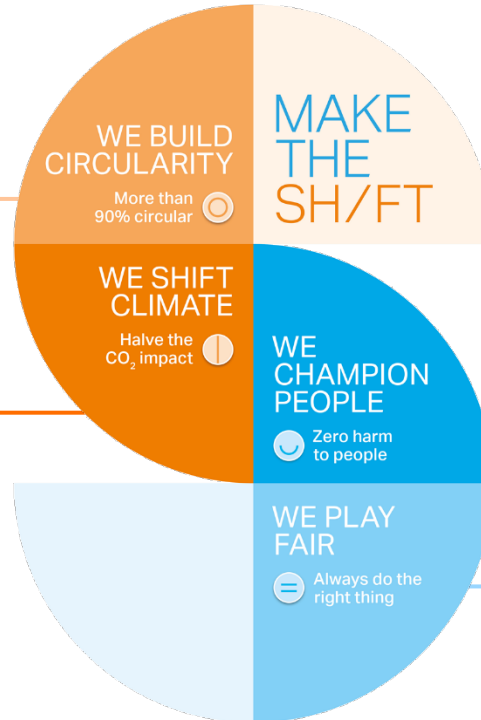
MATS W LUNDBERG, HEAD OF SUSTAINABILITY



# FOUR LONG-TERM SUSTAINABILITY GOALS

We build circularity –  
More than 90% circular

We shift climate –  
Halve the CO<sub>2</sub> impact



Champion people –  
Zero harm to people

Fair Play –  
Always do the right thing

# CIRCULARITY

If it can't be  
reduced, reused,  
repaired, rebuilt,  
refurbished,  
refinished, resold,  
recycled or  
composted,  
then it should  
be restricted,  
redesigned  
or removed  
from production.



- Pete Seeger

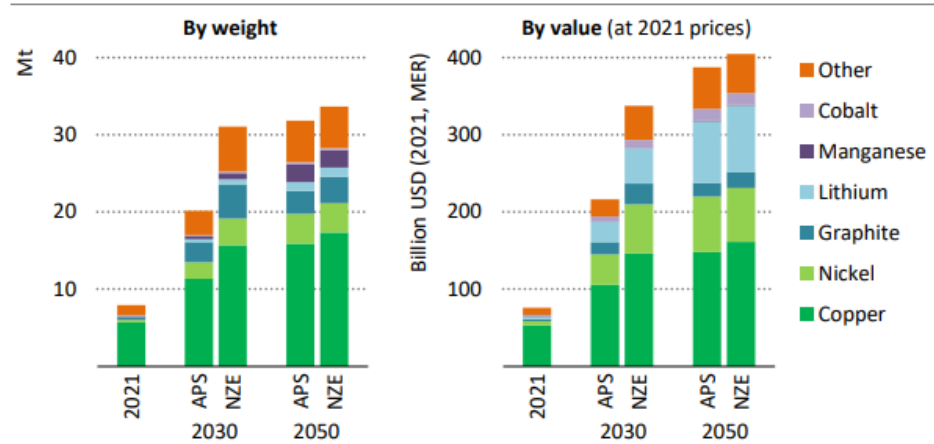


# CRITICAL MINERAL DEMAND

The Announced Pledges Scenario (APS) assumes that all aspirational targets announced by governments are met on time and in full, including their long-term net zero and energy access goals.

The Net Zero Emissions by 2050 (NZE) Scenario maps out a way to achieve a 1.5 °C stabilisation in the rise in global average temperatures, alongside universal access to modern energy by 2030.

**Figure 4.17** ▶ Critical mineral demand by weight and value for clean energy technologies by scenario



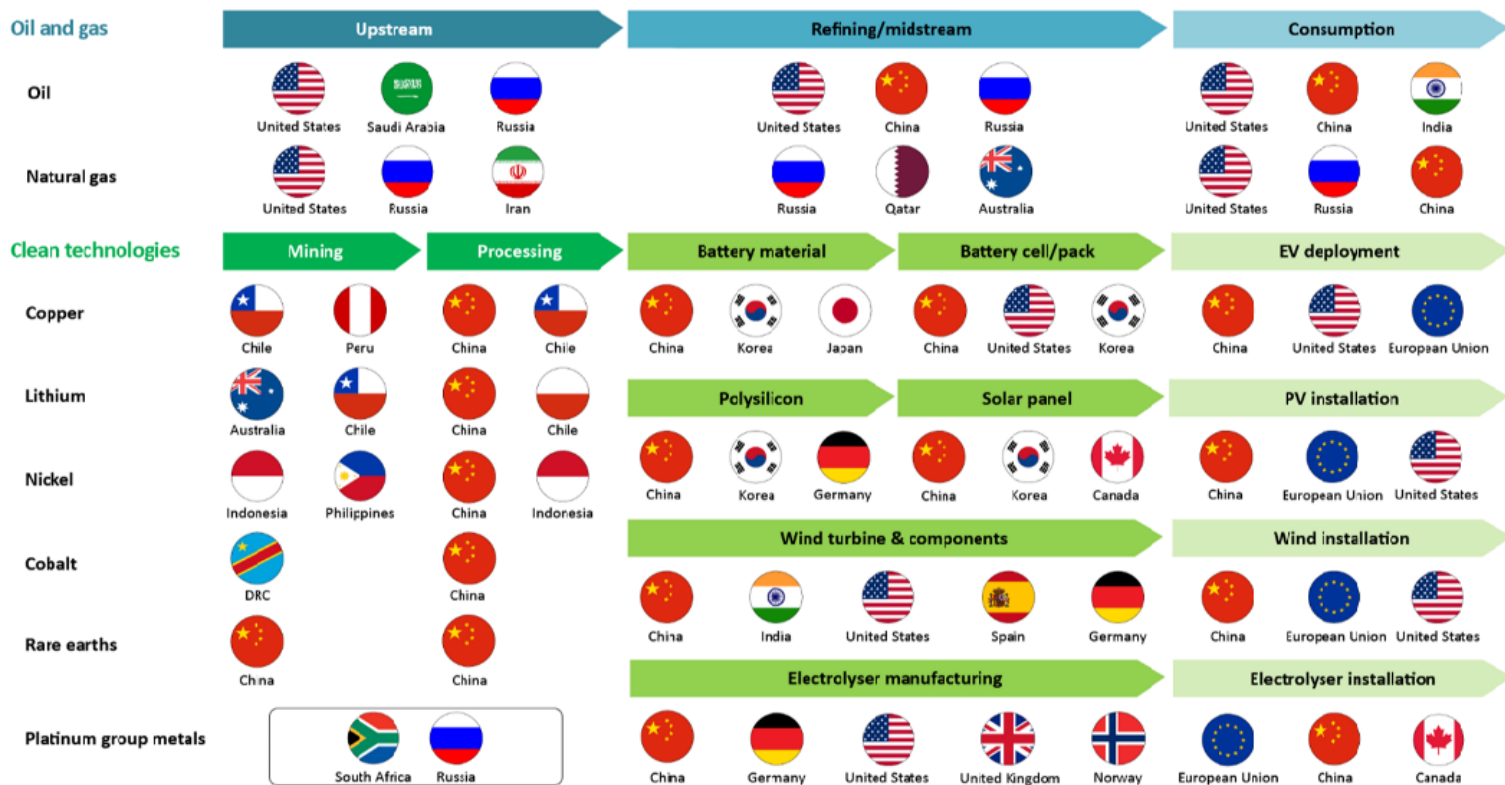
IEA. CC BY 4.0.

*Critical mineral demand for clean energy technologies quadruples already by 2050 in the NZE Scenario, with particularly high growth for EV-related minerals*

Notes: Mt= million tonnes. 2021 prices are used to calculate the monetary value of critical minerals.



**Figure 4.18** ▶ Indicative supply chains for oil and gas and selected clean energy technologies



IEA. CC BY 4.0.

*Transition to a clean energy system brings new energy trade patterns, countries and geopolitical considerations into play*

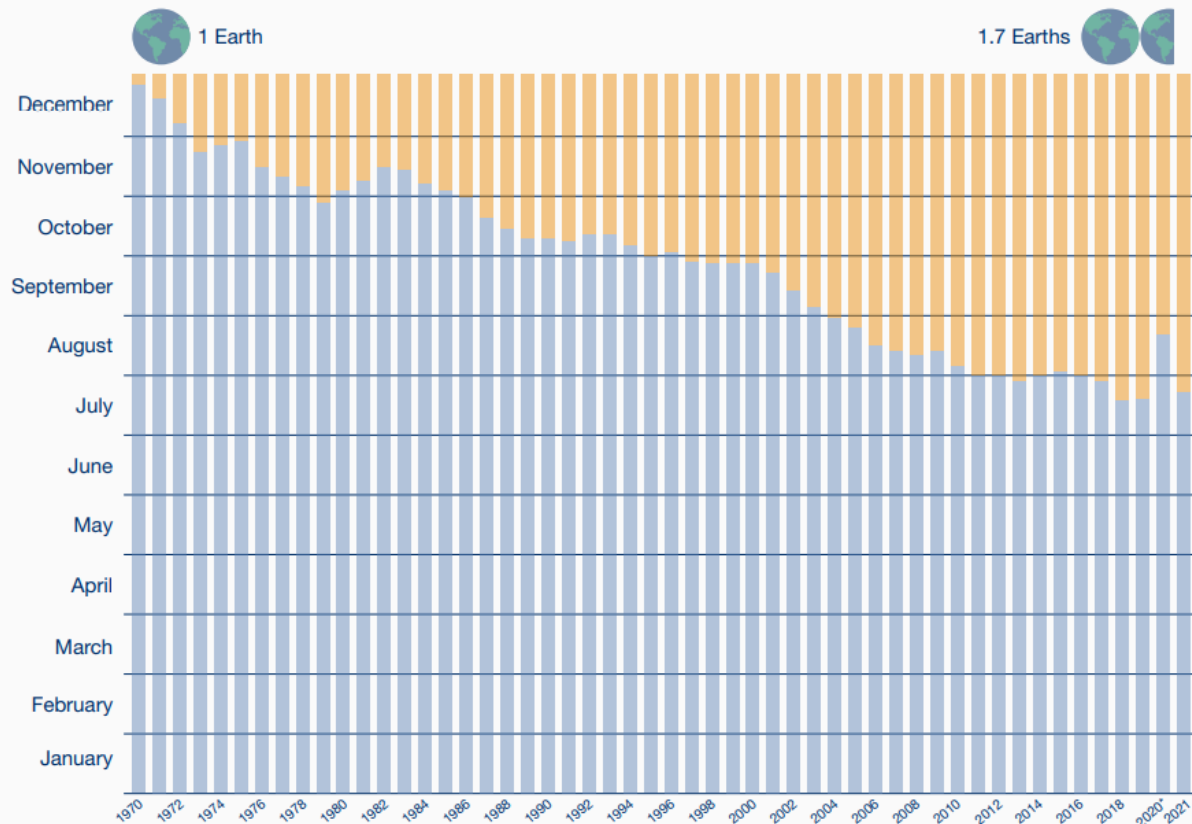
Notes: DRC = Democratic Republic of the Congo. Largest producers and consumers are noted in each case to provide an indication, rather than a complete account.

## CIRCULARITY WILL INCREASE IN IMPORTANCE

800 tons of material is consumed on average per person over its lifetime.

Earth's population will increase by 2 billion people until 2050.

Chart 6: Earth Overshoot Day 1970-2021



\* The calculation of Earth Overshoot Day 2020 reflects the initial drop in resource use in the first half of the year due to the pandemic-induced lockdowns. All other years assume a constant rate of resource use throughout the year.

# THE RECYCLING PROGRAM



# ECOSYSTEM – SUSTAINABLE CIRCULAR MINING BITS SUPPLY CHAIN

<0.5% tungsten  
content in ore



>85% tungsten  
content in Mining Bit





EXPERIENCE  
THE CALMNESS  
OF RECYCLING



# WHY IS CARBIDE RECYCLING SO IMPORTANT?

- 1 Earth has limited commodities to sustain a growing population, we need to find renewable sources and create circularity. Tungsten ~100 years of known resources
- 2 We reduce CO<sub>2</sub> emissions by up to 70% when recycling carbide to a RTP powder vs. mining cobalt and tungsten, without sacrificing product performance.
- 3 We secure a source of supply that does not originate from conflict areas across the world. (3TG)
- 4 We create local business opportunities in mining communities across the world leading to employment and sustainability in those communities.



**<0,5%**  
TUNGSTEN  
CONTENT IN ORE



**>85%**  
TUNGSTEN CONTENT  
IN MINING BIT

# WORLD-FIRST RECYCLING INCLUDED

DOING THE RIGHT THING SHOULD BE EASY!

Recycling is now included with all our carbide rock tools

- We regularly collect the used tools at your site
- The carbide is locally extracted to reduce shipping emissions and improve safety
- The carbide is recycled in our ISO certified plant
- New tools are produced from the recycled carbide

Then the cycle begins again – and again!



SANDVIK ROCK TOOLS  
CARBIDE RECYCLING PROGRAM



# ECOSYSTEM

## SUSTAINABLE CIRCULAR MINING BITS SUPPLY CHAIN

A sustainable and customer value added initiative created in collaboration between Sandvik and our customers.

This resulted in increased economic activity and social impact in the customer's local community, reduced CO<sub>2</sub> in both transport and production, as well as increased circularity to reach 90% and use of more conflict free supply.

**-4 500**

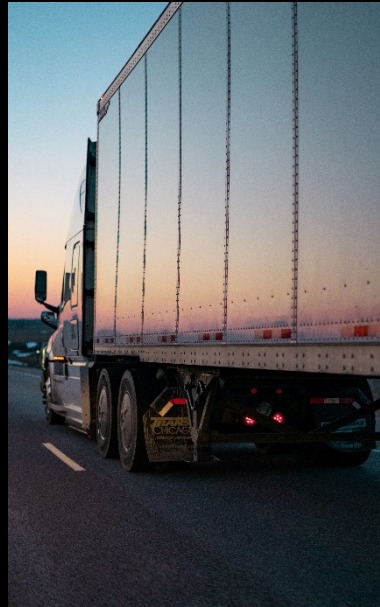
TON CO<sub>2</sub> / YEAR\*

**>50**

EXTRACTION  
UNITS

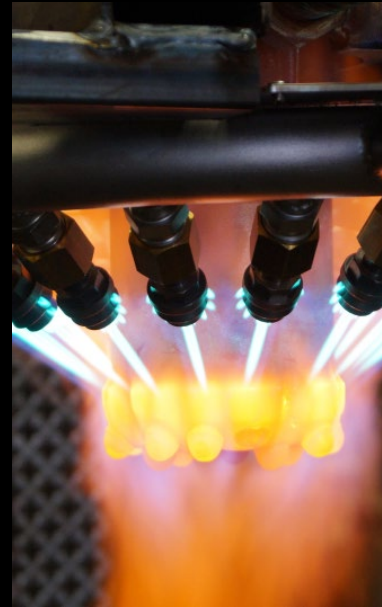
**>20**

NEW LOCAL  
EMPLOYMENTS\*



### TRANSPORT

**-93%** CO<sub>2</sub> EMISSION  
REDUCTIONS



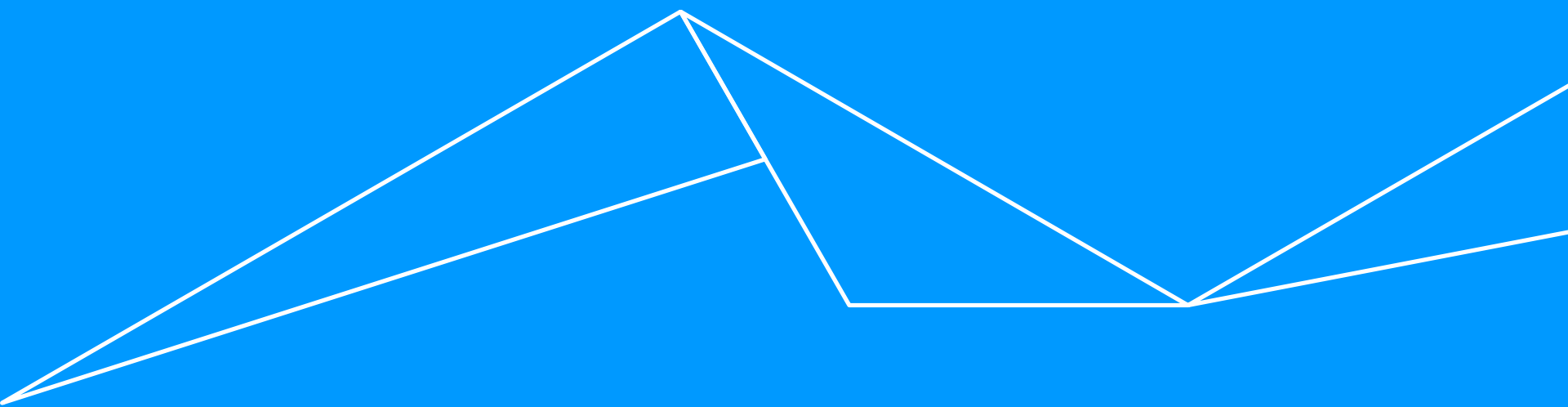
### LOCAL EXTRACTION

**-75%** CO<sub>2</sub> EMISSION  
REDUCTIONS



### POWDER PRODUCTION

**-64%** CO<sub>2</sub> EMISSION  
REDUCTIONS



# LOCAL EXTRACTION

# CARBIDE EXTRACTION

## AT THE SOURCE

- Sandvik has developed an efficient method of extracting tungsten carbide from dull bits
- 93% reduction in the shipping of scrap globally
- ~70\*% reduction in energy consumption when heating dull bits as opposed to traditional heating
- Creates local employment opportunities

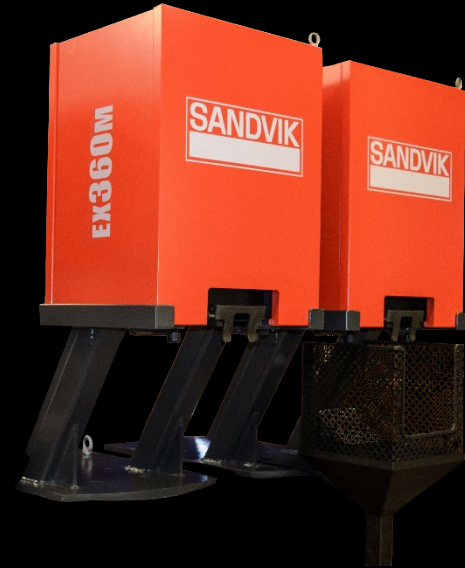


# LOCAL EXTRACTION UNITS – EX 360

The future of carbide recycling require local extraction capabilities on global basis

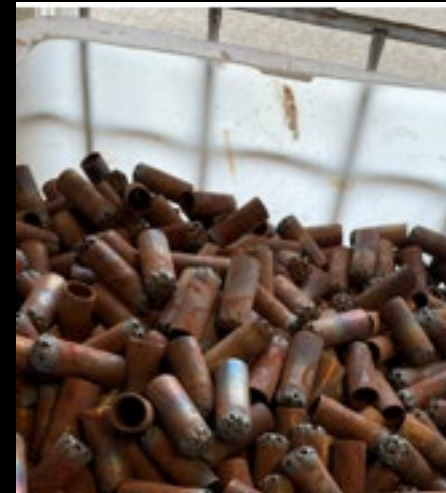
## Our local extraction units

- Create a safe and robust process of separating the carbide from the steel
- Create a set up with focus on safety for the operator in handling of dull products with limited heat exposure
- Improves work conditions and increased output/hour of clean carbide



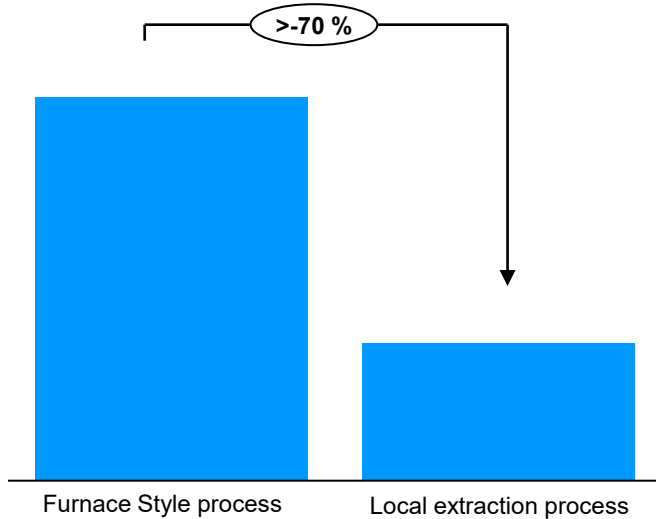
# CLEAN CARBIDE AND RESIDUAL STEEL

- The clean carbide is packed in steel buckets and shipped to Wolfram Bergbau WBH in Austria Europe.
- Tungsten carbide is heavy - a steel bucket with 20 liter of tungsten carbide is close to 350 kg
- The volume of residual steel are on average 10 times the cleaned carbide
- The steel is recycled at the local steel recycling plant



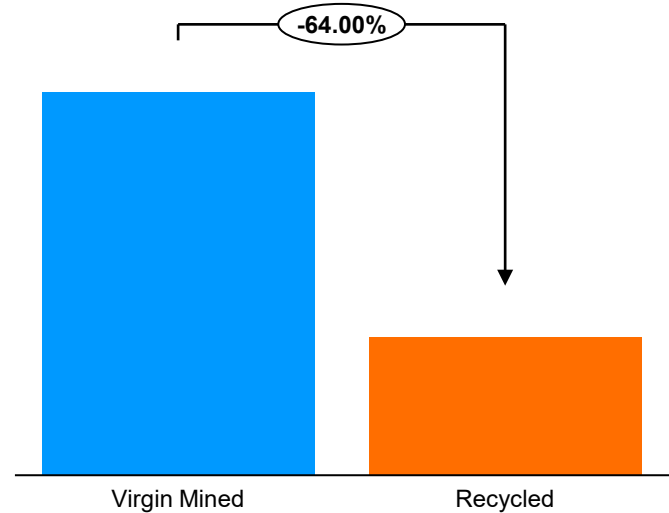
# ENERGY AND CO<sub>2</sub> REDUCTIONS

% of reduction in total energy used in furnace style carbide extraction vs EX 360 extraction process



Heating only a part of the product where the carbides are positioned during a limited time, reduce the energy used

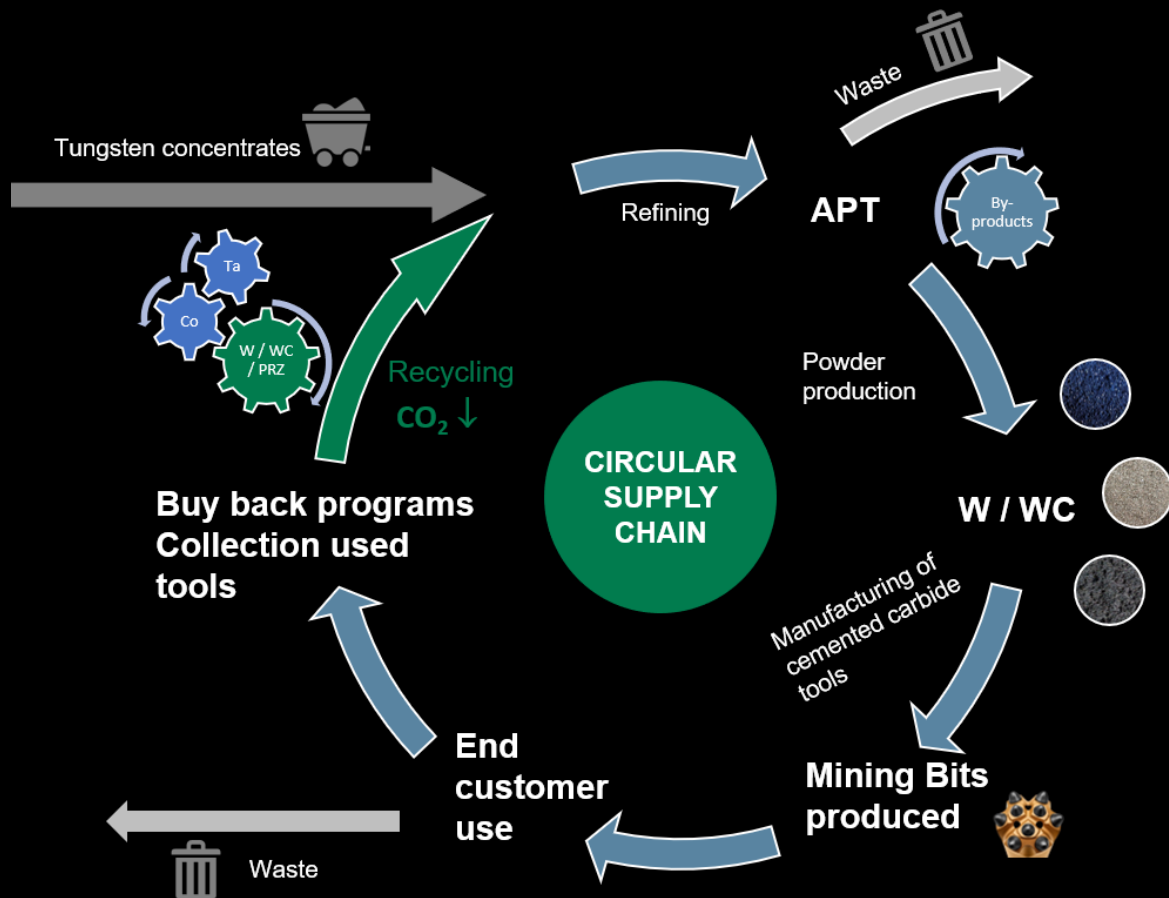
% reduction in CO<sub>2</sub> mined carbide vs recycled carbide



Savings in CO<sub>2</sub> listed does not include savings on shipping and local extraction



# ECOSYSTEM – SUSTAINABLE CIRCULAR MINING BITS SUPPLY CHAIN





THANK YOU!