



Transformers | Motors | Generators

| 19-21 May 2026

● A Hyve Event

Decarbonising the Copper Value Chain: Meeting Environmental Requirements for Winding Wire

Cu

International Copper
Association Europe

Decarbonising the Copper Value Chain: Meeting Environmental Requirements for Winding Wire

CWIEME BERLIN
MAY 2026



WHO WE ARE

~50%

of the world's
copper production



World Leaders
in Responsible
Production



6
Continents



40
Members

adani

AMMAN

AngloAmerican

ANTOFAGASTA
MINERALS

ANTUCOYA
ANTOFAGASTA MINERALS

ANTAMINA

Aurubis

BOLIDEN

BUENAVISTA DEL COBRE
operado por BHP

Cerro Verde

CENTINELA
ANTOFAGASTA MINERALS

CODELCO

COLLAHUASI

CMOC



FREEPORT-McMoRAN

GLENCORE

GOLD MOUNTAINS
FEEDBACK LTD. (AUS) LIMITED

GrupoMéxico

HINDALCO++

IVANHOE
MINES

JX Advanced Metals USA, Inc.

LSM

LOS PELAMBRES
ANTOFAGASTA MINERALS

METALÚRGICA DE COBRE
operado por BHP

Metso

MINERA ESCONDIDA
Operado por BHP

MITSUBISHI MATERIALS

Newmont.

OPERADORA DE MINAS

RioTinto

SIEMENS
energy

SOUTHERN COPPER
operado por BHP

SUMITOMO METAL MINING CO., LTD.

Teck

VALE

Vitol

WEIR

ZALDIVAR
ANTOFAGASTA MINERALS



International Copper
Association

01

PROMOTE

Promote copper
as the element of
choice and our
members as
responsible
producers

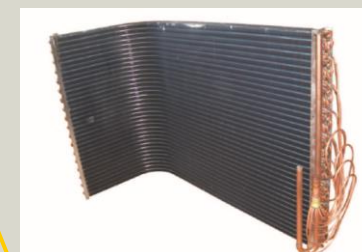
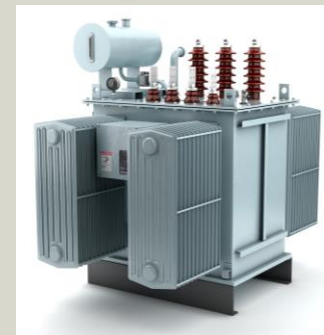
Protect the market
and the industry
with science and
evidence

PROTECT
02

03

DEFEND

Defend and sustain
copper demand in
key applications

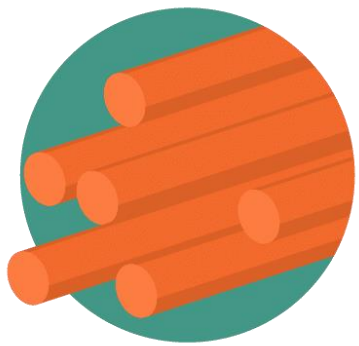


EU production of copper



Most of EU copper demand is met by domestic smelting, refining and recycling: 70% EU sourcing, 90% EU processing

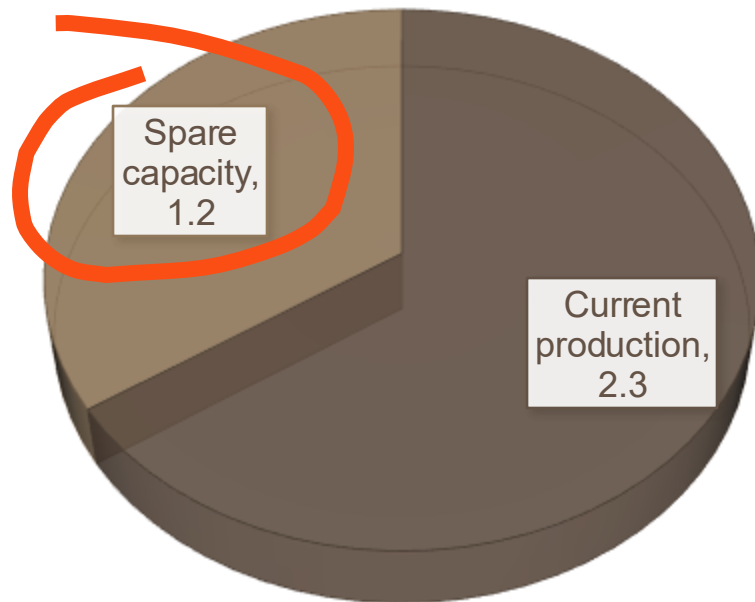




Semi-Fabrication – Wire Rod

The EU is net exporter and has spare capacity

WIRE ROD PRODUCTION CAPACITY IN EU (3.5 MTPA)

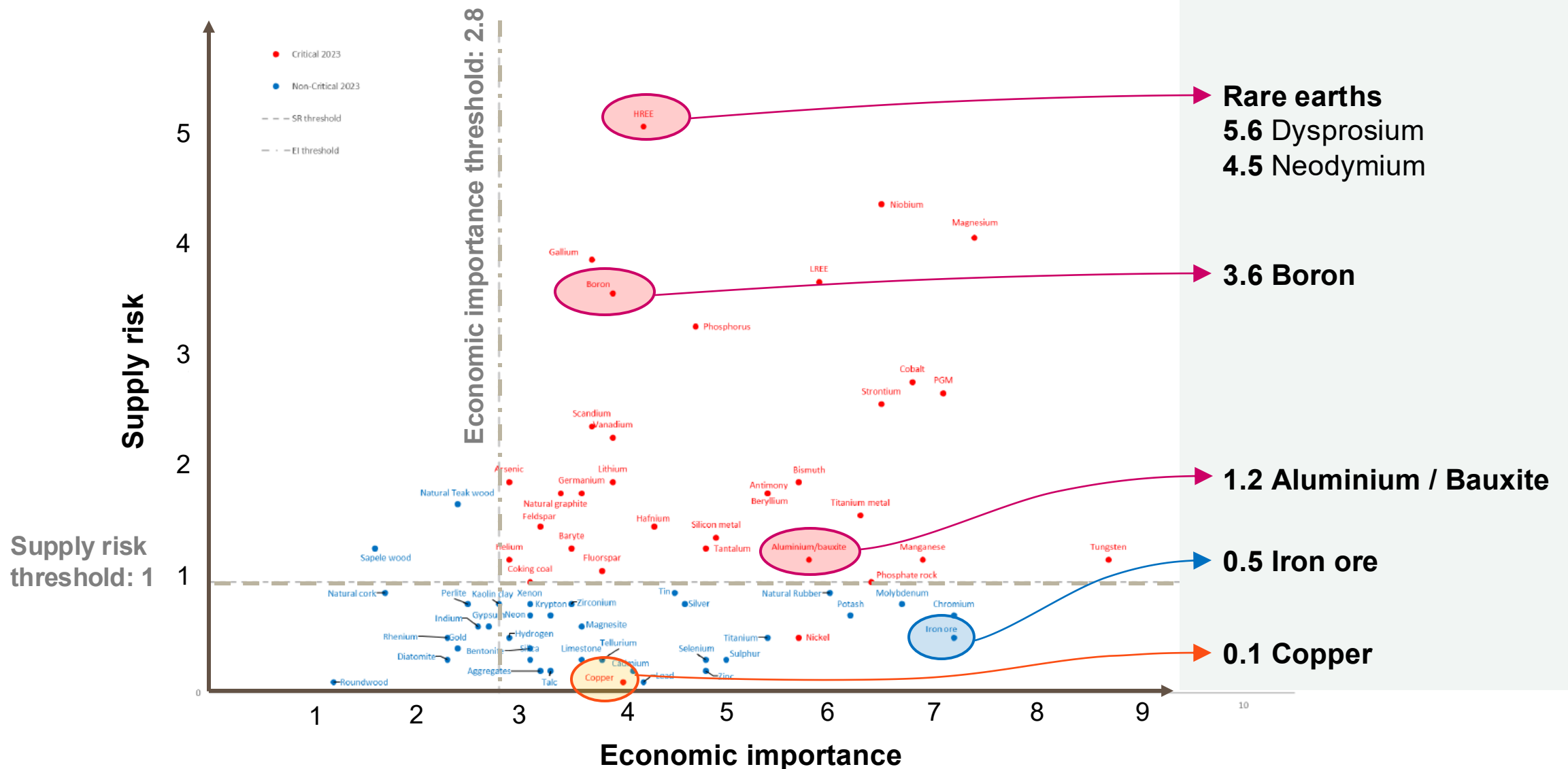


Picture : Aurubis

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Source : IWCC, 2024 : “The production capacity of wire rod in Europe is approximately 3.5 million tons per year, while the current consumption level is about 2.3 million tons, which leaves a margin of more than 1 million ton available for future demand growth (under the right framework conditions such as labour, financing or other).”

Critical Raw Materials – 2023 list



Takeaways

EU copper supply is diversified

There is sufficient EU spare capacity for wire rod production

Copper has the lowest supply risk among key raw materials

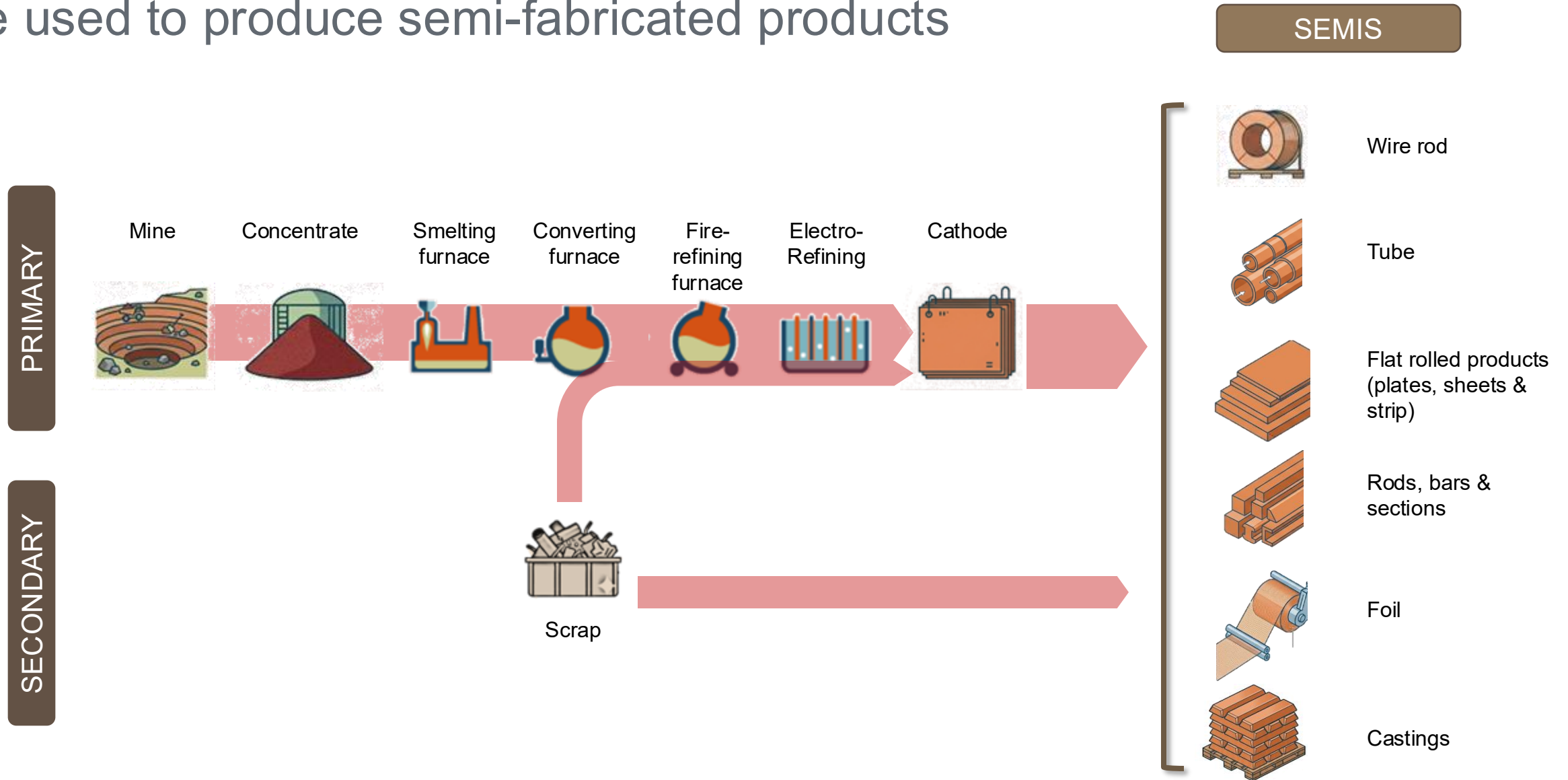
Copper remains strategically important for a wide range of applications

The Critical Raw Materials Act further supports copper projects in Europe

Description of the value chain for winding wire

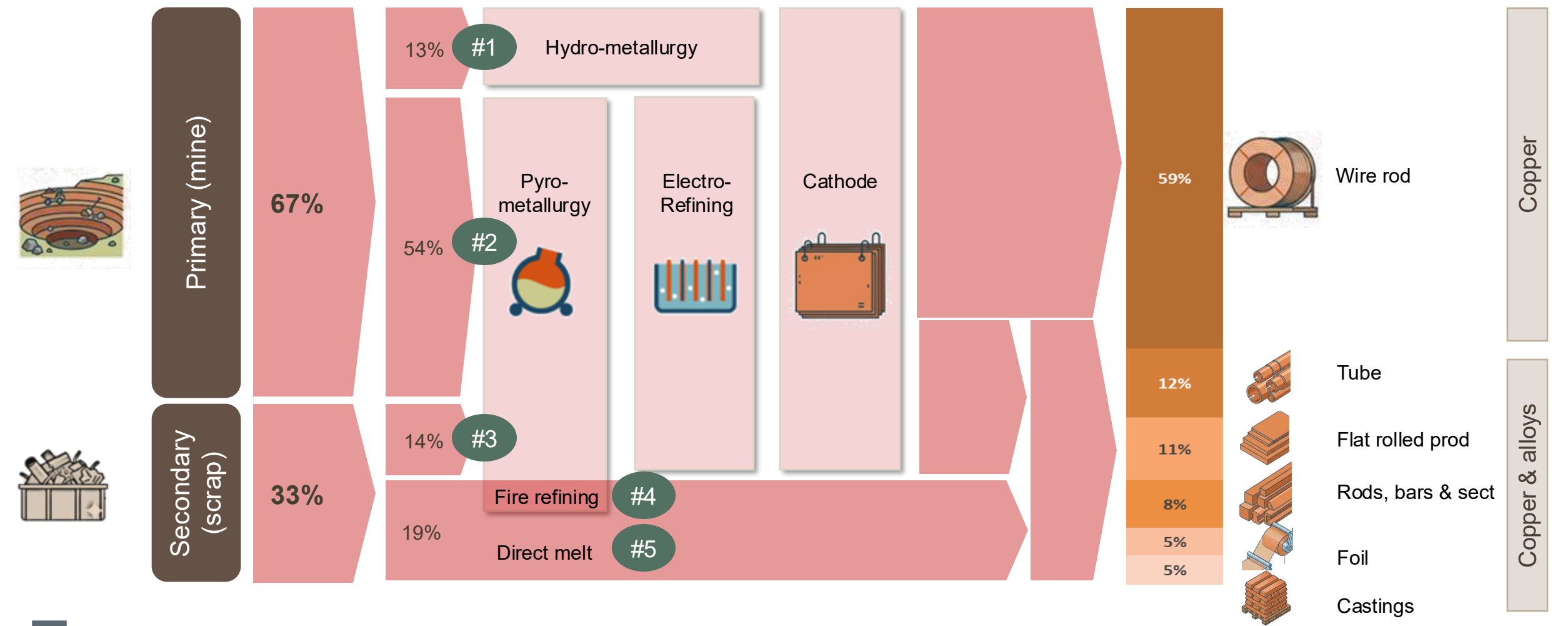


Both primary (mine) and secondary (scrap) sources are used to produce semi-fabricated products



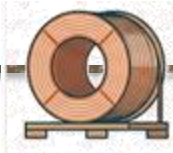
Split down of the ~31 Mton total copper usage worldwide (2024)

Wire rod is largely produced out of cathode



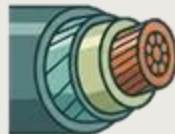
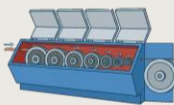
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Wire rod has different requirements depending on the application



Drawn wire

Building wire
& power cable



CTC

Transformer



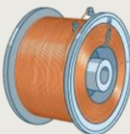
Winding wire

Motor



Thin wire
<0.1 mm

Multiwire



High purity



Surface quality



Enamel reliability



Very low level of targeted
impurities

Ductility and low annealing T

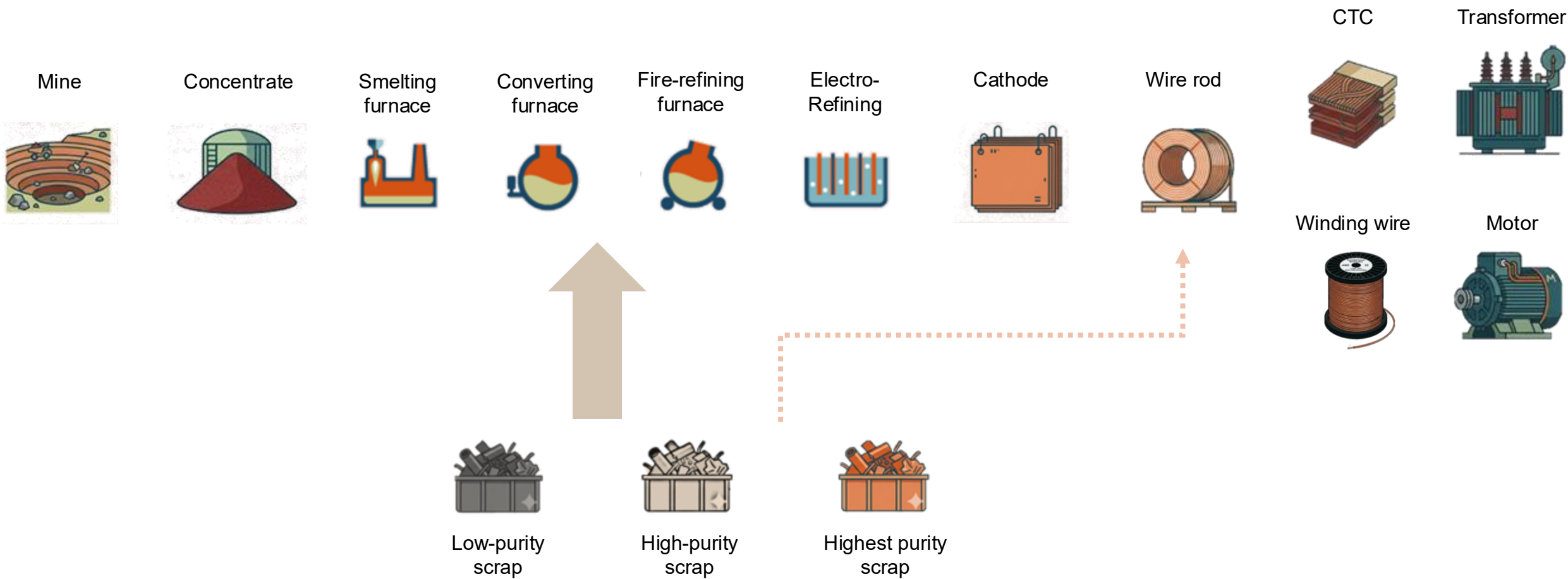
High conductivity

Extreme bending

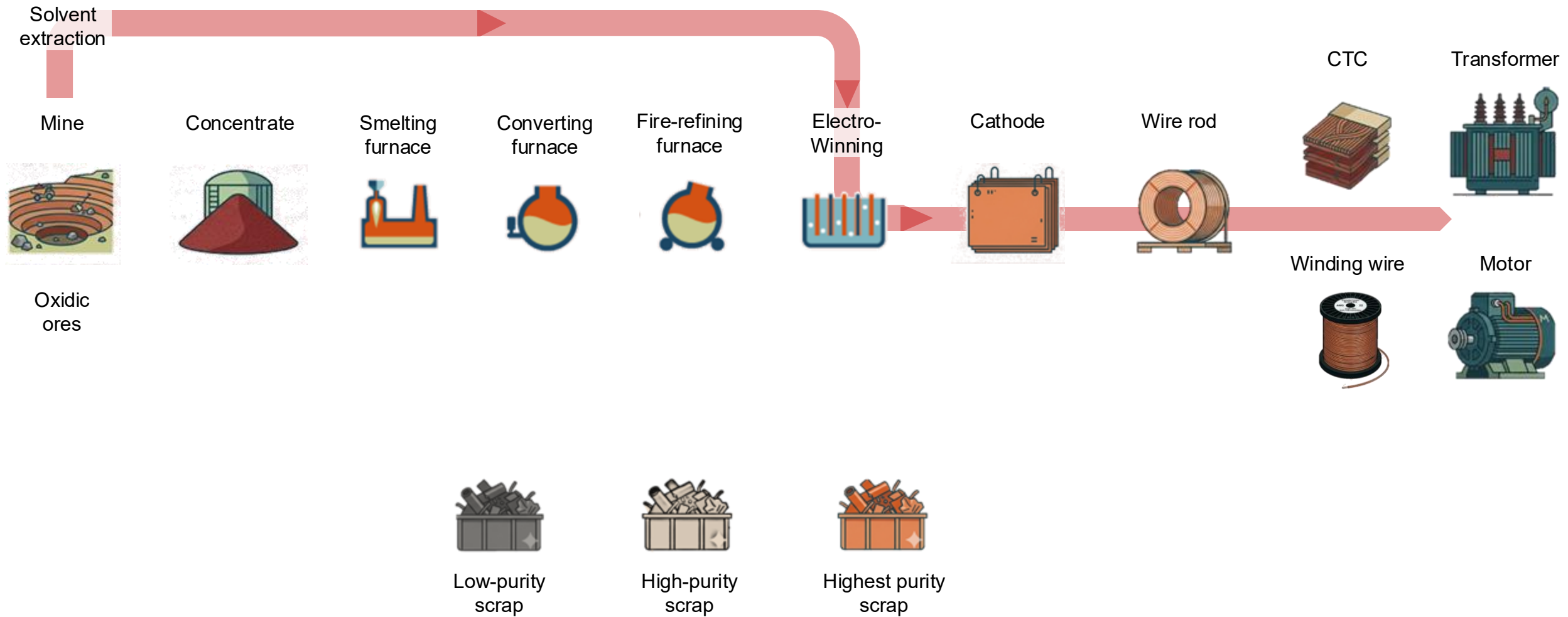
Multiple performance
requirements

Extreme drawing

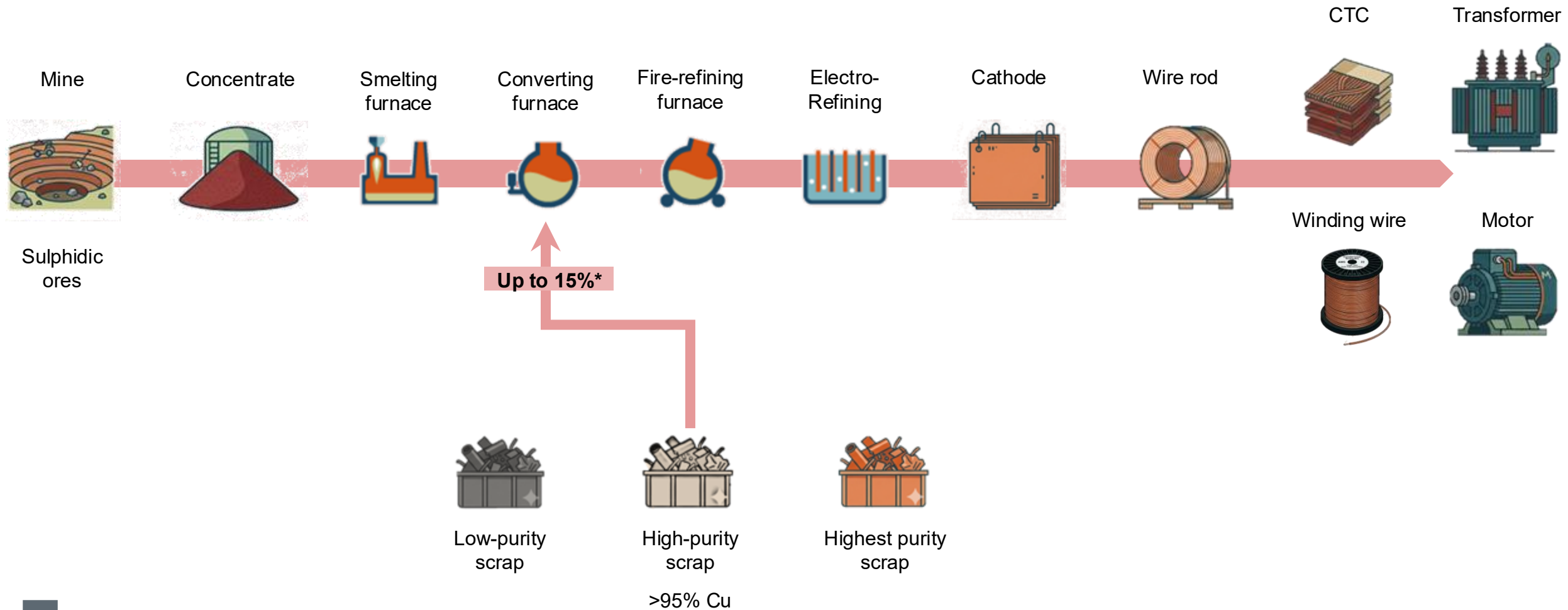
The steps of copper production till power transformers and motors



Route #1: primary - hydrometallurgical

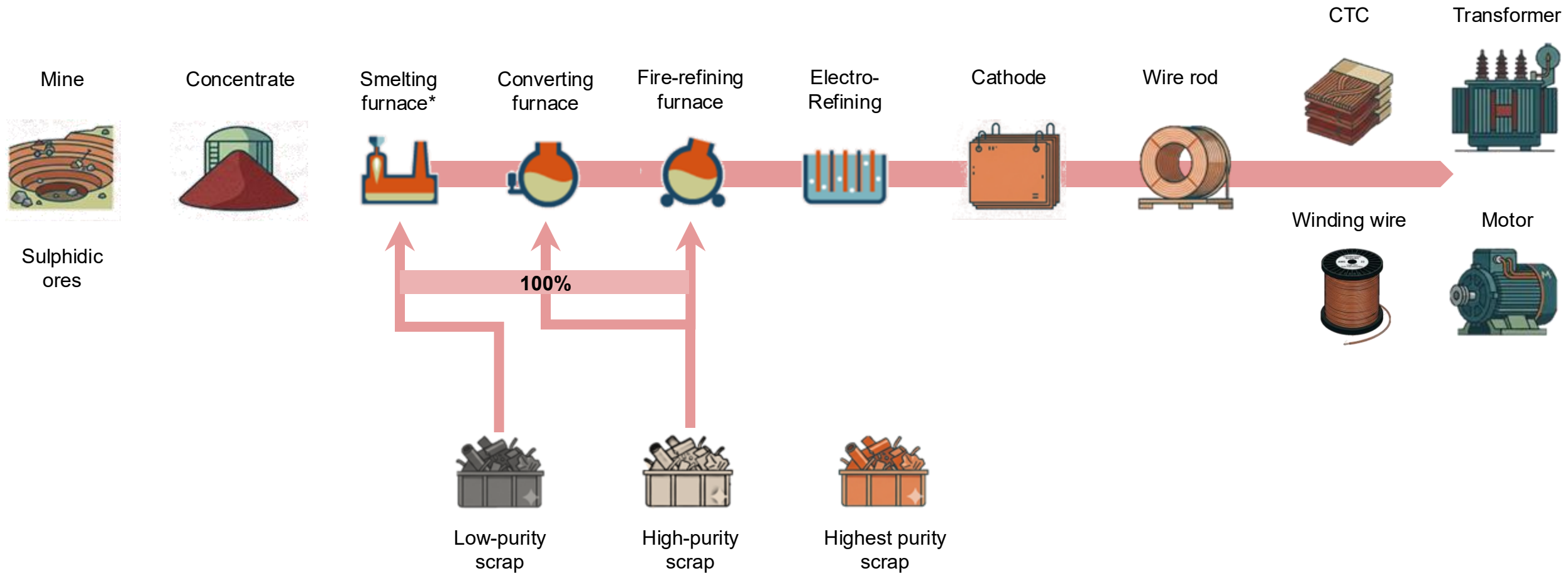


Route #2: primary – pyrometallurgical (smelting & refining)

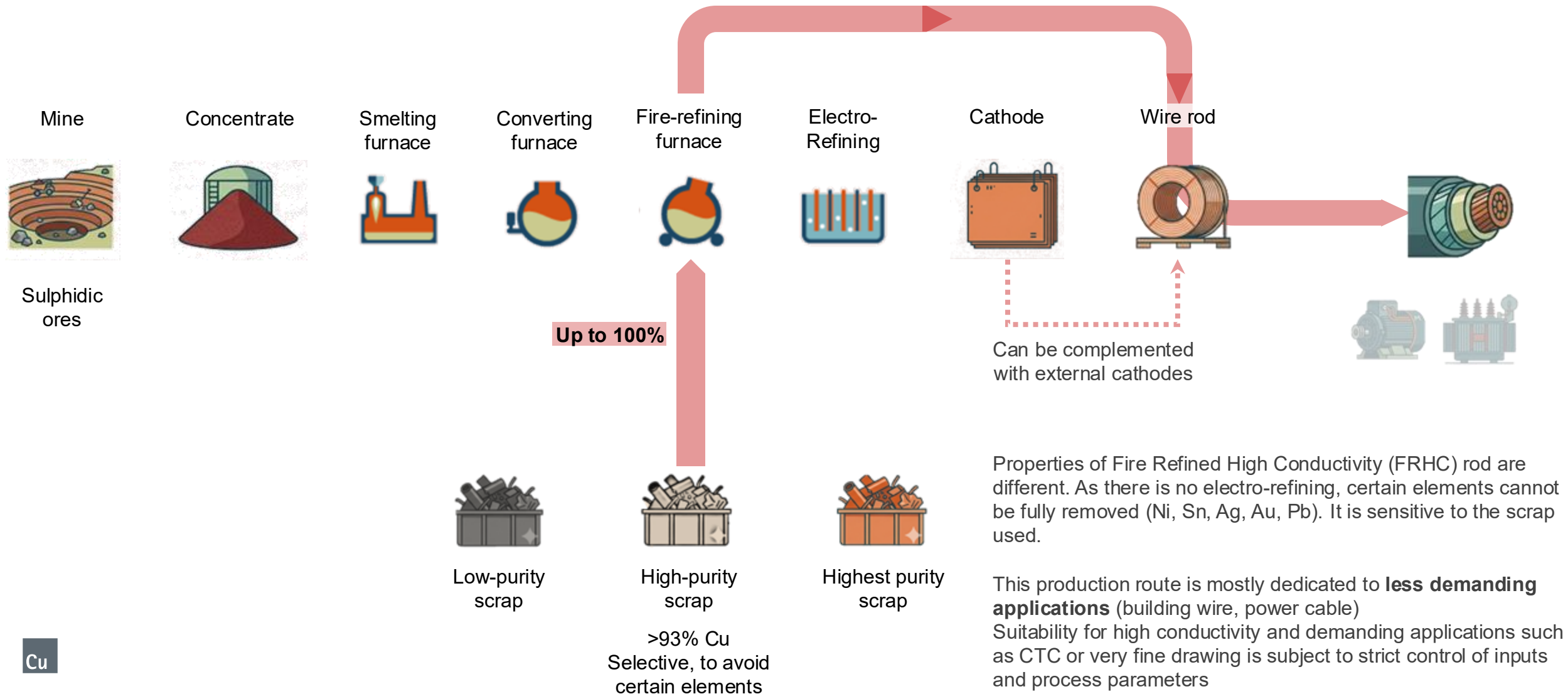


* Typically up to 15%, though some specific smelters are adapted to process higher rates

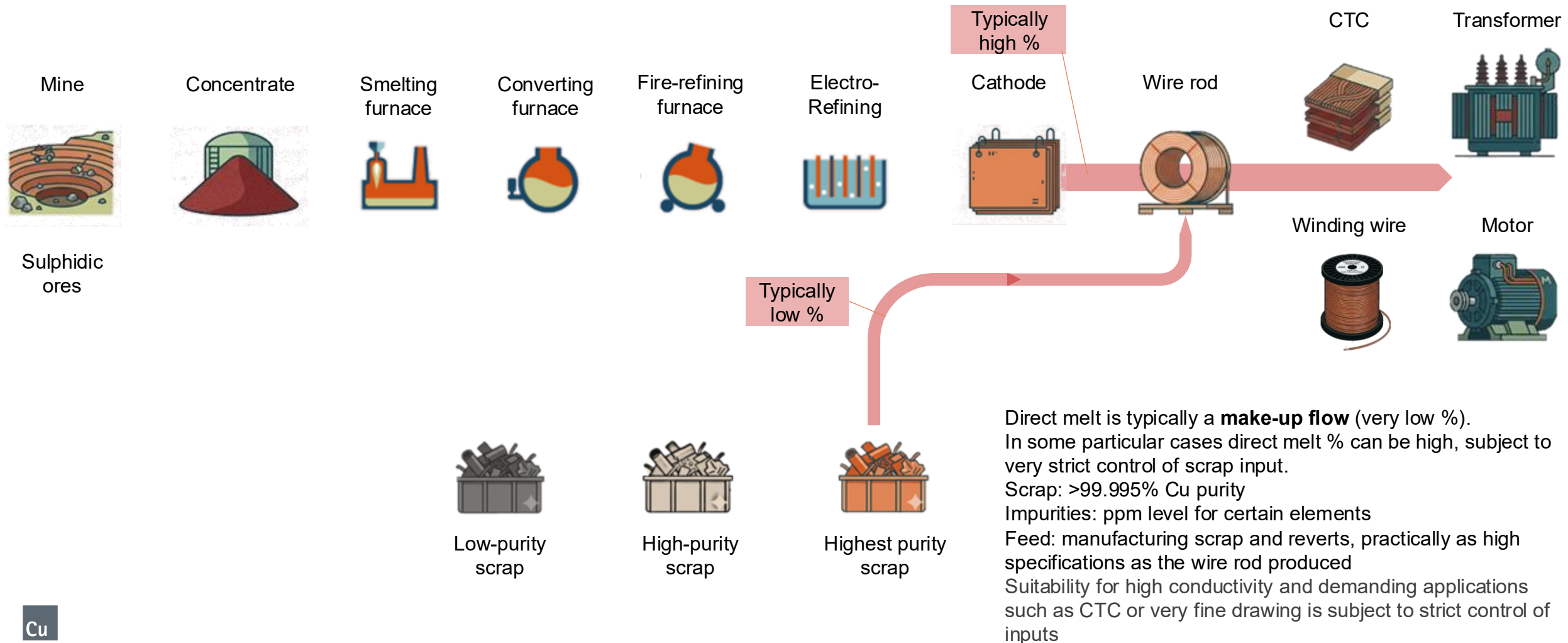
Route #3: secondary – pyrometallurgical (smelting & refining)



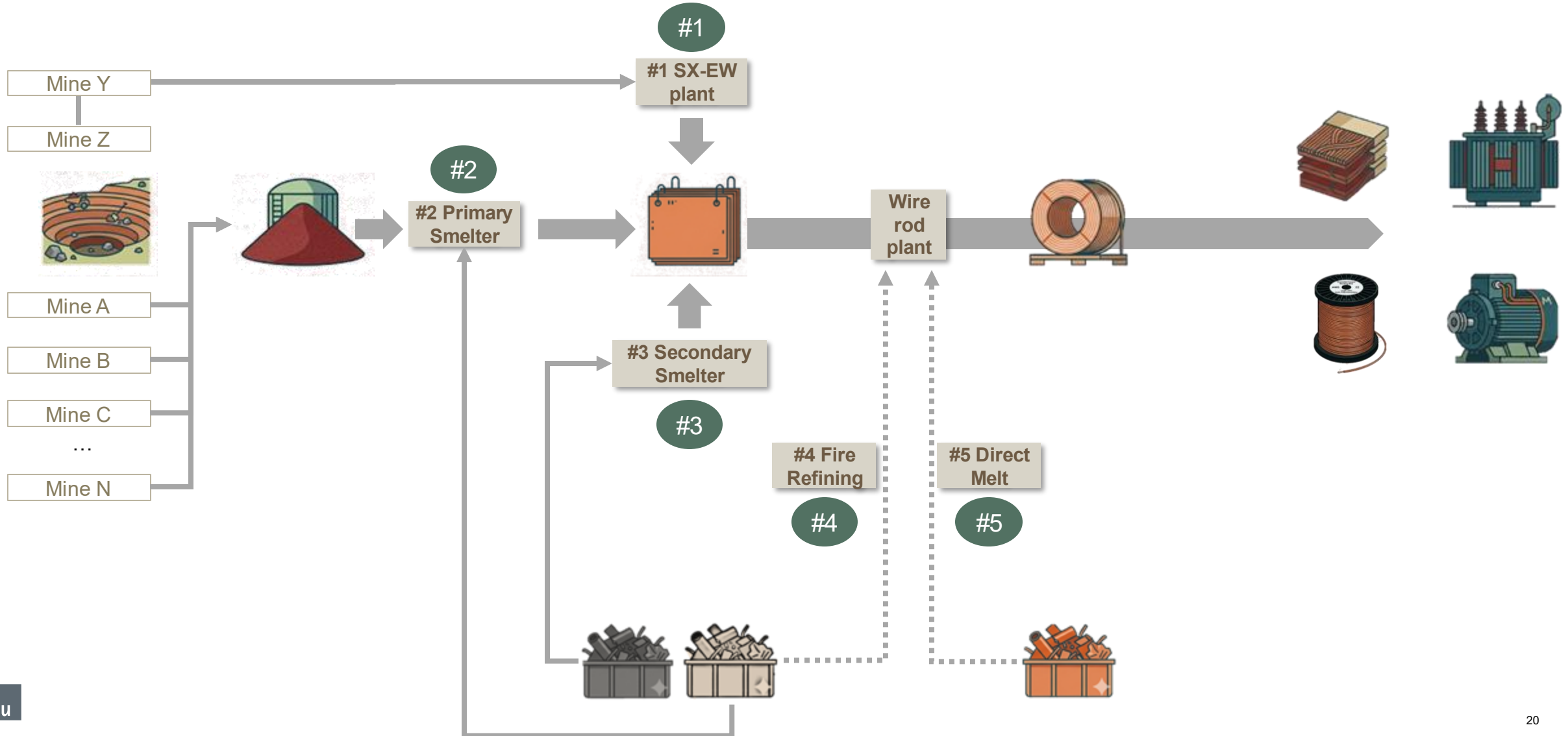
Other routes (non-mainstream for winding wire): #4 fire-refining



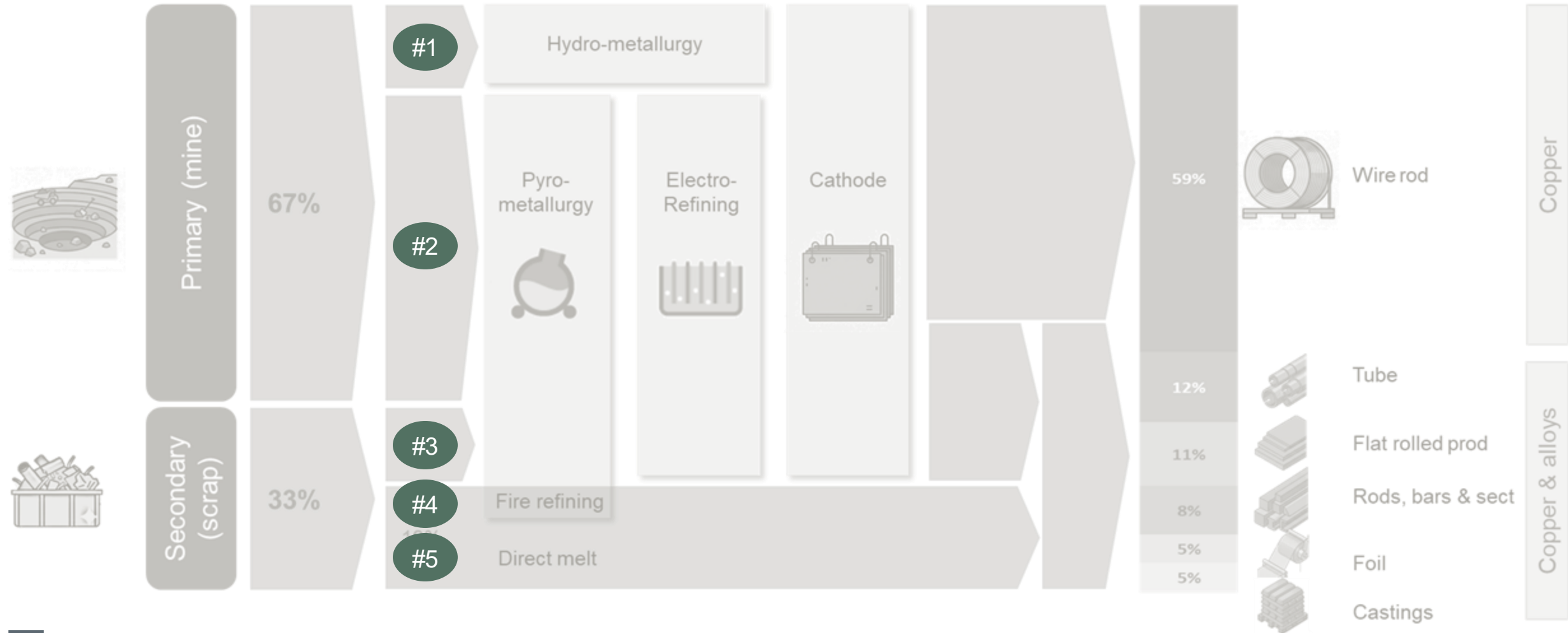
Other routes (non-mainstream for winding wire): #5 direct melt



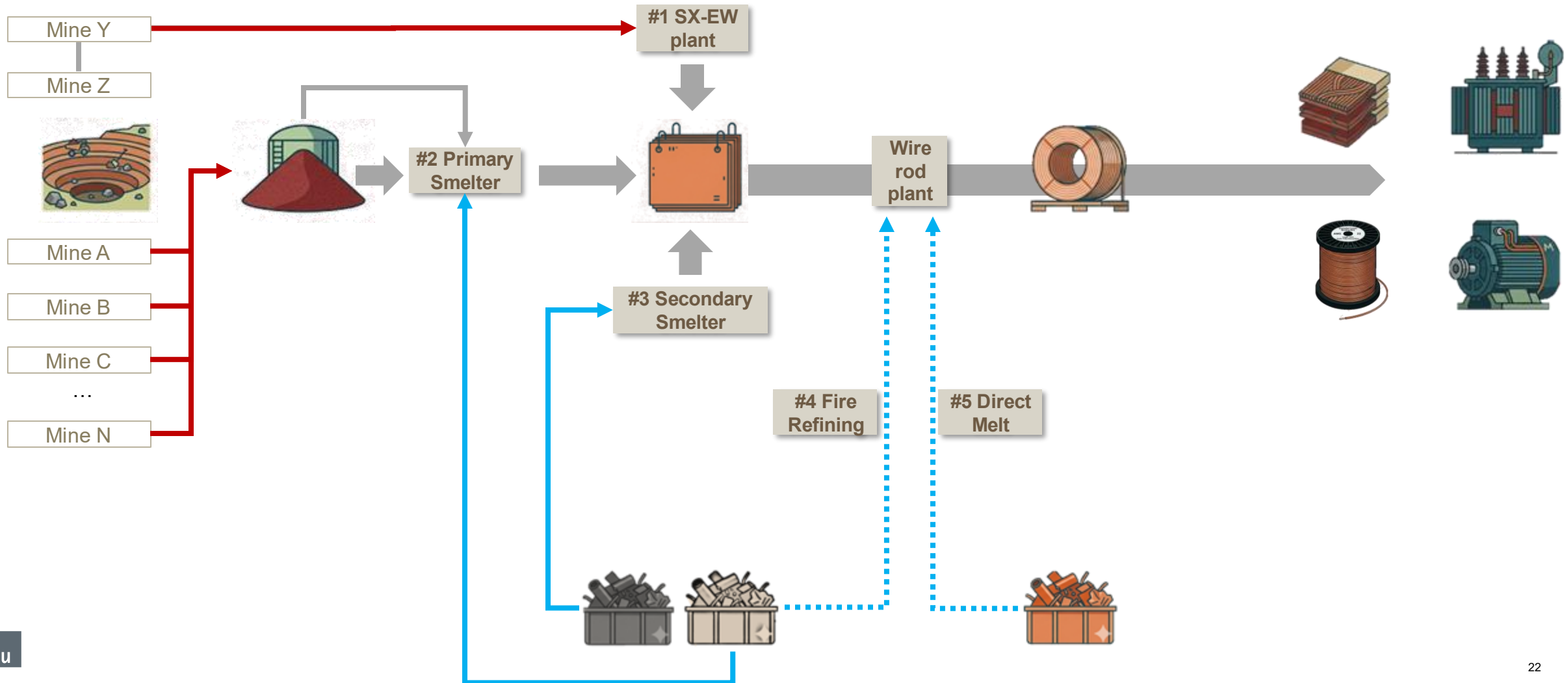
Full picture, five production routes



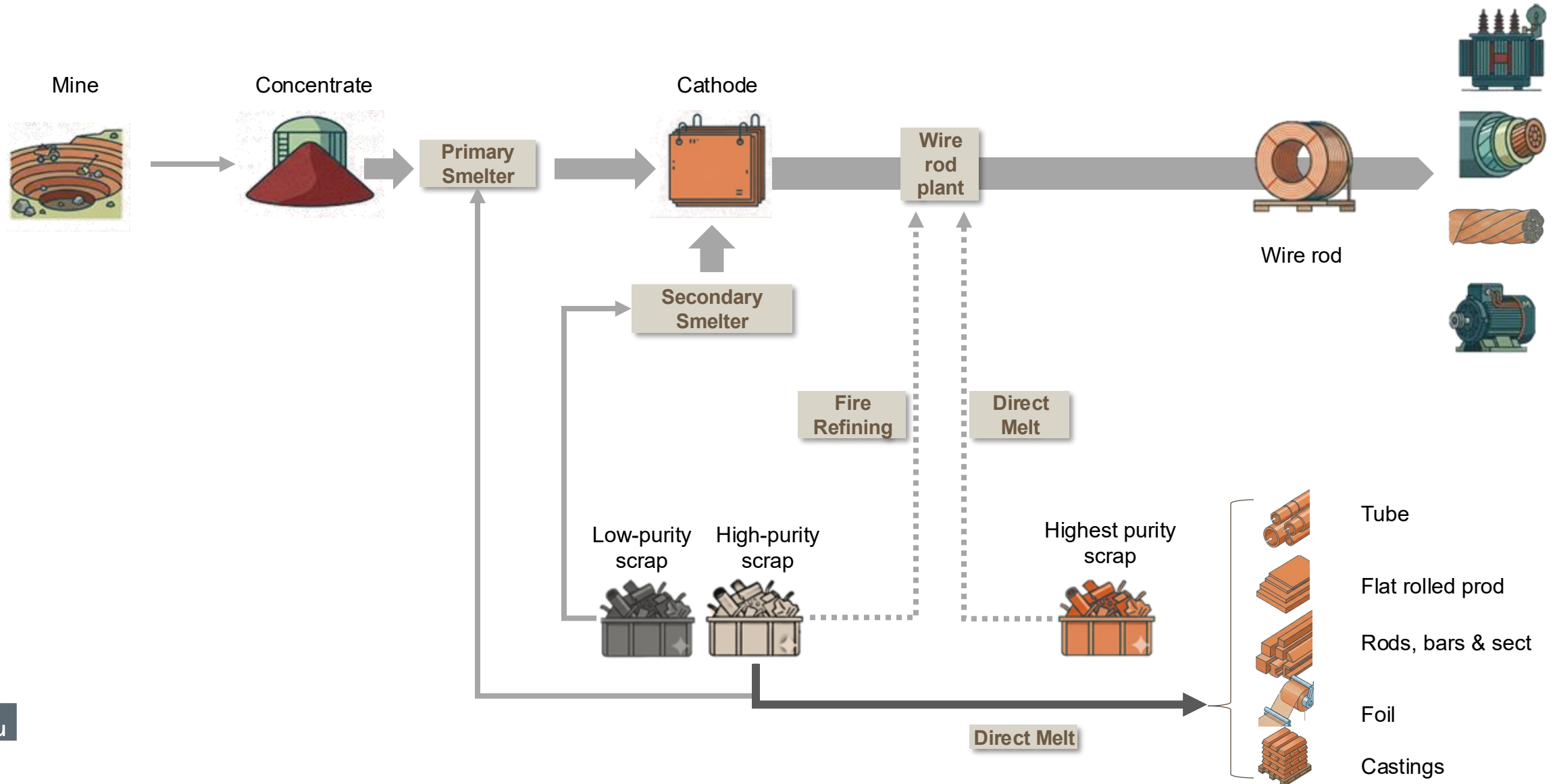
Five production routes and split down of production & usage



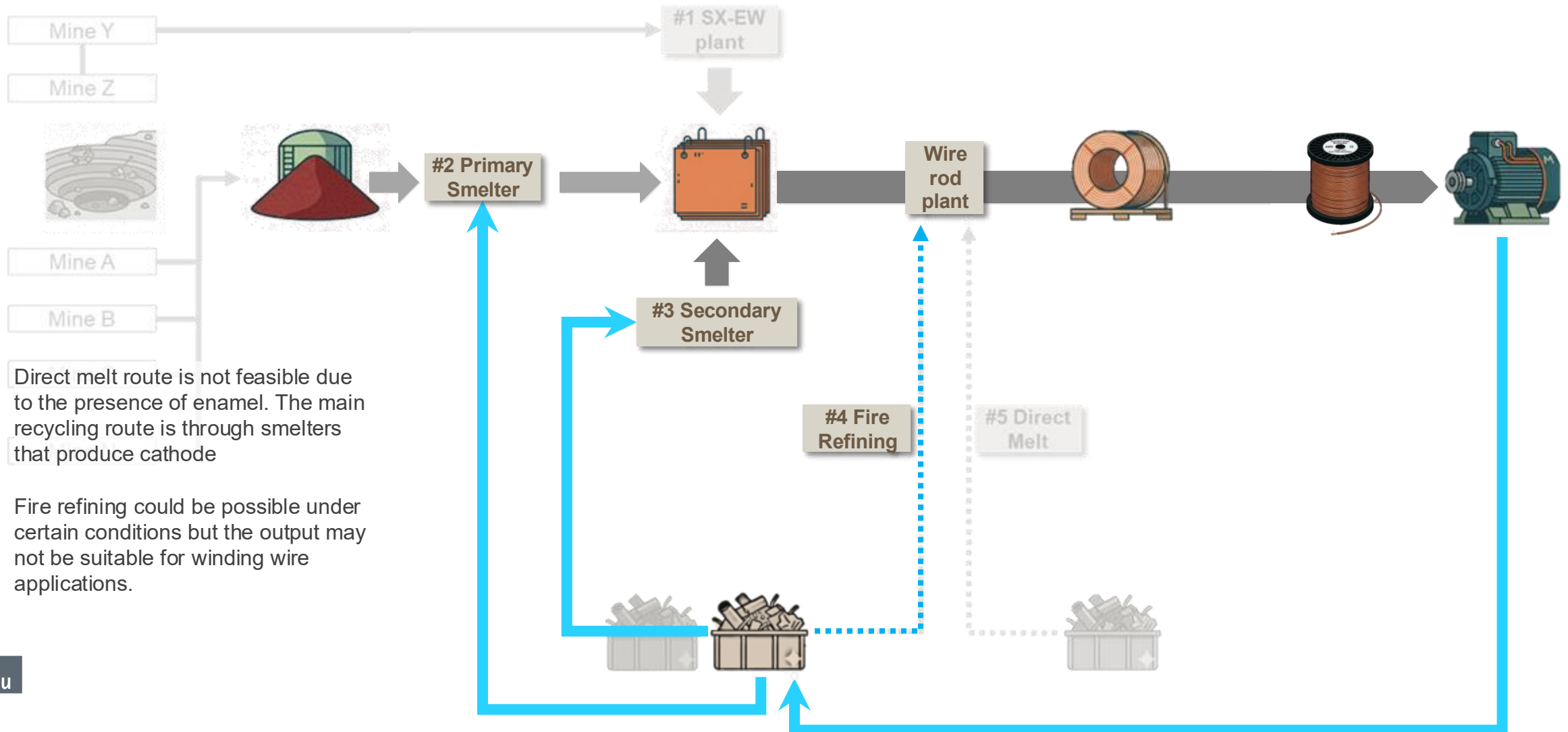
Both **mined** and **recycled** content are mainstreamed through multiple routes



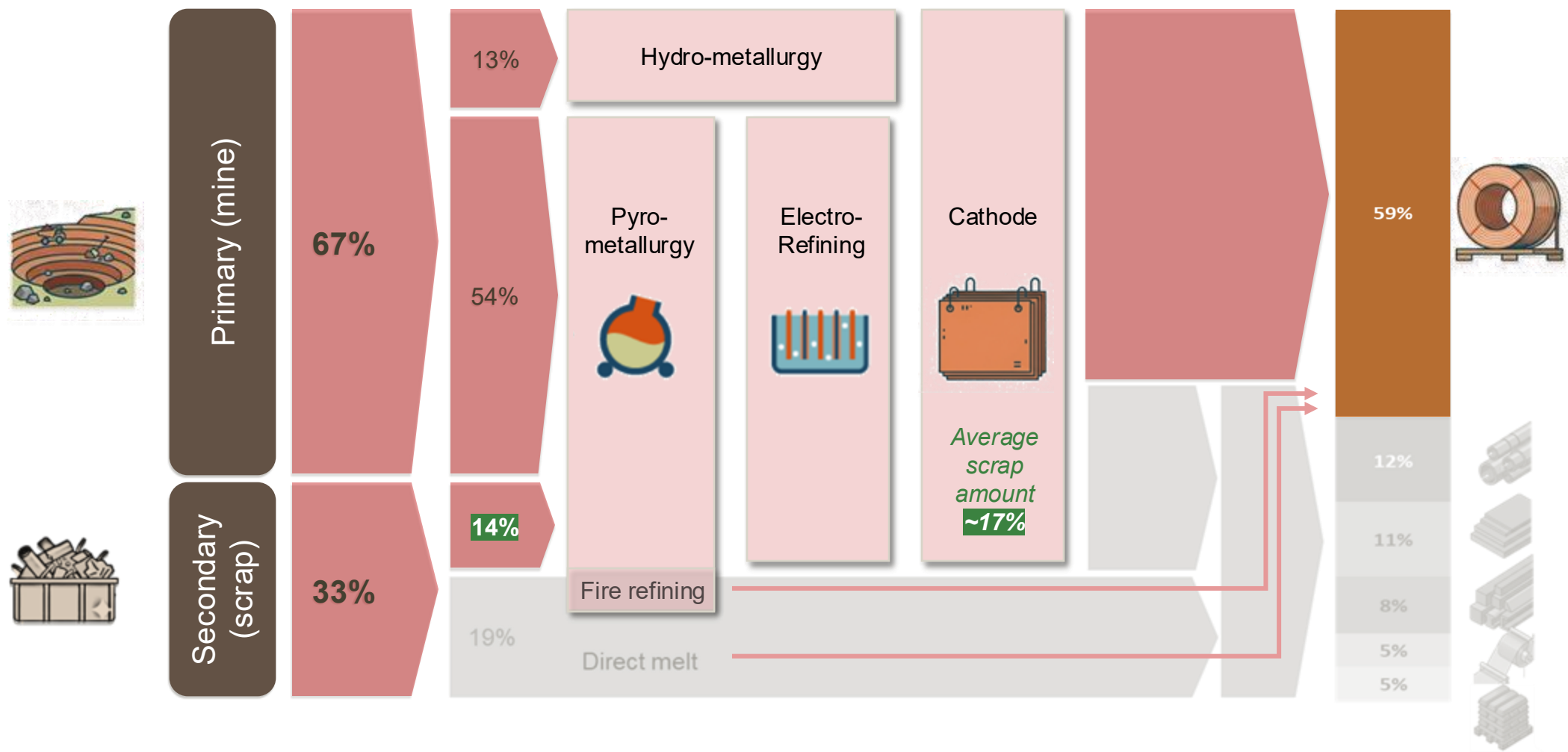
Rational use of scrap



Recycling motor winding wire



Global wire rod production is dominated by cathodes, the average scrap use is limited (<20%)



Takeaways

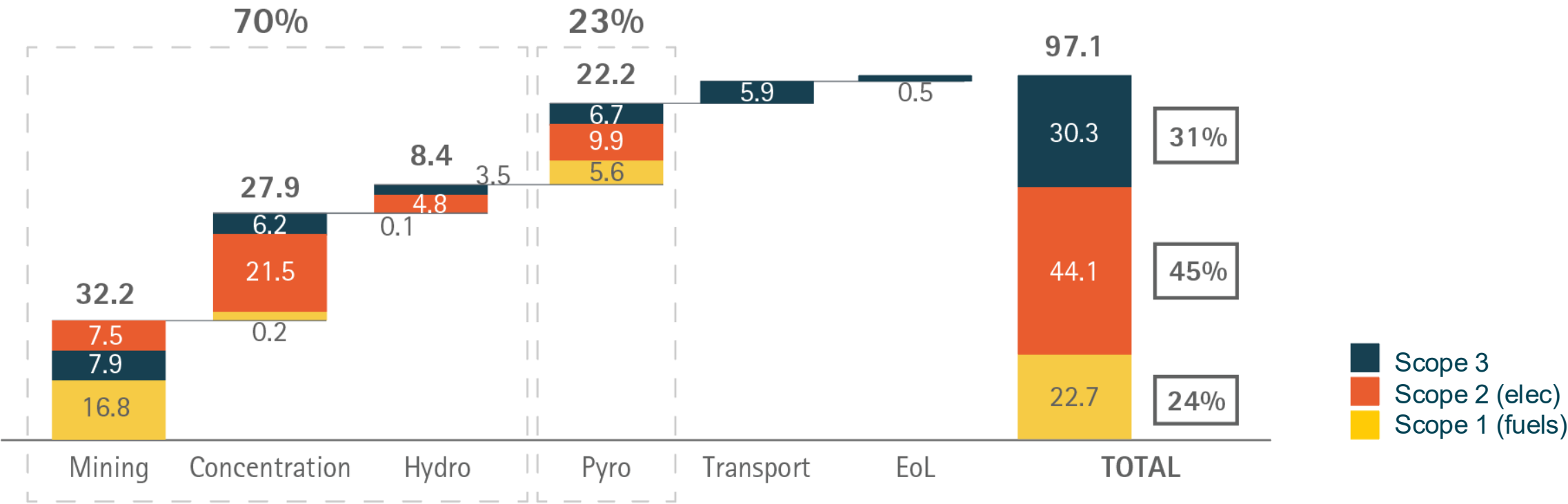
Recycled copper can be used in your application (and it is actually used)

- The mainstream route for winding wire is through wire rod made of copper cathodes, which generally have a limited recycled content.
- Niche cases can be implemented with high recycled content, but these are not replicable at large scale
- The wire rod producer selects the best approach and optimal blends (primary/secondary grade A cathode, direct melt)
- Recycled content comes from various streams that could be traced back
- GHG footprint calculation requires tracing back the various sources of material

Decarbonising the copper value chain

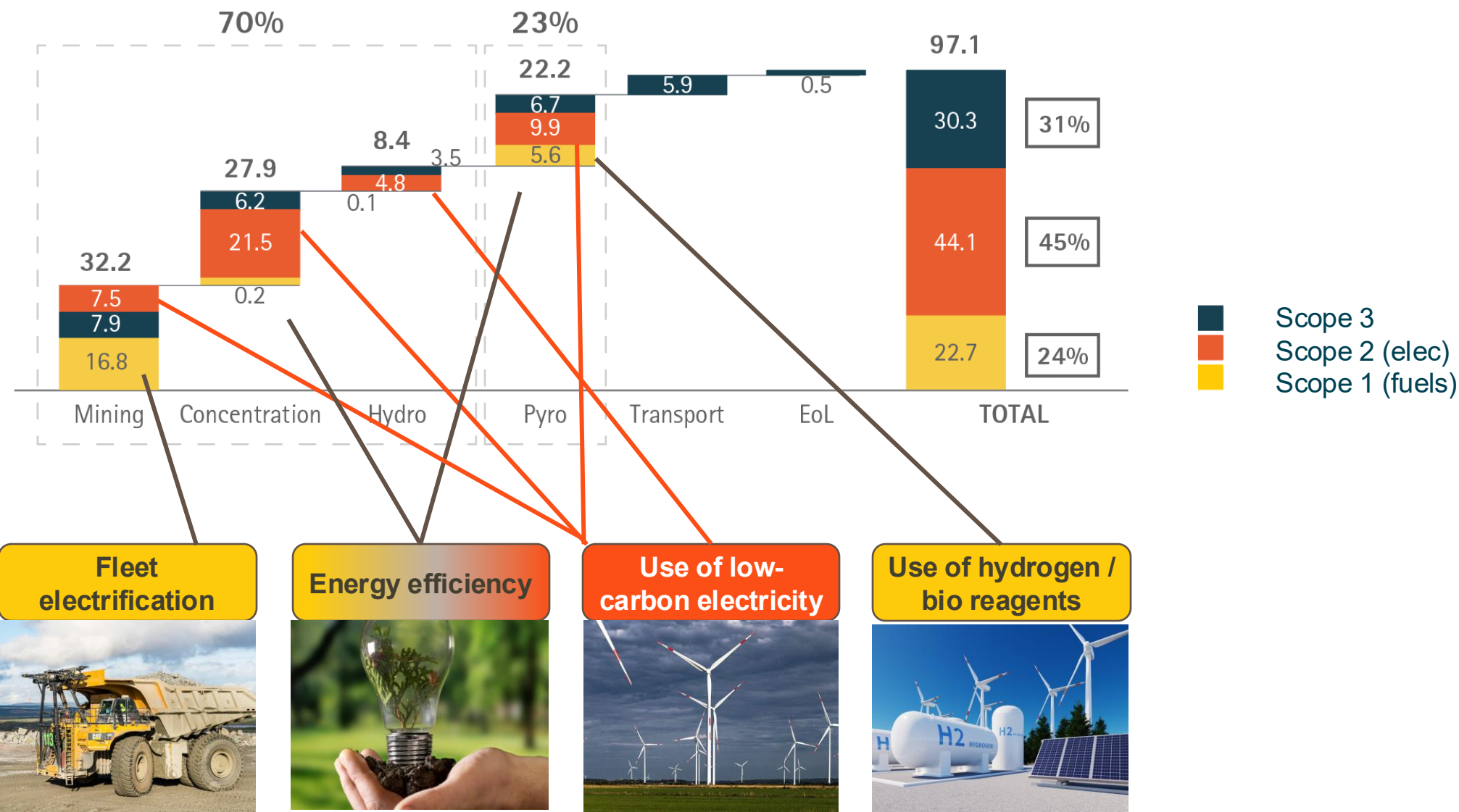


2018 global carbon footprint, million tonnes CO2eq

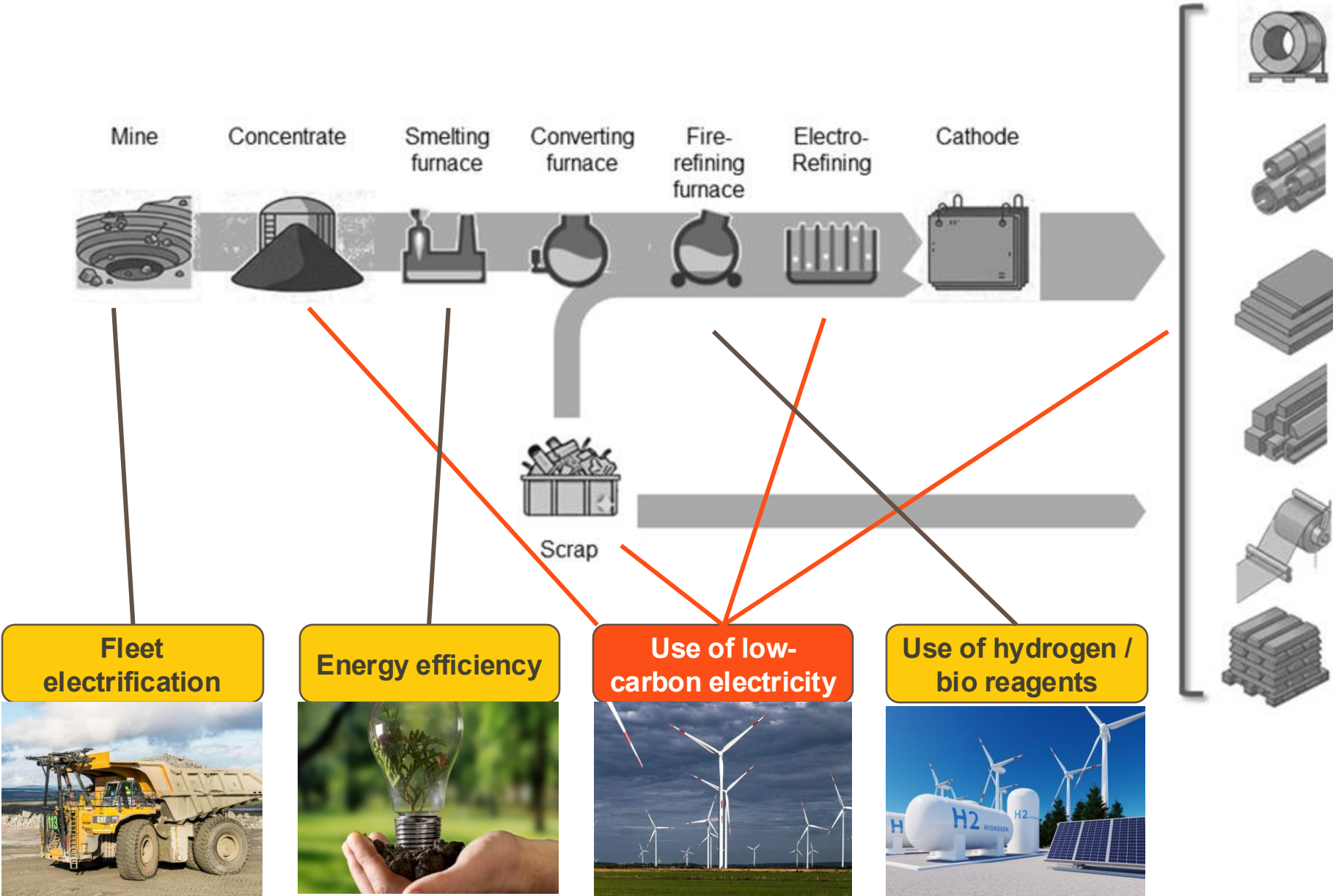


<https://internationalcopper.org/resource/copper-pathway-to-net-zero/>

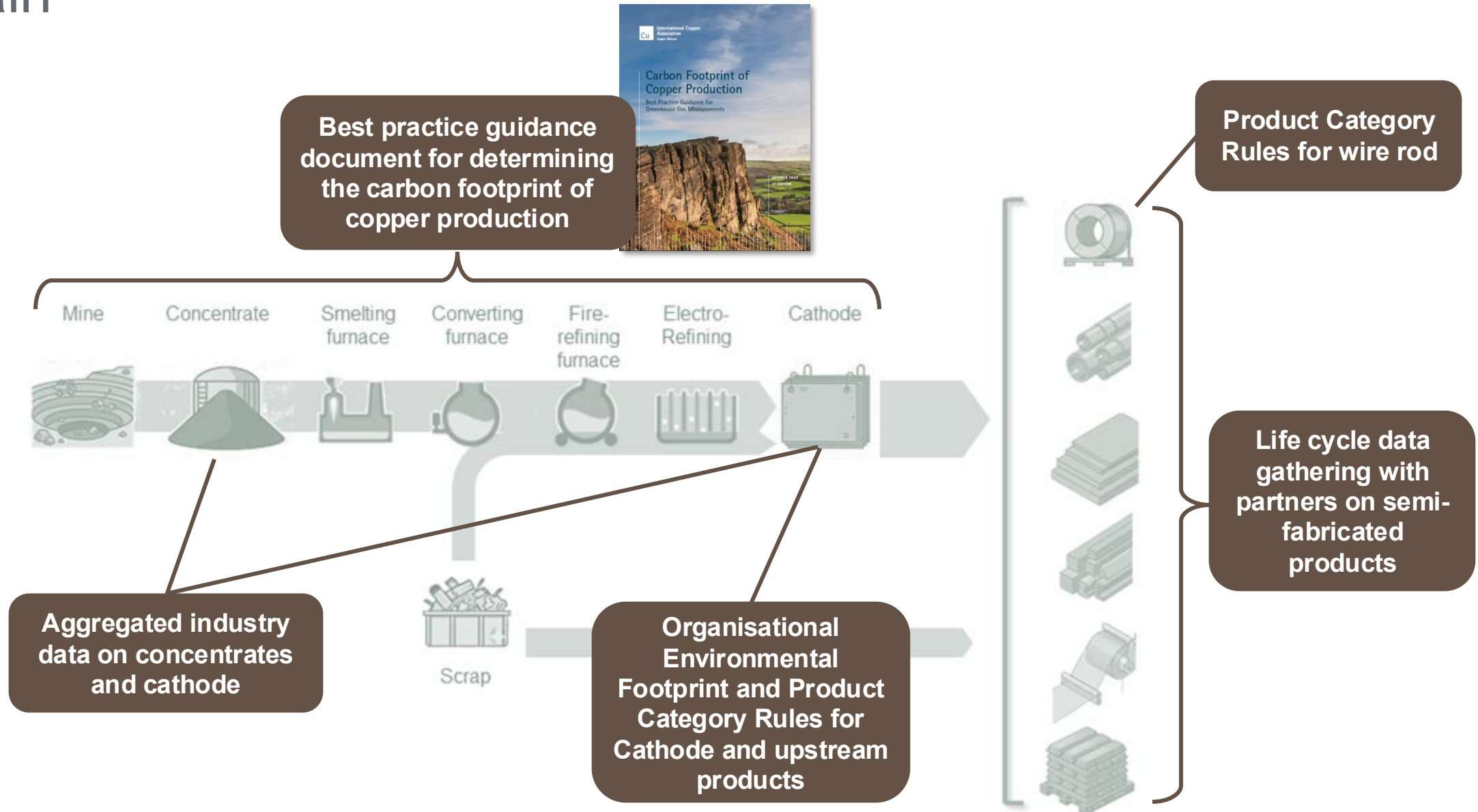
Adressing scope 1 and 2



Adressing scope 1 and 2



ICA workstreams addressing sustainability needs of the value chain

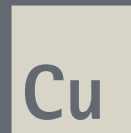


Takeaway

Sustainability requirements are more robust in the mid and long-term when considering **also** primary copper sourcing together with pathways for its decarbonisation

Decarbonisation is being addressed through multiple levers

International Copper Association works to deliver guidance and common rules for life cycle evaluation, so as to allow comparability.



EU copper supply is diversified with mining, recycling and trade

Copper has the lowest supply risk among key raw materials

The Critical Raw Materials Act further supports copper projects in Europe

Recycled copper is mainstreamed through cathodes which are used in transformers

Though, typically a mix of mined and recycled copper is used in the production of copper wire rod

Decouple decarbonization and recycled content

Sustainability requirements are more robust in the mid and long-term when considering also primary copper sourcing together with pathways for its decarbonization → more holistic and resilient approach

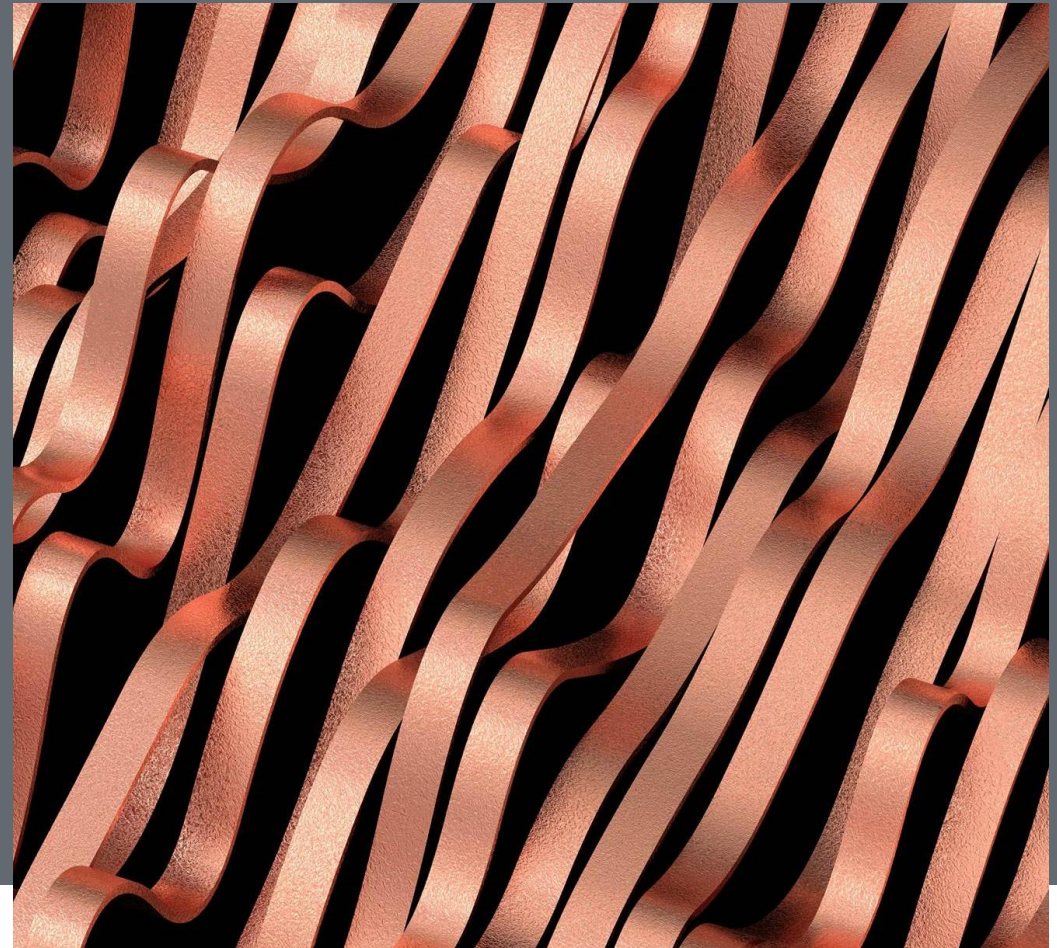
The International Copper Association is developing guidance and rules for common LCA methodologies for cathode and copper wire rod

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Association Europe

Thank you!

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