

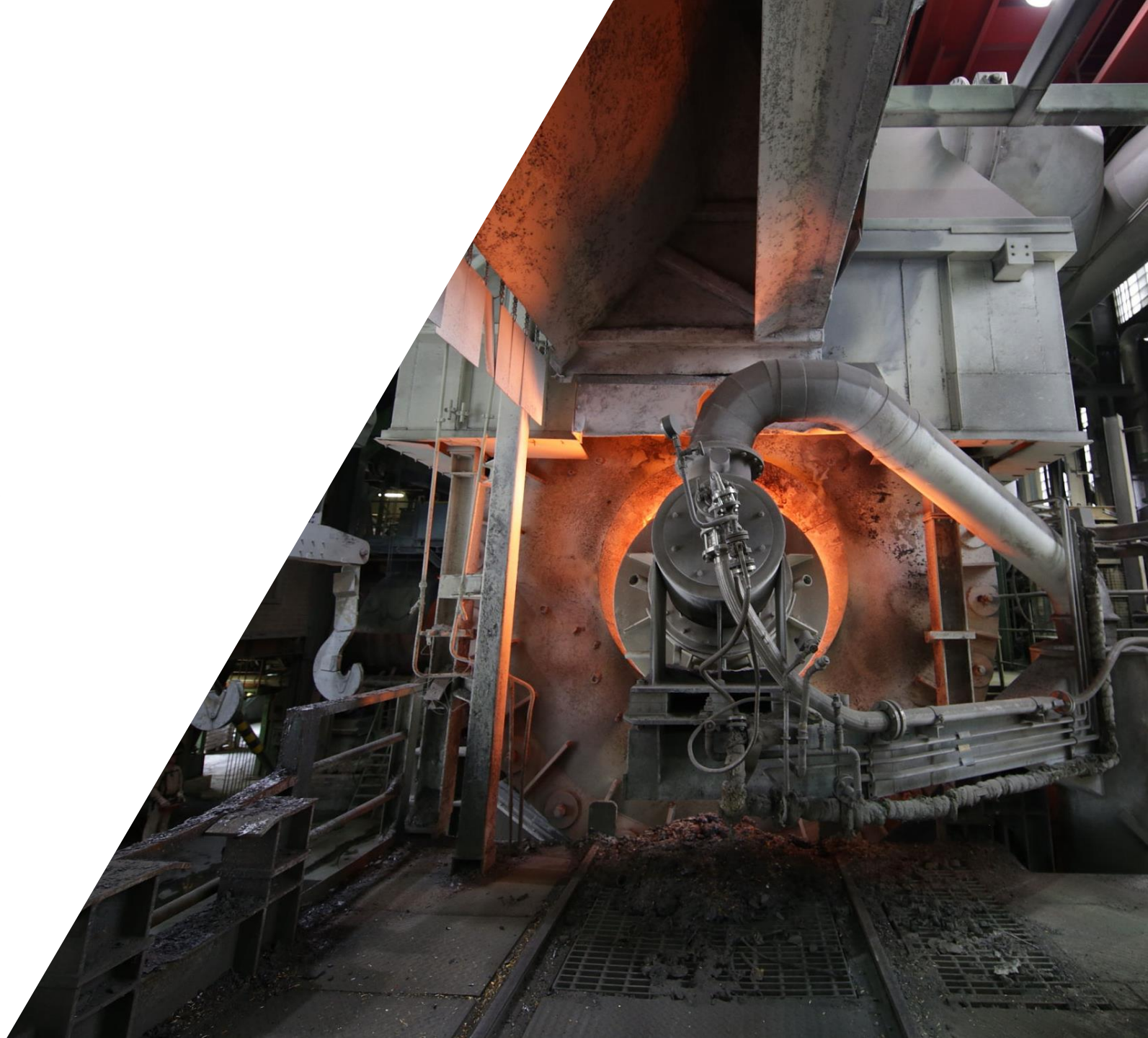
# Aurubis AG Metals for Progress

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MM. Warburg Warsaw Conference

February 20th, 2024  
Warsaw

 **Aurubis**





# Our metals for an innovative world: Copper makes the circular economy possible

renewable energy



e-mobility



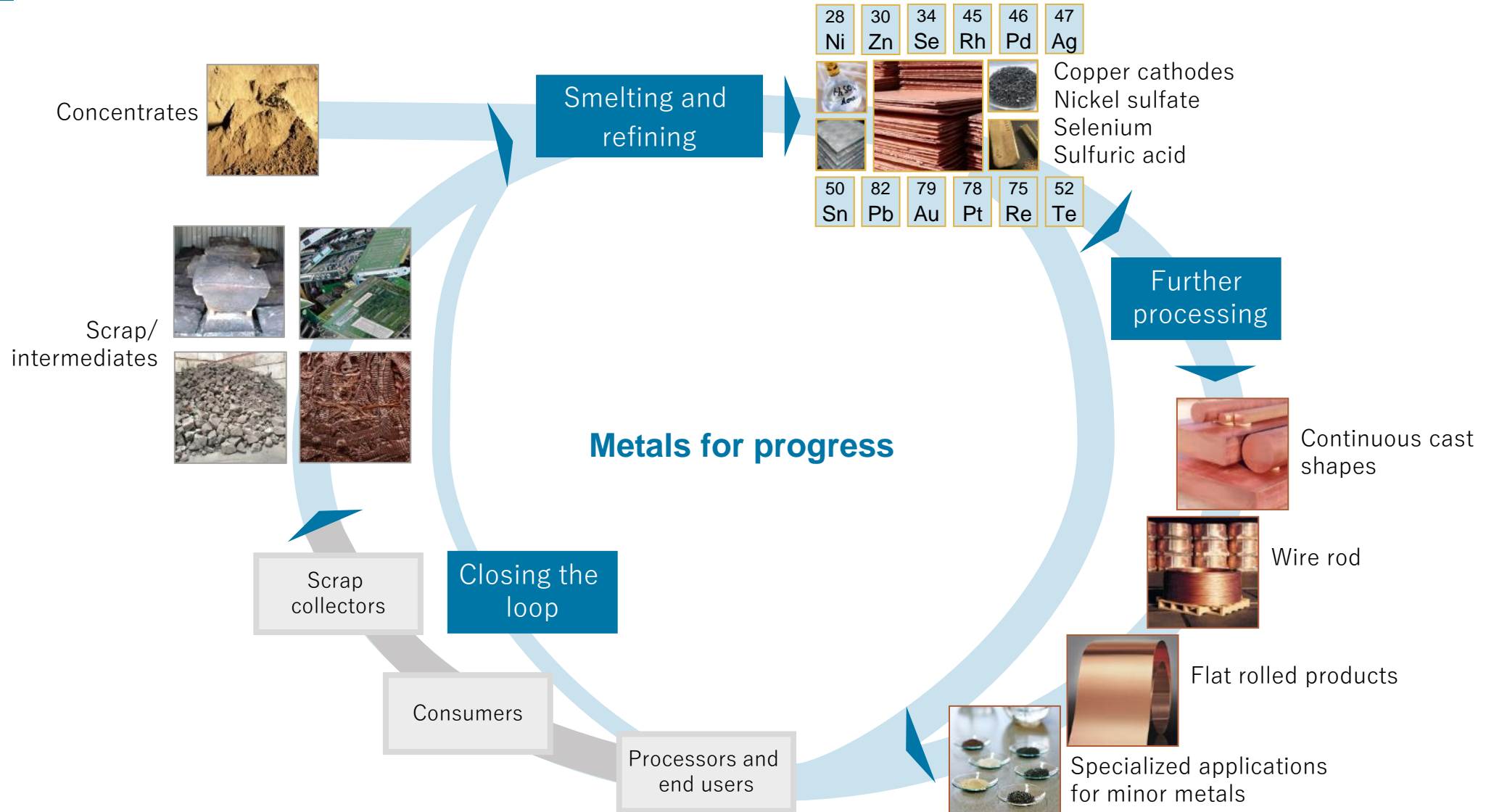
digitalization



urbanization



# Closing the loop is part of Aurubis' integrated business model



# Lower concentrate throughput due to shutdown with strong demand for wire rod

	FY 2022/23	Change vs. prior year		FY 2022/23	Change vs. prior year
 Concentrate processing <sup>1</sup>	2,319,000 t	-5 %	 Gold	49 t	+4 %
 Copper scrap/blister copper input <sup>2</sup>	515,000 t	-5 %	 Silver	921 t	+1 %
 Other recycling materials <sup>2</sup>	565,000 t	+8 %	 Lead	38,088 t	-13 %
 Cathode output	1,109,000 t	0 %	 Nickel	3,488 t	-10 %
 Continuous cast wire rod output	876,000 t	-1 %	 Tin	7,858 t	-16 %
 Copper shapes output	178,000 t	-18 %	 Zinc	13,791 t	-1 %
 Flat rolled products + specialty wire output <sup>3</sup>	133,000 t	-24 %	 Minor metals	875 t	+1 %
 Sulfuric acid output	2,158,000 t	-6 %	 Platinum group metals (PGMs)	9,858 kg	+4 %

<sup>1</sup> Custom smelter production <sup>2</sup> Prior-year figures adjusted <sup>3</sup> Prior-year figures include FRP sites that have been sold



# Executive summary of first 3 months 2023/24

Operating EBT  
3M 2023/24 of  
**€ 111 million**  
(PY: € 125 million)<sup>1</sup>

Operating ROCE  
**9.7 %**  
(PY: 16.3 %)

Overall stable market conditions and good operative performance led to solid three-month figures for FY 2023/24

Operating EBT positively influenced by higher treatment and refining charges for concentrates, a significant increase in the Aurubis copper premium, and continuing high demand for wire rod at a stable cost structure. Decreased metal result due to reduced metal prices and lower sulfuric revenues had a negative impact on earnings.

Net cash flow  
**€ -202 million**  
(PY: € -64 million)

Confirmed forecast  
range for FY 2023/24  
**€ 380–480 million**  
op. EBT

ROCE (taking EBIT of the past four quarters into account) reduced due to the negative closing quarter of the previous year and ongoing investment activity

Net cash flow subdued as a result of the build-up of inventories in preparation for the shutdown in Hamburg

Op. EBT for FY 2023/24 expected in the guided forecast corridor of **€ 380–480 million**

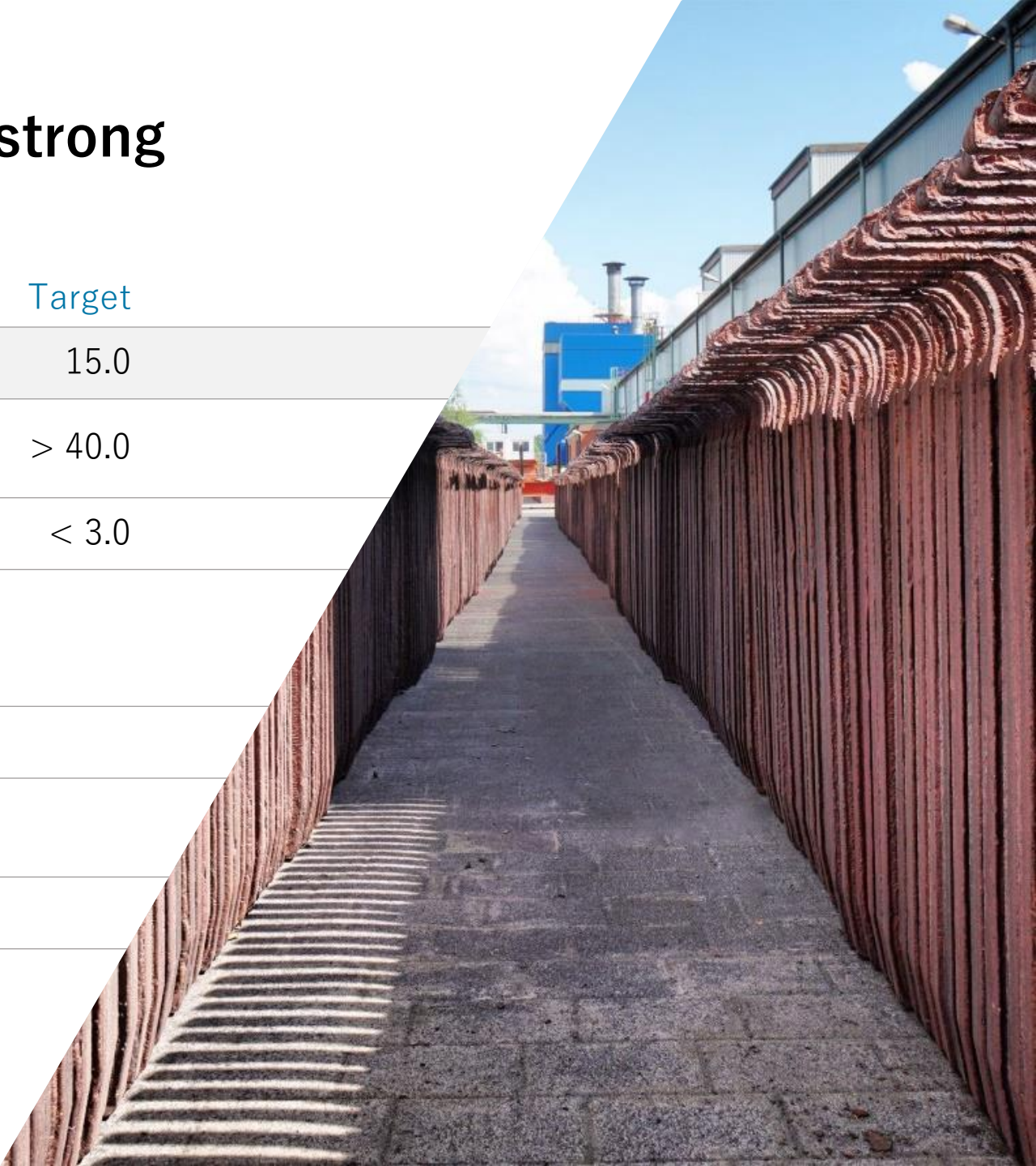
**» Good operating performance and continued progress on the strategic projects**

# Aurubis' financial position remains strong

		3M 2023/24	3M 2022/23	Target
ROCE <sup>1</sup>	%	9.7	16.3	15.0
Equity ratio (equity / total assets)	%	58.6	56.6	> 40.0
Debt coverage <sup>2</sup>		0.2	-0.3	< 3.0
Additional KPIs				
		3M 2022/23	3M 2022/23	
Capital expenditure	€m	153	72	
Capital employed (balance sheet date)	€m	3,597	3,099	
Net cash flow	€m	-202	-62	

<sup>1</sup> Rolling EBIT last 4 quarters

<sup>2</sup> Net financial liabilities/rolling EBITDA last 4 quarters





# Gross margin for the Group in 2023/24 YTD

Breakdown of income components in the Aurubis Group 3M 2023/24 YTD (YTD prior-year figures)

**36 % (30 %)**

Treatment and refining charges for concentrates + recycling materials

**29 % (39 %)**  
Metal result

**~€ 514 million\***  
(~€ 540 million\*)

**35 % (31 %)**

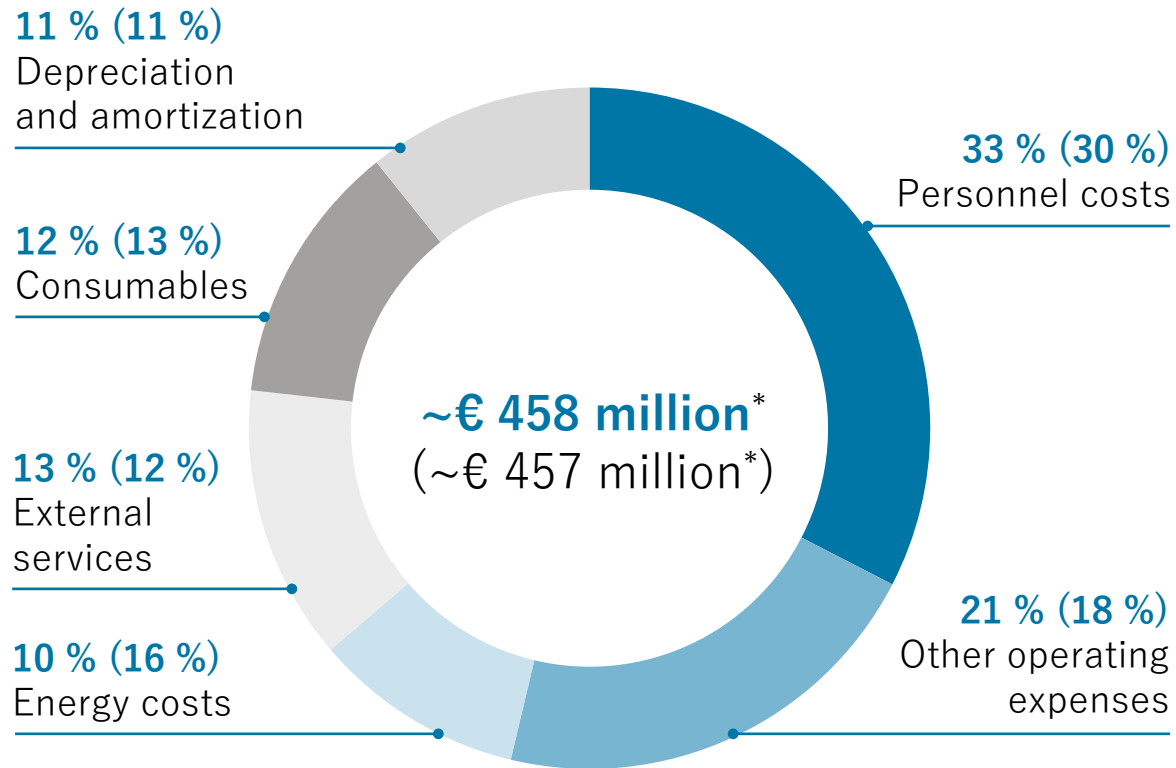
Premiums + products

\* Gross margin = Total of earnings components metal result, treatment and refining charges for concentrate + recycling input, and premiums + products



# Stable overall Group costs

Overview of cost/expense positions  
3M 2023/24 YTD (YTD prior-year figures)



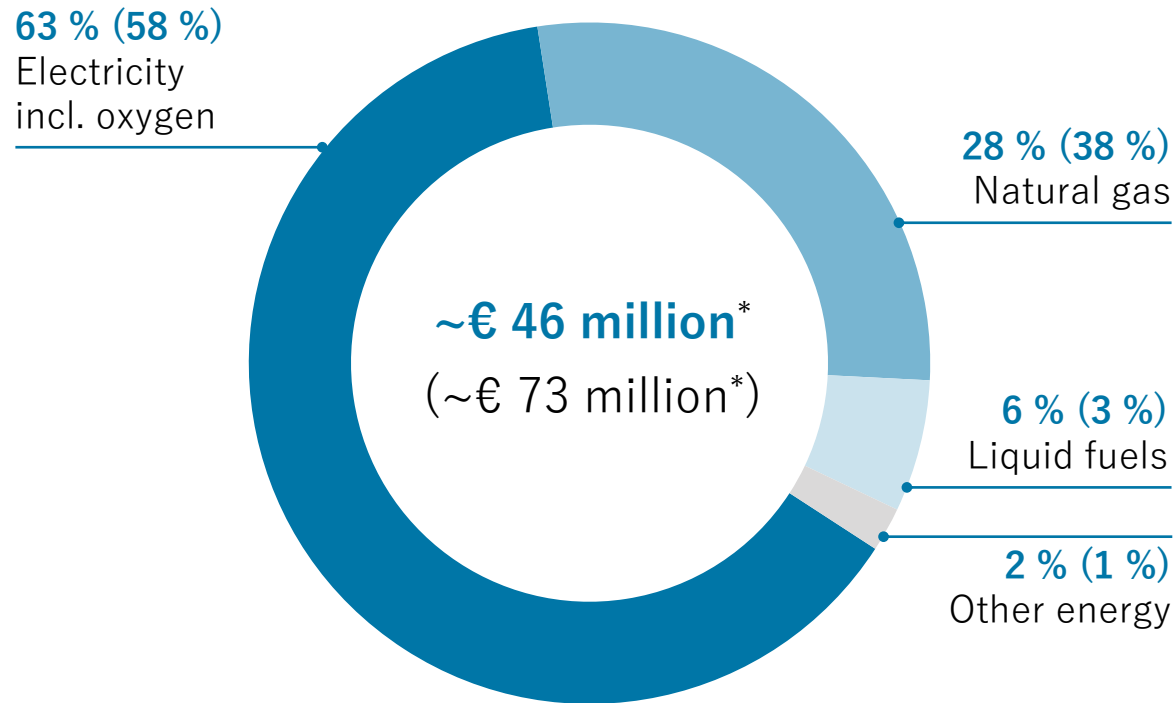
\* Figures adjusted by energy compensations and hedging transactions





# Significant decrease in energy costs due to reduction of market prices

Breakdown of energy costs 3M 2023/24  
(3M PY)



Key factors influencing the reduction of energy costs in Q1 2023/24:

- Active energy management/hedging transactions
- Electricity price cap in Bulgaria
- Indirect CO<sub>2</sub> compensation (annual payment)

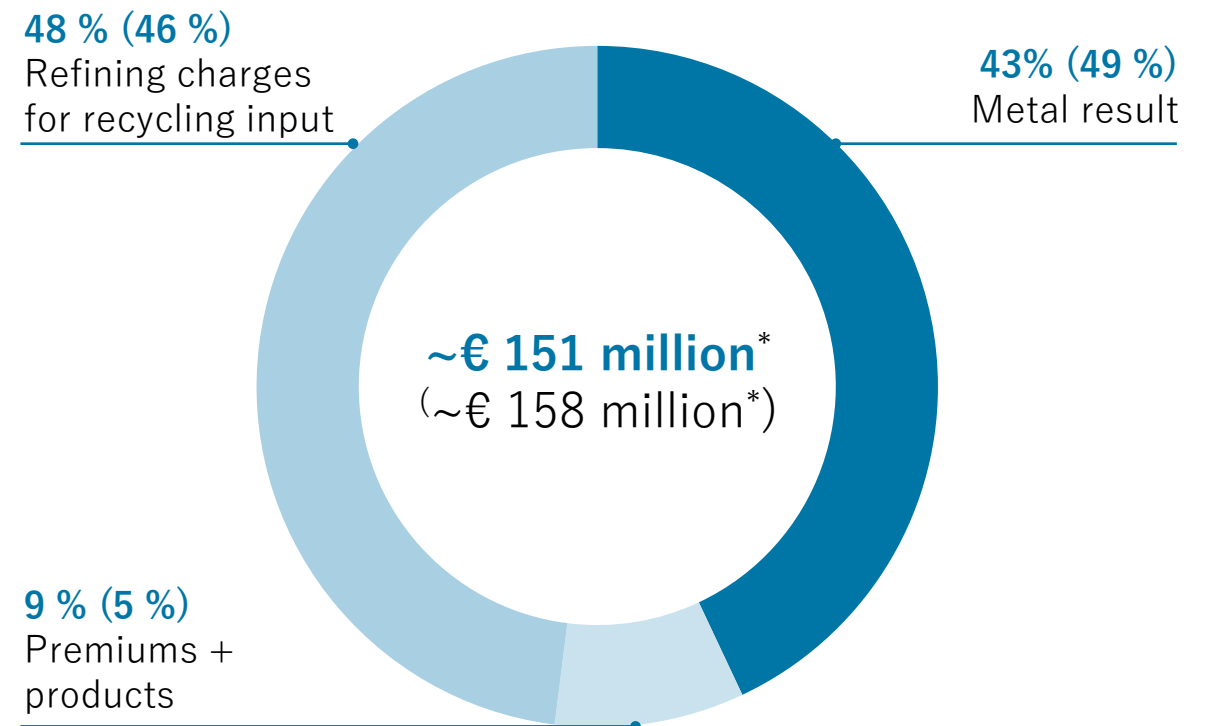
\* Figures adjusted by energy compensations and hedging transactions

# Multimetal Recycling segment

		3M	3M
Operating results		2023/24	2022/23
EBIT	€m	28	34
<b>EBT</b>	<b>€m</b>	<b>29</b>	<b>35</b>
<b>ROCE<sup>1</sup></b>	<b>%</b>	<b>13.5</b>	<b>18.3</b>
Quantities			
Copper scrap / blister copper	mt	73	84
Other recycling materials	mt	133	130
Cathodes	mt	125	131

<sup>1</sup> Rolling EBIT last 4 quarters  
Prior-year figures adjusted

Breakdown of income components in MMR segment  
3M 2023/24 YTD (YTD prior-year figures)



\* Gross margin = Total of earnings components metal result, refining charges for recycling input, and premiums + products



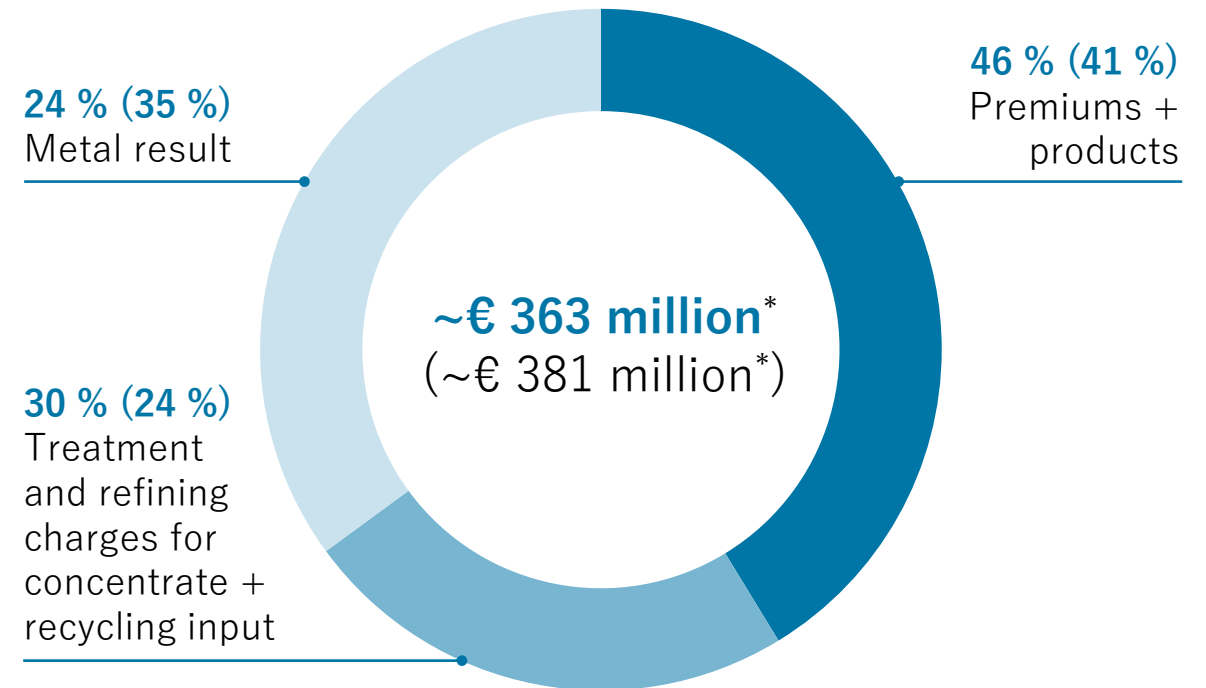
# Custom Smelting & Products segment

		3M	3M
Operating results		2023/24	2022/23 <sup>2</sup>
EBIT	€m	107	108
<b>EBT</b>	<b>€m</b>	<b>107</b>	<b>108</b>
<b>ROCE<sup>1</sup></b>	<b>%</b>	<b>11.5</b>	<b>18.9</b>
Quantities			
Concentrates	mt	646	635
Copper scrap / blister copper	mt	50	46
Sulfuric acid	mt	592	586
Cathodes	mt	151	150
Rod	mt	205	195
Shapes	mt	35	49
Flat rolled products and specialty wire	mt	30	32

<sup>1</sup> Rolling EBIT last 4 quarters

<sup>2</sup> Prior-year figures adjusted

Breakdown of income components in CSP segment  
3M 2023/24 YTD (YTD prior-year figures)

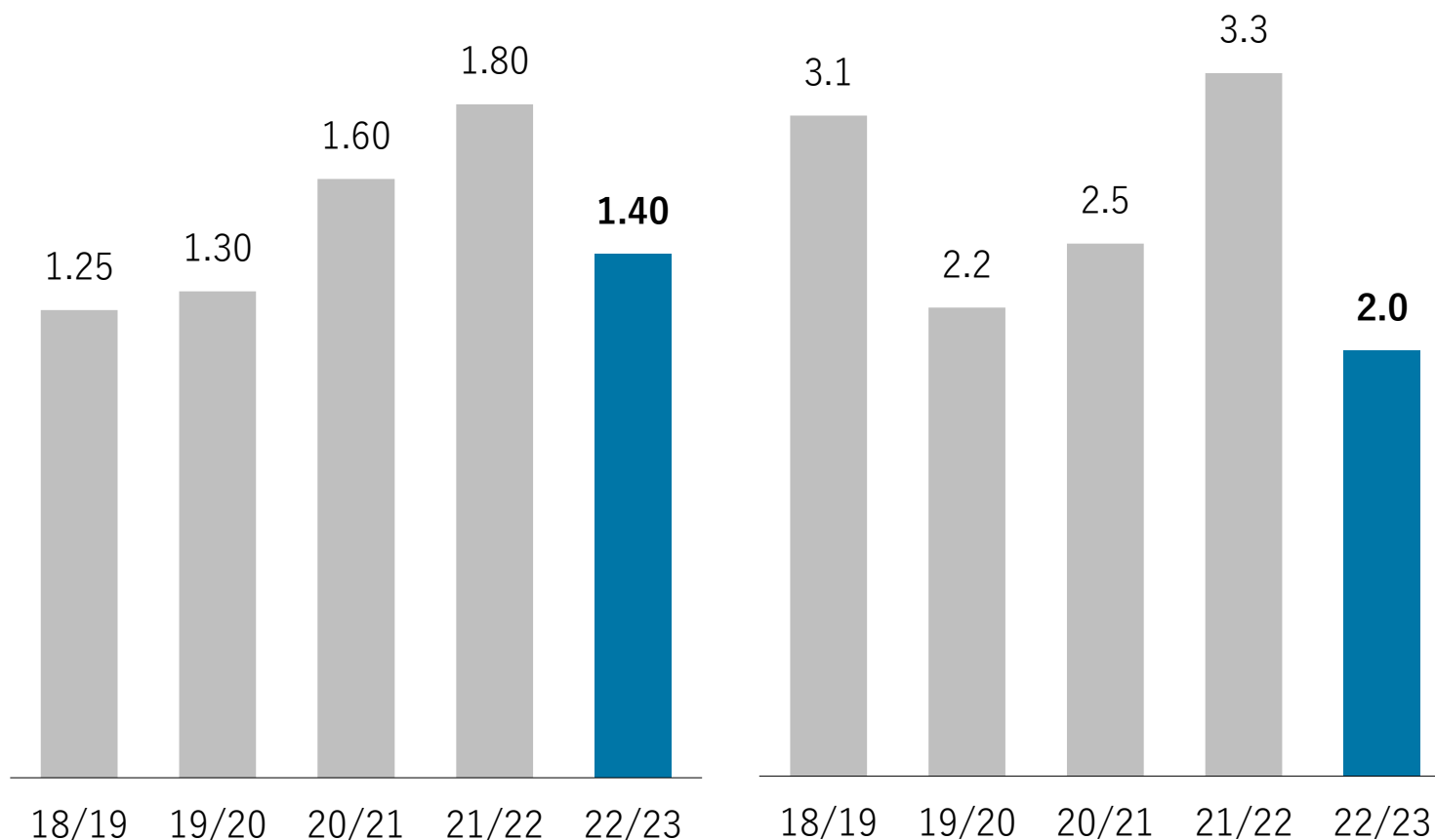


\* Gross margin = Total of earnings components metal result, treatment and refining charges for concentrate + recycling input, and premiums + products

# Dividend for fiscal year 2022/23

Aurubis dividend (in € per share)

Dividend yield (in %)



Aurubis' growth strategy requires high investments in the coming years

Strategic projects ensure considerable increase in overall group profitability in the years to come



# FY 2023/24 guidance

## Our forecast range

Operating **EBT**  
between € **380** million  
and € **480** million

Operating **ROCE**  
between **10** %  
and **14** %

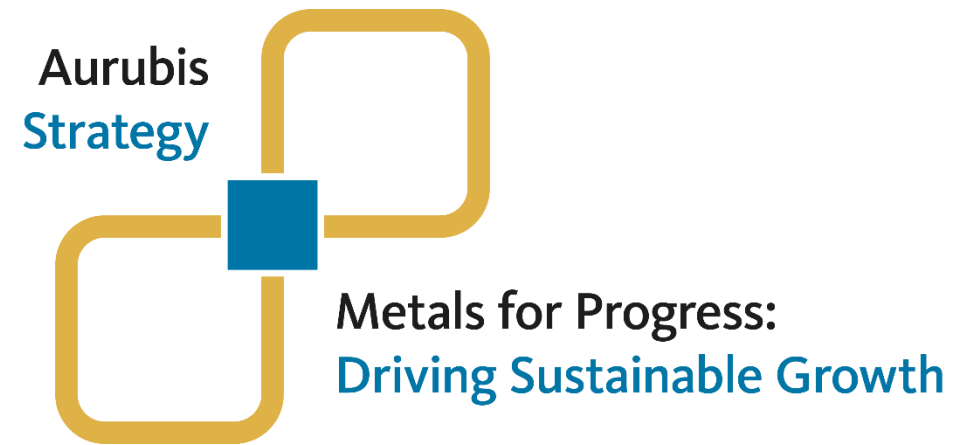
	Operating EBT in € million	Operating ROCE in %
Group	<b>380–480</b>	<b>10–14</b>
Multimetal Recycling	60–120	5–9
Custom Smelting & Products	410–470	19–23

# Our strategy builds on Aurubis' sound mission and covers relevant aspects for driving sustainable growth



## Industry Leadership in Sustainability

- Enablers**
- Digitalization, automation, and “Plant of the Future”
  - Strategic resource management, talent and personnel development



» We are consistently implementing the strategy



# Strategic investments and EBITDA impact to increase substantially

## Short term

Currently approved

Strategic capex ~€ 1.7 billion approved

Key projects for the 3 strategic pillars – **Secure & Strengthen Core Business** (i.e., CRH & PM refinery), **Pursue Growth Options** (Aurubis Richmond), and **Sustainability** (i.e., PV park & Industrial Heating)

**EBITDA impact** over next 3 to 5 years ramping up to ~€ 260 million p.a., of which ~€ 170 million from Aurubis Richmond

## Medium term

Medium-term planning

Additional strategic capex is included in the medium-term planning and projects are developed along the project stage gates

Additional EBITDA potential identified mainly in the modular recycling system, battery recycling, and further expansion of Aurubis Richmond

## Long term

Until 2030

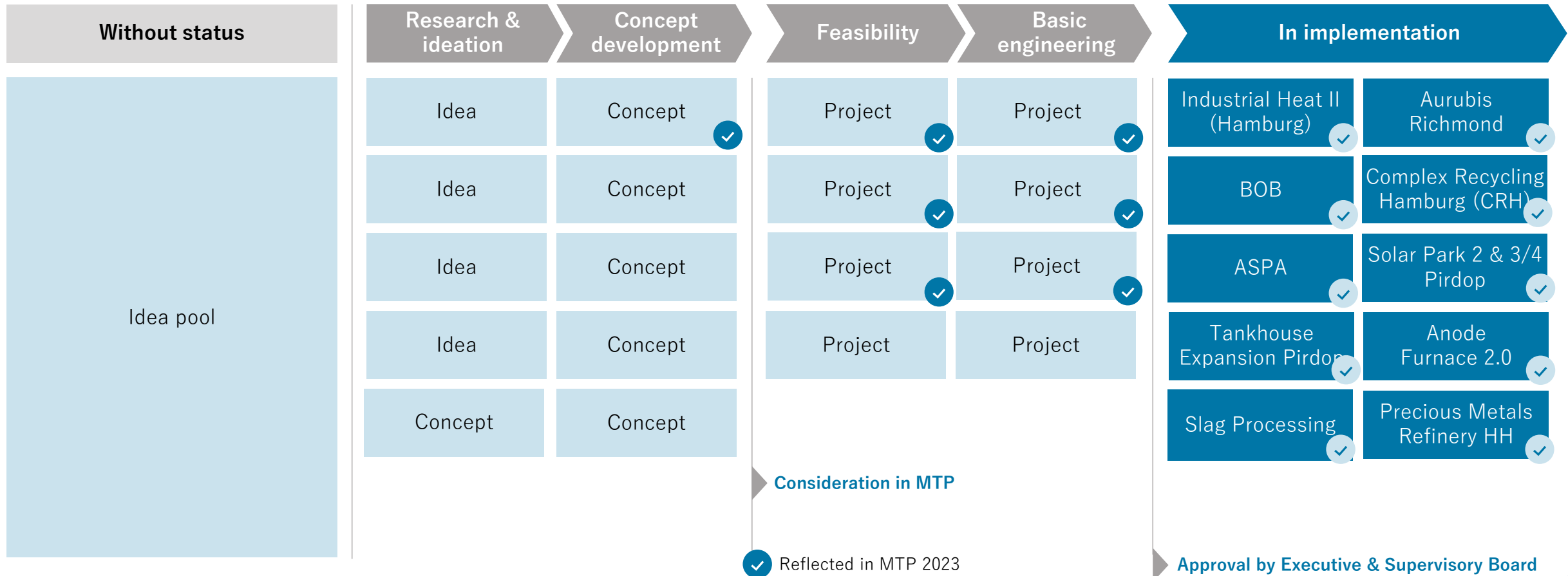
Ambition and scale of our long-term growth and project plans remain at a high level

All capex projects are subject to a sustainability assessment (especially CO<sub>2</sub> contribution)

All strategic investments create valuable synergies with our existing processes and positively impact our op. ROCE target

# Strong pipeline features advanced projects included in medium-term planning, plus wealth of nascent concepts to drive sustainable growth

Strategic projects from development to implementation





# Timeline of strategic projects in implementation

Timeline for the commissioning of our strategic projects

2024

- **Bleed treatment Olen Beerse (BOB)** (BE Olen)
- **Industrial Heat II** (DE Hamburg)
- **Aurubis Richmond Module 1** (US Georgia)
- **Advanced Sludge Processing by Aurubis (ASPA)** (BE Beerse)
- **Solar Park 2&3** (BG Pirdop)
- **Anode Furnace 2.0** (DE Hamburg)

2025

- **Solar Park 4** (BG Pirdop)
- **CRH** (DE Hamburg)
- **Aurubis Richmond Module 2** (US Georgia)

2026

- **Tankhouse Expansion** (BG Pirdop)
- **Precious Metals Refinery** (DE Hamburg)
- **Slag Processing** (BG Pirdop)



# Aurubis Richmond, USA

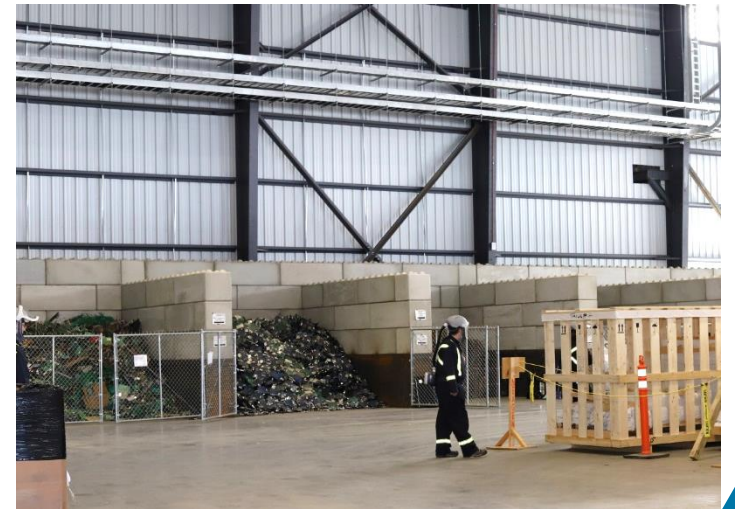
## Visible progress — first important milestones achieved





# Aurubis Richmond, USA

## Visible progress — first important milestones achieved





# Aurubis Richmond – the leading processor of electric and electronic recycling materials in the US



## Pursue Growth Options

Investment  
~ € 740 million

EBITDA p.a.

~ € 80 million  
(by 2025/26)

~ € 170 million  
(by 2026/27)

Aurubis Richmond complements and expands our international integrated smelter network with a highly attractive investment in a promising growth market.

The total investment includes additional infrastructure investments and inflation.

Aurubis Richmond establishes us as the front-runner in the US recycling market – tied directly to our strength, innovative expertise, industry-leading metallurgical processes and flexible applications.

With this, Aurubis will become the leading processor of electrical and electronic scrap in the US, by doubling the throughput capacity and output.

~200 new jobs in total.

**Start of production**  
following ramp-up phase

Module 1: **2024**  
Module 2: **2026**

~ **180,000 t**  
input material

~ **70,000 t**  
blister copper output

» Project strengthens the circular economy and underlines Aurubis' ambition to strengthen and expand our position as the most efficient integrated smelter network worldwide

# Aurubis Richmond showing significant progress since groundbreaking in June 2022



Groundbreaking

June '22

First equipment

June '23

Nov '23  
Start of sampling/  
pre-processing

Focus on finalization of process equipment installation and commissioning activities

Start of cold  
commissioning  
(Module 1)

June '24

Start of hot  
commissioning  
(Module 1)

August '24

## Key project statistics:

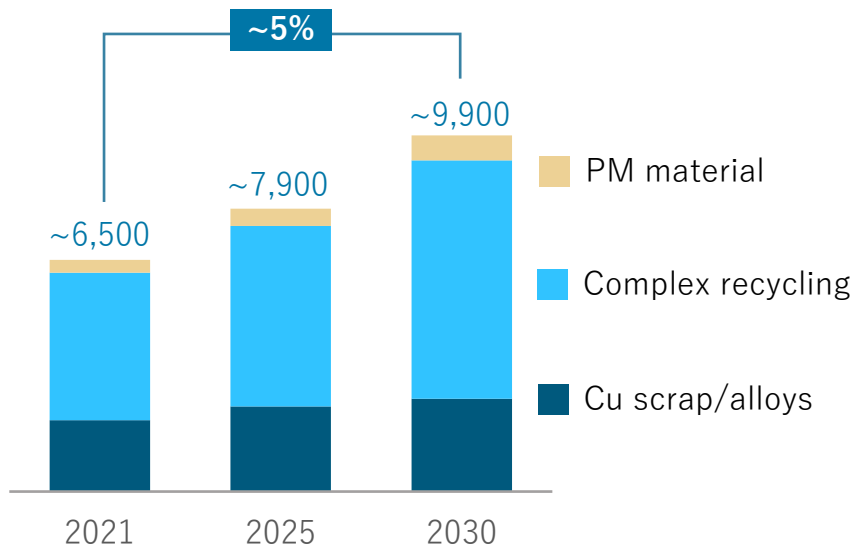
- **Visible progress:** approx. 30 kt concrete poured, 20,000 m<sup>2</sup> PEMB<sup>1</sup> erected, over 3,000 t of structural steel installed, approx. 80 % of process equipment delivered to site
- **Project & operational teams:** key project roles & senior mgmt. team staffed (~100 FTE in January 2024) — strong focus on hiring to continue in 2024 to fill vacant roles on production team
- **CAPEX:** € 740 m approved, thereof ~€ 281 m spent as of January 2024

<sup>1</sup>Pre-engineered metal buildings

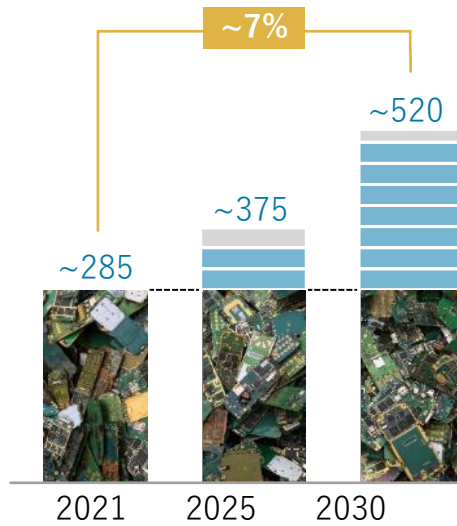
# Very attractive market environment: Relevant recycling materials to grow at ~5 % p.a. in North America

Pursuing growth in North America

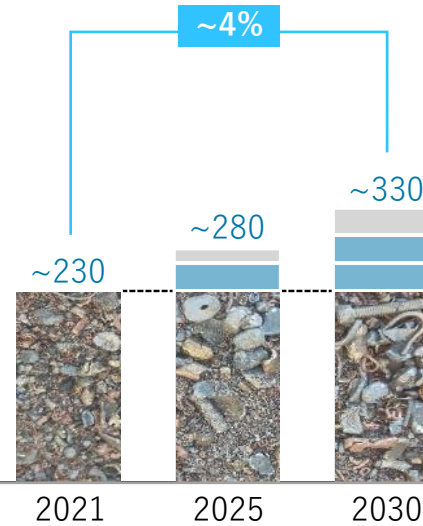
US-relevant recycling market (kt p.a.)



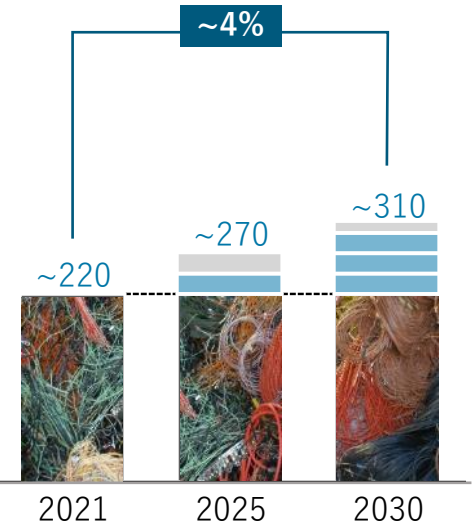
Printed circuit boards (PCB) supply (kt p.a.)



Metal shredder supply (kt p.a.)



Insulated copper wire supply (kt p.a.)



## Key growth drivers



### Collection rates

**Increasing collection rates**, especially of bulk e-waste and PCB materials (currently only ~30 %)



### Declining exports

Net export of copper scrap **continuously decreasing due to increasingly restrictive import policies in China/SEA**



### Incremental growth

**Continuous growth of industrial activity** and consumption of electronics lead to solid growth base



# New precious metal processing plant in Hamburg heightens security and enables additional strategic projects

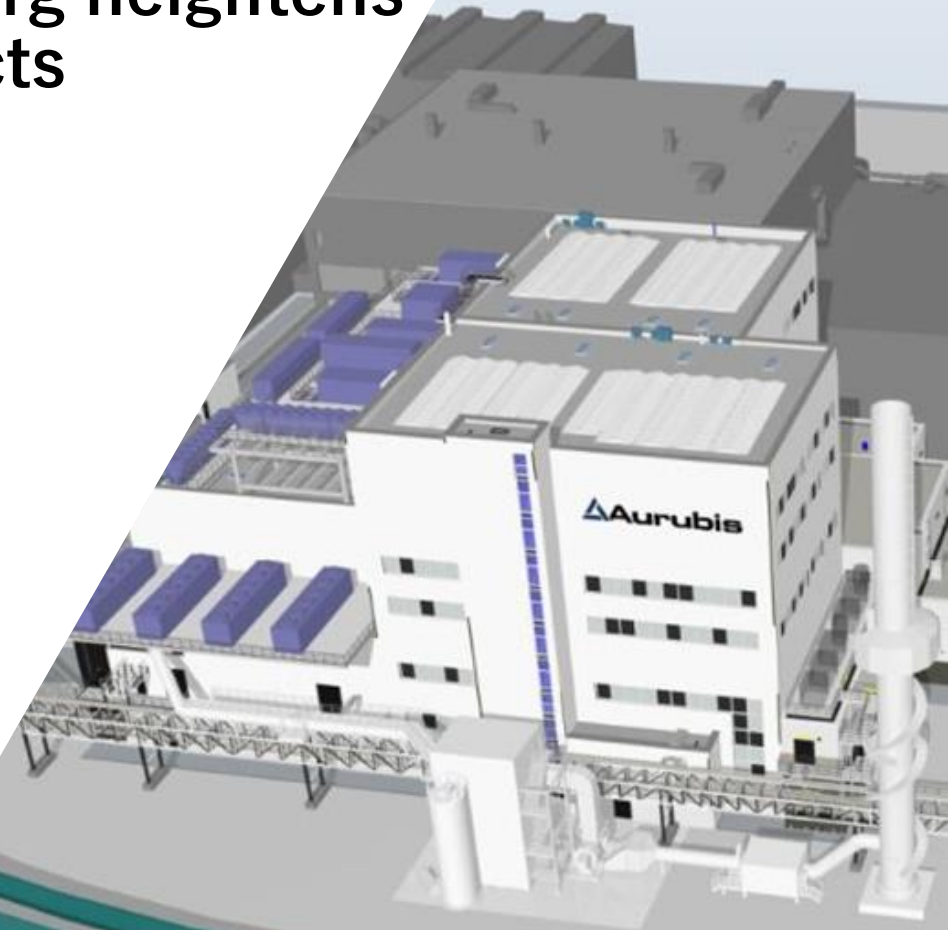
~€ 300 million investment optimizes process chain and includes integrated security concept – multiple security levels for higher physical security

Faster recovery of precious metals optimizes net working capital

Expanding processing capacity enables additional strategic projects by extending precious metal capacity

Setting benchmarks with innovative process and facility technology

15 % reduction of operating costs for precious metal processing



Secure  
Core Business



Strengthen  
Core Business

# Secure core business: Complex Recycling Hamburg (CRH) – further optimization of smelting process



CRH





# Secure & strengthen core business

## CRH: Further optimization of the smelting process in Hamburg



Secure  
Core Business



Strengthen  
Core Business

Investment  
~ **€ 190 million**

EBITDA p.a.  
~ **€ 40 million**  
(at full production)

Aurubis is **strengthening its core business** and investing € 190 million for further optimization of the smelting process at the Hamburg site.

Construction of a new TBRC at the Hamburg site incl. process gas cleaning system based on best available techniques (BAT).

Processing **internal and external value-added complex intermediates and recycled materials** with additional treatment and refining charges and metal recoveries.

Increase in metal yield (mainly precious metals) with lower process times.

CRH is the prerequisite for further attractive strategic projects (e.g., higher yield of additional industrial and precious metals).

Differentiation from competitors through expansion of metallurgical processes and extension of the value chain at the Hamburg site.

Start of production  
following ramp-up  
phase  
**Q4 2025**

~ **32,000 t** p.a.  
Input of external  
material

» **Project underscores Aurubis' commitment to its Hamburg site, while increasing capacities for the sustainable recovery of metals from intermediates and complex recycling materials**



# Pursue growth options

## Test pilot for battery recycling in Hamburg



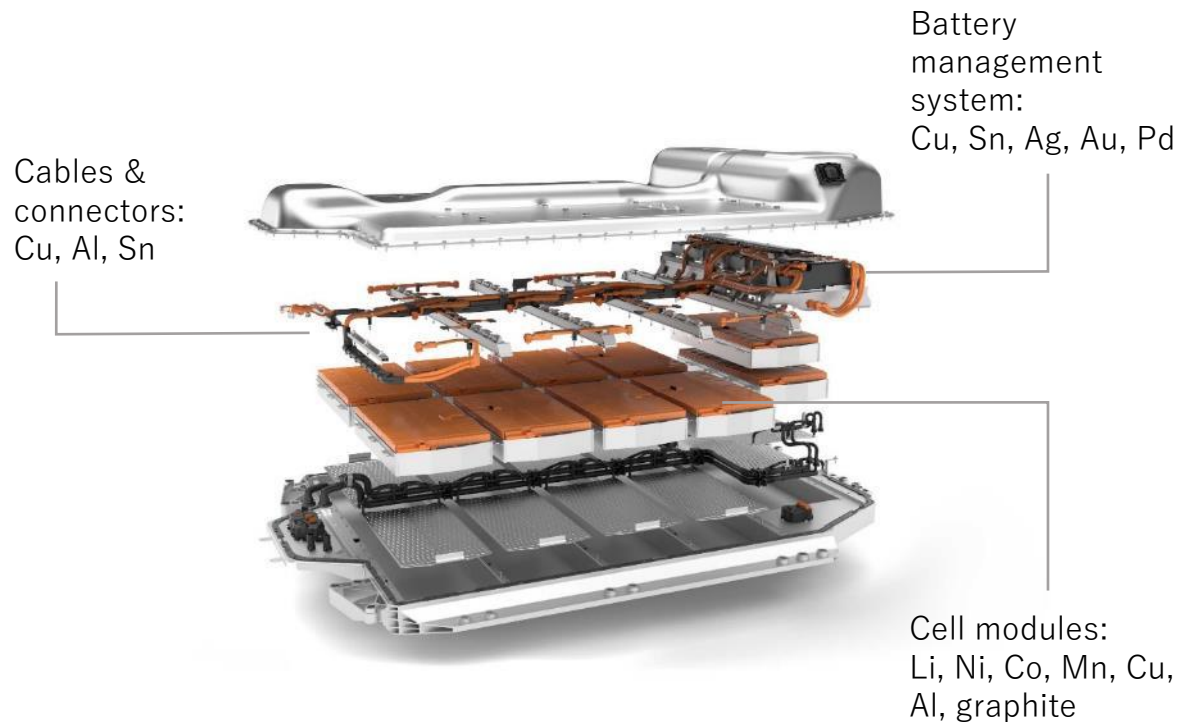
Battery recycling





# Lithium-ion batteries – exceptional value hidden in complex products, complex recycling material

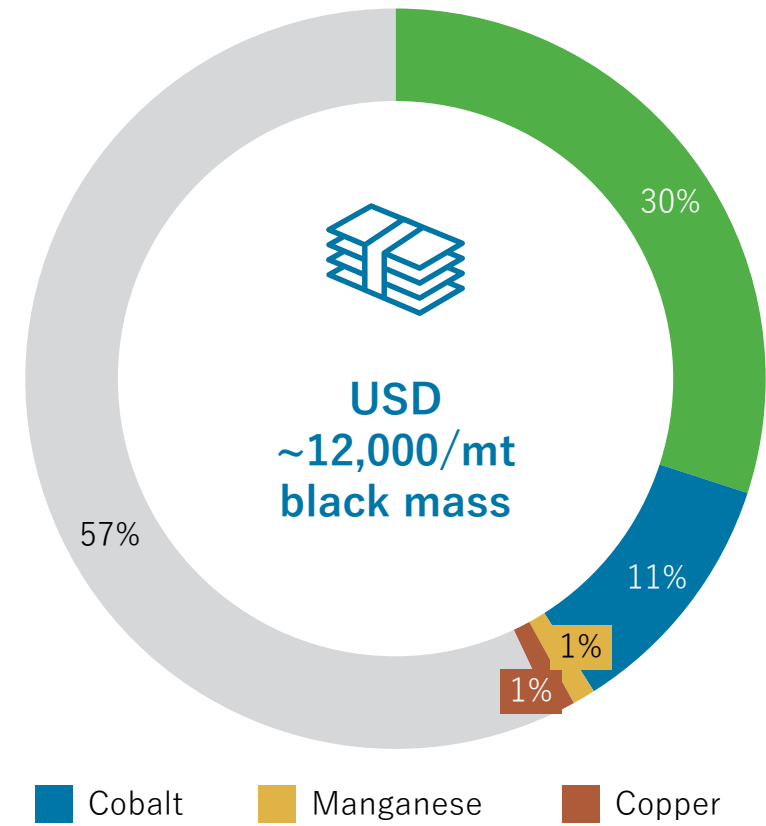
Batteries are complex scraps that are of huge value



➤ Average black mass content: ~40 %

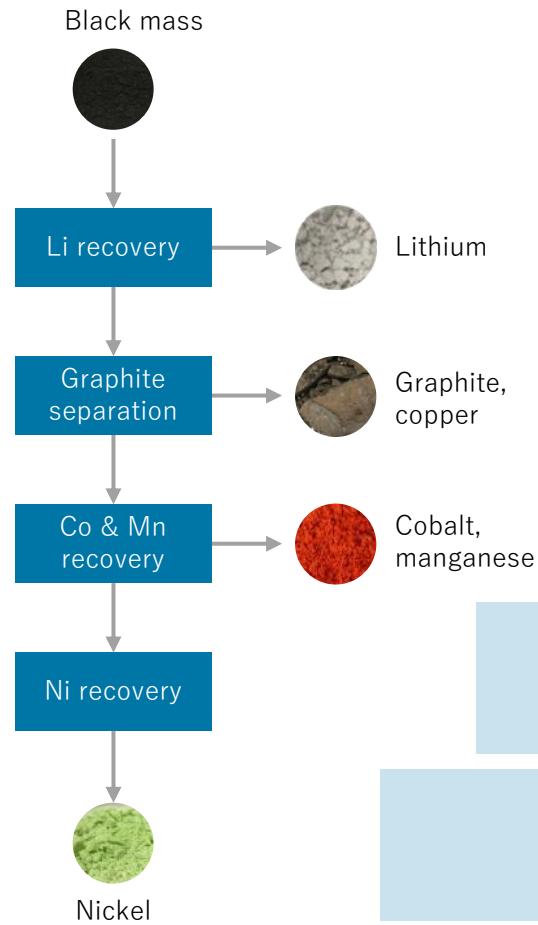
Source: BMW Group

As the metal value in black mass is very high, capabilities to recover the value are essential



Source: Aurubis, Roland Berger, LME

# Our innovative process for black mass leverages capabilities of our integrated smelter network



## Benefits of the unique Aurubis process

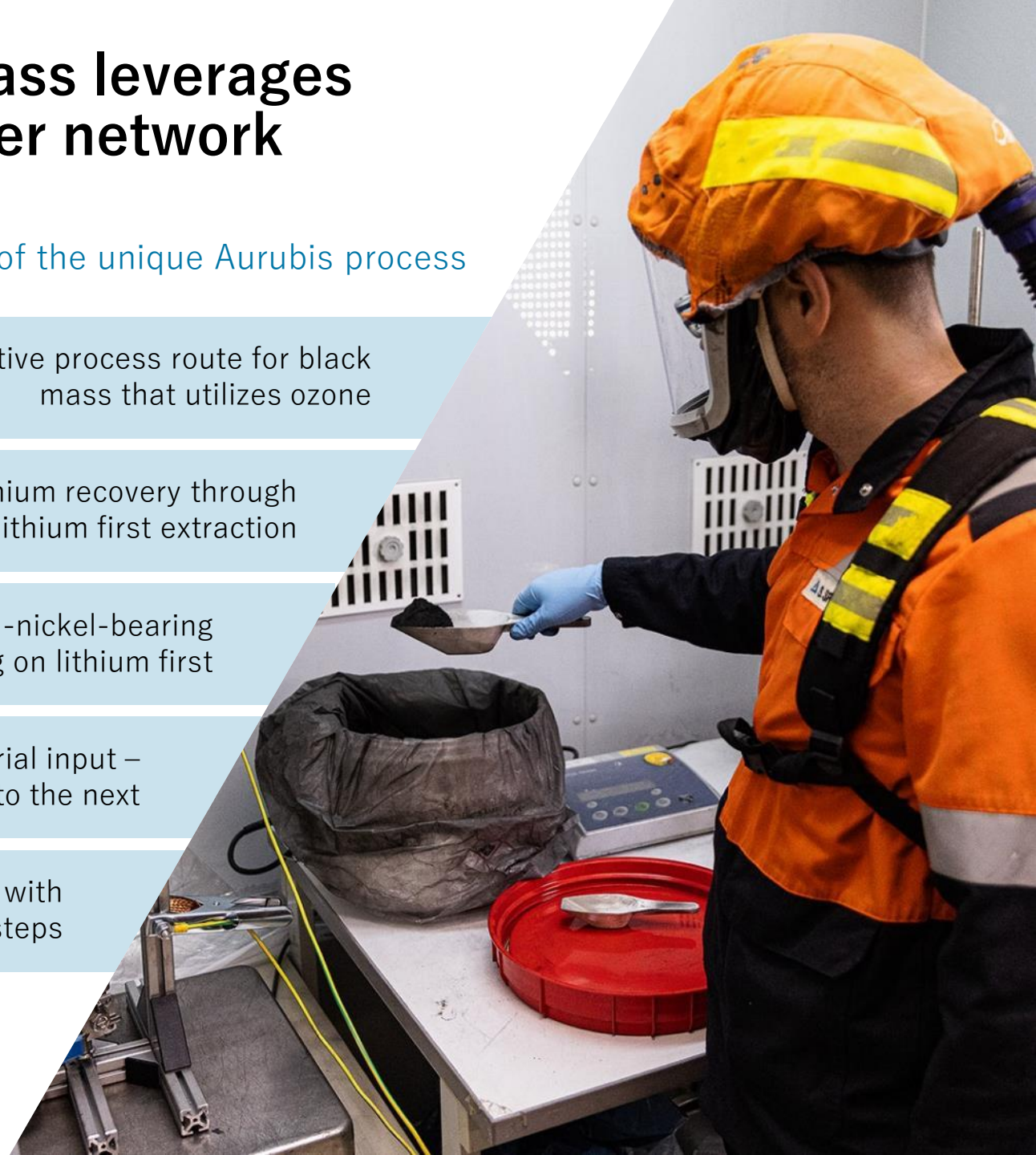
Innovative process route for black mass that utilizes ozone

High lithium recovery through lithium first extraction

Ability to process non-nickel-bearing black mass by focusing on lithium first

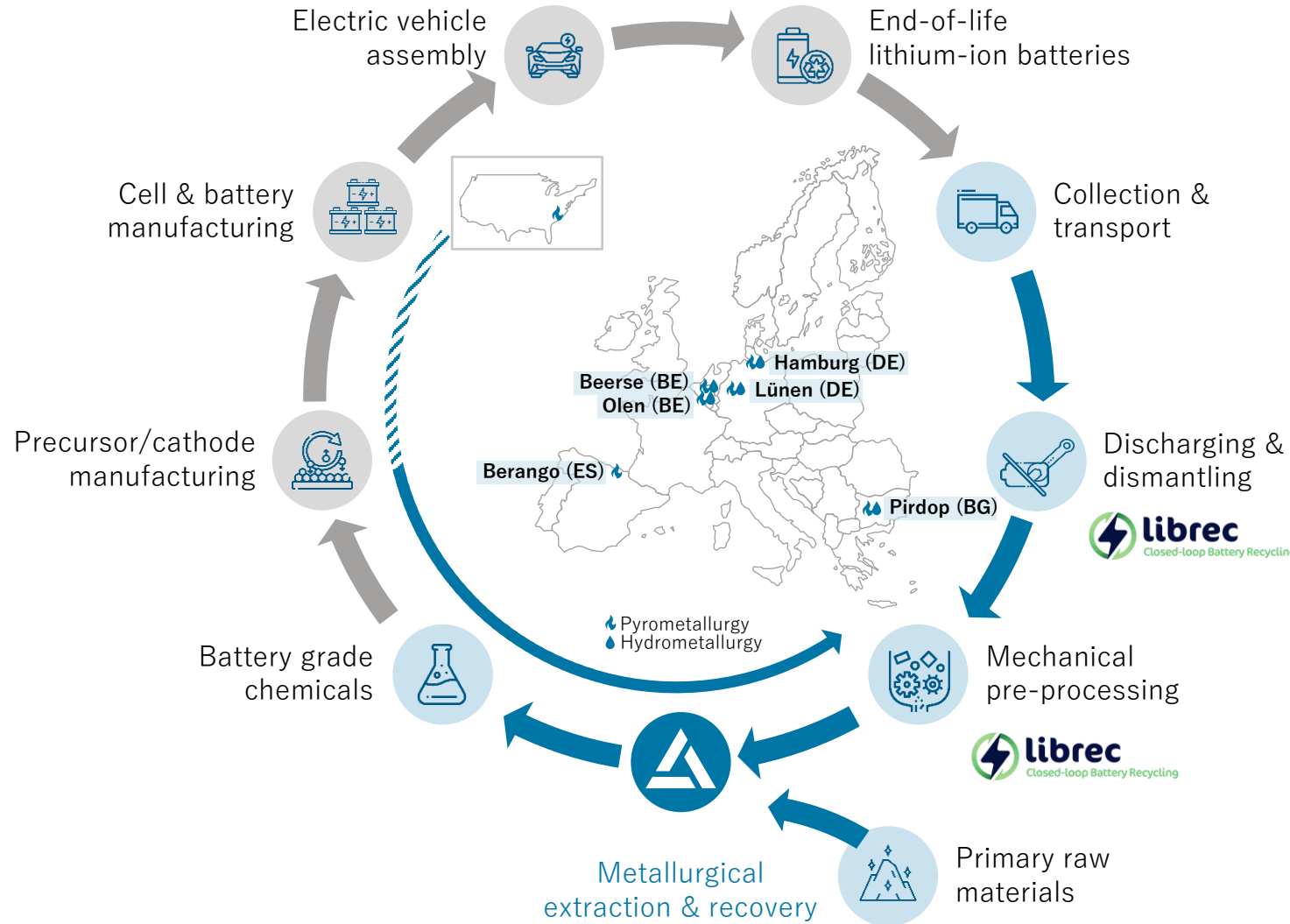
Flexibility regarding raw material input – no recycling material is identical to the next

Modularity – compatible with further refining steps





# Our sweet spot in the battery recycling value chain is based on Aurubis' core expertise



We are developing a fully-fledged battery recycling supply and value chain

First steps taken with Librec, a specialist company in Switzerland, to optimize metallurgy vis-à-vis pretreatment

Further existing partners with core expertise in recycling to cover the production of black mass

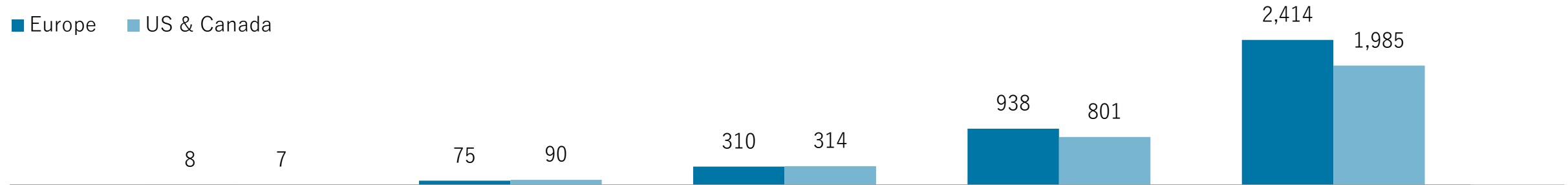
Aurubis' integrated smelter network offers unique benefits

Downstream: intensive partnership discussions with experts in chemicals production to close the loop in battery metals

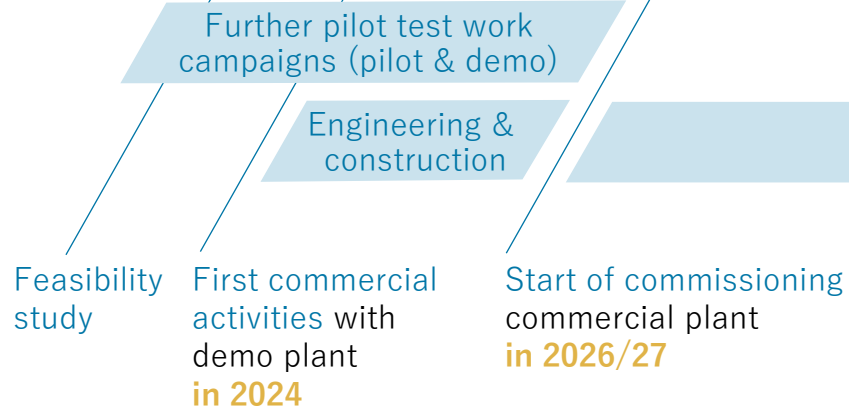
# In line with projected market growth, Aurubis could enter the commercial market in the second half of this decade

Regional supply of black mass for recycling (in kt)

■ Europe ■ US & Canada



2020 2025 2030 2035 2040



Engineering & construction Commissioning & operation

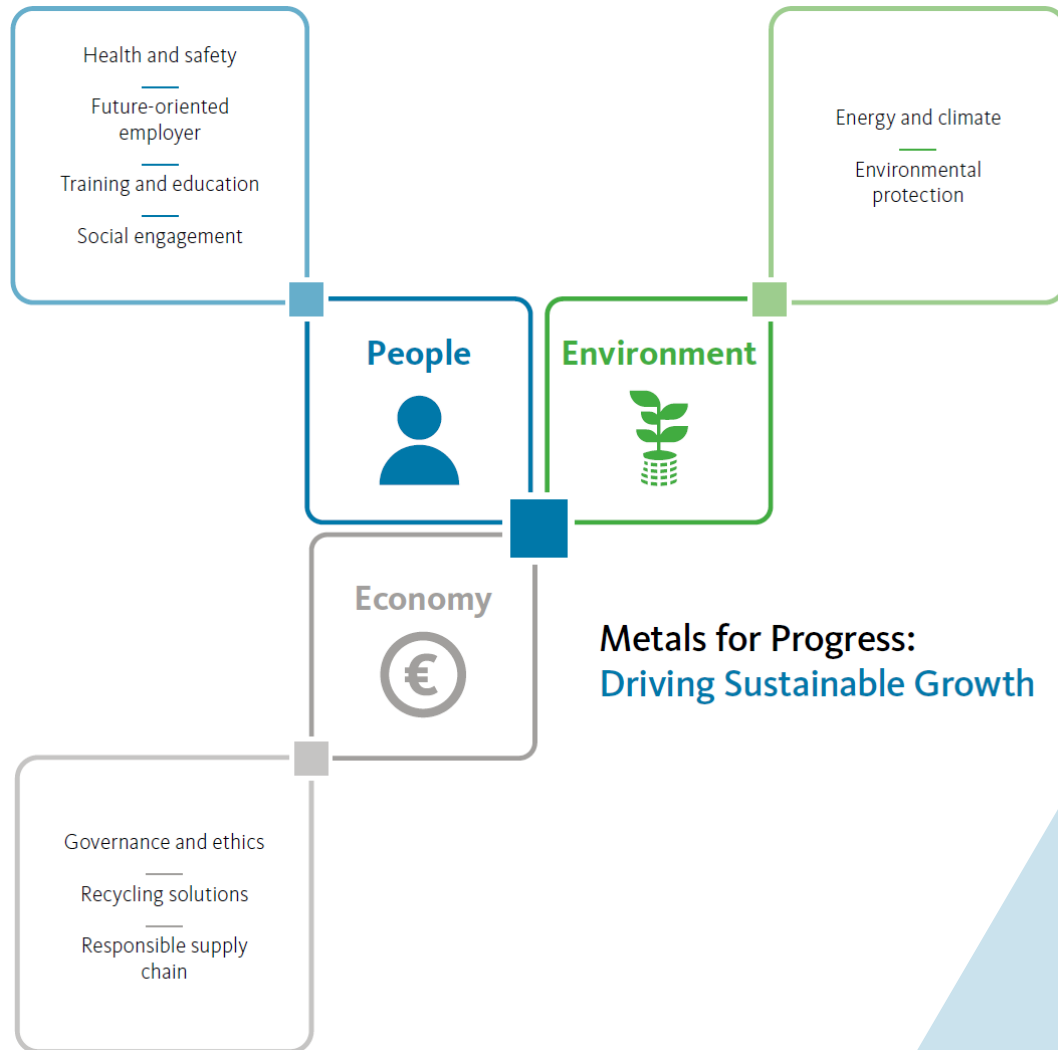
Criteria for site selection of commercial plant determined; site selection process is underway as we speak

Demo plant will already deliver output on a small commercial scale, enabling build-up of market know-how and reputation

Industrial scale commercialization foreseen for 2026/27

Source: Rhomotion, Q2 2023

# We continue to lead our industry in sustainability – minimizing emissions and costs, maximizing opportunities in new business areas



We continue to strengthen our position as the most efficient and sustainable multimetal producer worldwide

1

Sustainability is a fundamental part of Aurubis' strategy

2

We strive for **balance** between economy, environment, and people

3

9 action areas, targets and measures across E, S, and G

# The Copper Mark certification demonstrates our leadership in sustainable production practices



The Copper Mark launched for copper producers in March 2020



Focus on steady improvement of the sector's production practices



Aurubis Beerse and Solberg certification in 2023 expected



Basis:  
UN SDGs & Risk Readiness Assessment



Joint Due Diligence Standard enables effective due diligence



Review of  
32 sustainability criteria



Aurubis Bulgaria, Hamburg, Lünen and Olen already certified for meeting The Copper Mark's requirements



The copper value chain can be sustainable – promoting and driving this industry initiative demonstrates our responsibility and growing momentum for a more sustainable product.



RESPONSIBLY  
PRODUCED  
COPPER



# Leading the way with life cycle assessments – and substantially lower carbon footprints than industry averages

Copper cathodes (in kg CO<sub>2</sub> eq./t Cu)

Global industry average



2019: 3,965

Aurubis

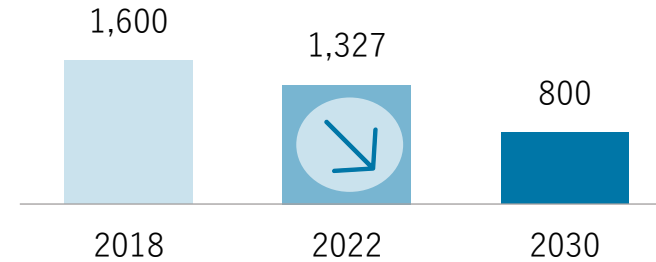


2022: 1,495

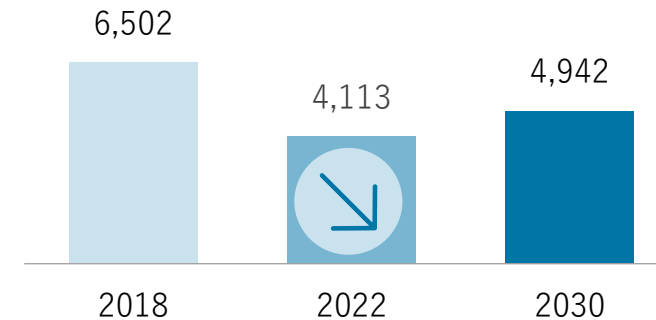
\* Please note that ITA data is reported using the CML method of impact assessment, which has limited comparability.

Source: International Copper Association 2019, Aurubis LCA 2022

Absolute Scope 1+2 CO<sub>2</sub> emissions (in kt)



Scope 3 CO<sub>2</sub> emissions (in kt)<sup>1</sup>



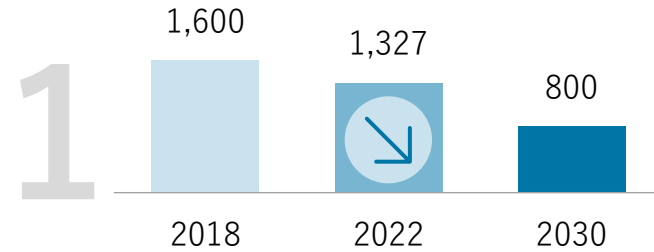
<sup>1</sup> Assumed steady copper cathode production until target year (physical intensity target). In 2022 we were able to draw on more accurate mine and transport data, so emissions were lower. We now plan to reassess and sharpen our 2030 target in FY 23/24 based on the better data now available.

» Aurubis continuously pursues better energy efficiency: lowering costs and reducing CO<sub>2</sub> emissions

# Our KPIs underline our sustainability ambitions and demonstrate momentum

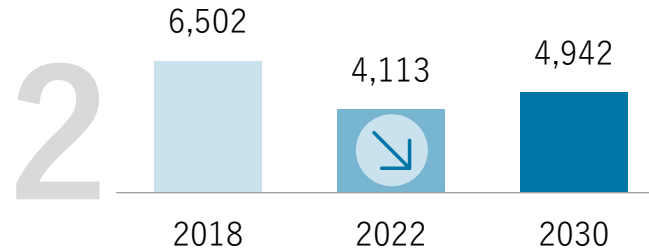


**Absolute Scope 1+2 CO<sub>2</sub> emissions**  
(in kt)

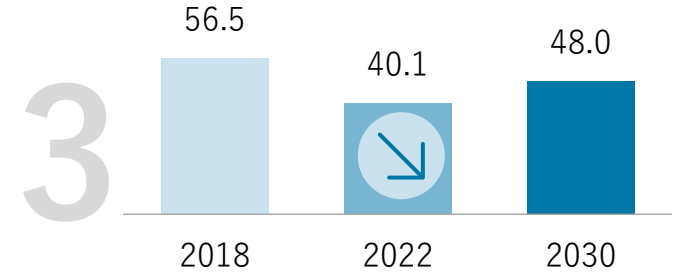


\* Preliminary figures

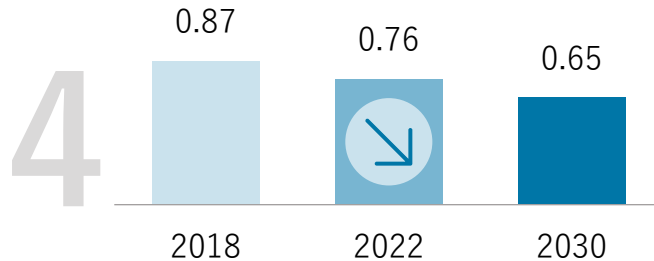
**Scope 3 CO<sub>2</sub> emissions**  
(in kt)<sup>1</sup>



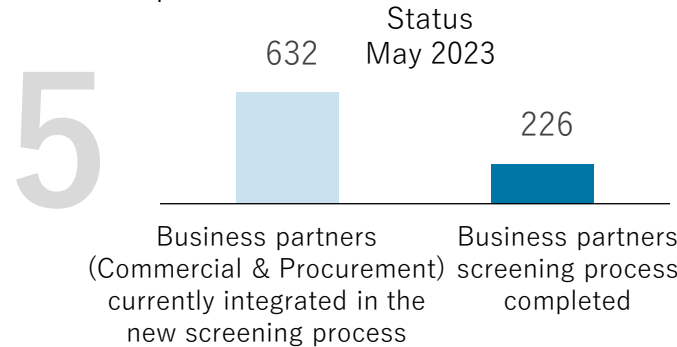
**Air emissions (dust)**  
(in g per t of multimetal Cu equivalent)<sup>2</sup>



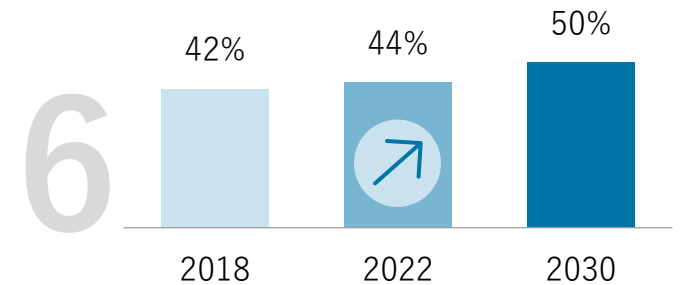
**Metal emissions to water**  
(in g per t of multimetal Cu equivalent)<sup>2</sup>



**Supply chain integrity**  
For all identified high risk business partners we implemented action plans. This has reduced our business partner risk.<sup>3</sup>



**Recycling content (Cu)**  
Recycling share of Cu cathodes (in %)



<sup>1</sup> Assumed steady copper cathode production until target year (physical intensity target). In 2022 we were able to draw on more accurate mine and transport data, so emissions were lower. We now plan to reassess and sharpen our 2030 target in FY 23/24 based on the better data now available.

<sup>2</sup> Multimetal Cu equivalent: total metal produced at Aurubis smelters (Cu, Zn, Ni, Pb, Sn, Au, Pd, Pt, Ag, Rh, Se, Te) x weight factors.

<sup>3</sup> Aurubis is introducing a revised and uniform Business Partner Screening system in FY 2022/23, in which we bundle the requirements of the various regulations, standards, and initiatives.

# Aurubis AG Metals for Progress

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MM Warburg Warsaw Conference

February 20th, 2024  
Warsaw

 **Aurubis**





# Financial calendar

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- Q2 2023/24 May 8, 2024
- Q3 2023/24 August 5, 2024
- Annual Report 2023/24 December 5, 2024



# Your IR contacts

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# Scheduled shutdowns in the next 3 years



EBT effect from scheduled shutdowns (in € million)

Status: December 2023

	FY 2023/24		FY 2024/25		FY 2025/26	
Smelter maintenance Hamburg	May until beginning of July 2024	~44				
Anode furnace Hamburg					May/June 2026	~6
Smelter maintenance Pirdop			Apr/June 2025	~24		
KRS Lünen	May 2024	~10	May 2025	~10	May 2026	~10
Anode furnace Lünen	Nov/Dec 2023	~6	Nov/Dec 2024	~7	Nov/Dec 2025	~7



# Aurubis at a glance

Based in [Hamburg](#), Aurubis AG develops its leading market position with a [responsible approach](#) to the [environment](#), [people](#), and [resources](#)



The company's main expertise is in optimally [processing concentrates](#) and [recycling raw materials](#) with complex qualities

[Metallurgical know-how](#), [state-of-the-art plant facilities](#), and extraordinarily [high environmental standards](#) for the sector make Aurubis an attractive partner for raw material suppliers



The company, which was founded in 1866 as [Norddeutsche Affinerie AG](#), is listed in the [MDAX](#) and produces more than [1 million t of copper cathodes](#) and various copper products from them with about [7,100 employees](#) worldwide

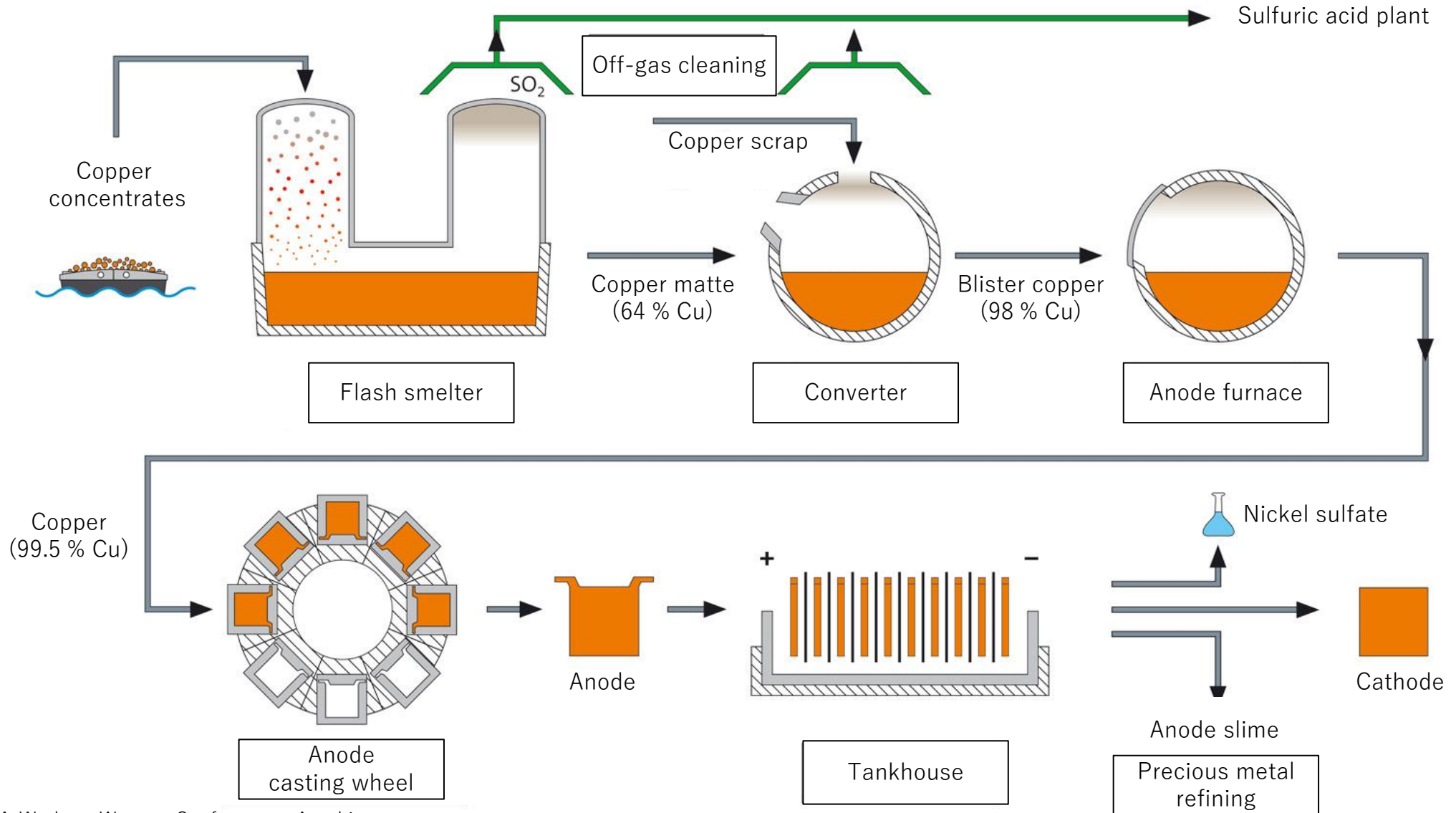


The Group is [active in more than 20 countries](#) and has production sites concentrated in [Europe](#) and [North America](#)



Aurubis is one of the world's leading producers of cathodes, rod, and flat rolled copper products

# Primary copper production process



# Disclaimer

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## Forward-looking statements

This document contains forward-looking statements that involve risks and uncertainties, including statements about Aurubis' plans, objectives, expectations and intentions. Readers are cautioned that forward-looking statements include known and unknown risks and are subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond the control of Aurubis. Should one or more of these risks, uncertainties or contingencies materialize, or should any underlying assumptions prove incorrect, actual results could vary materially from those anticipated, expected, estimated or projected.