

# Aurubis AG

## Metals for Progress

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DZ Bank Reverse Roadshow  
Hamburg

July 13th, 2023



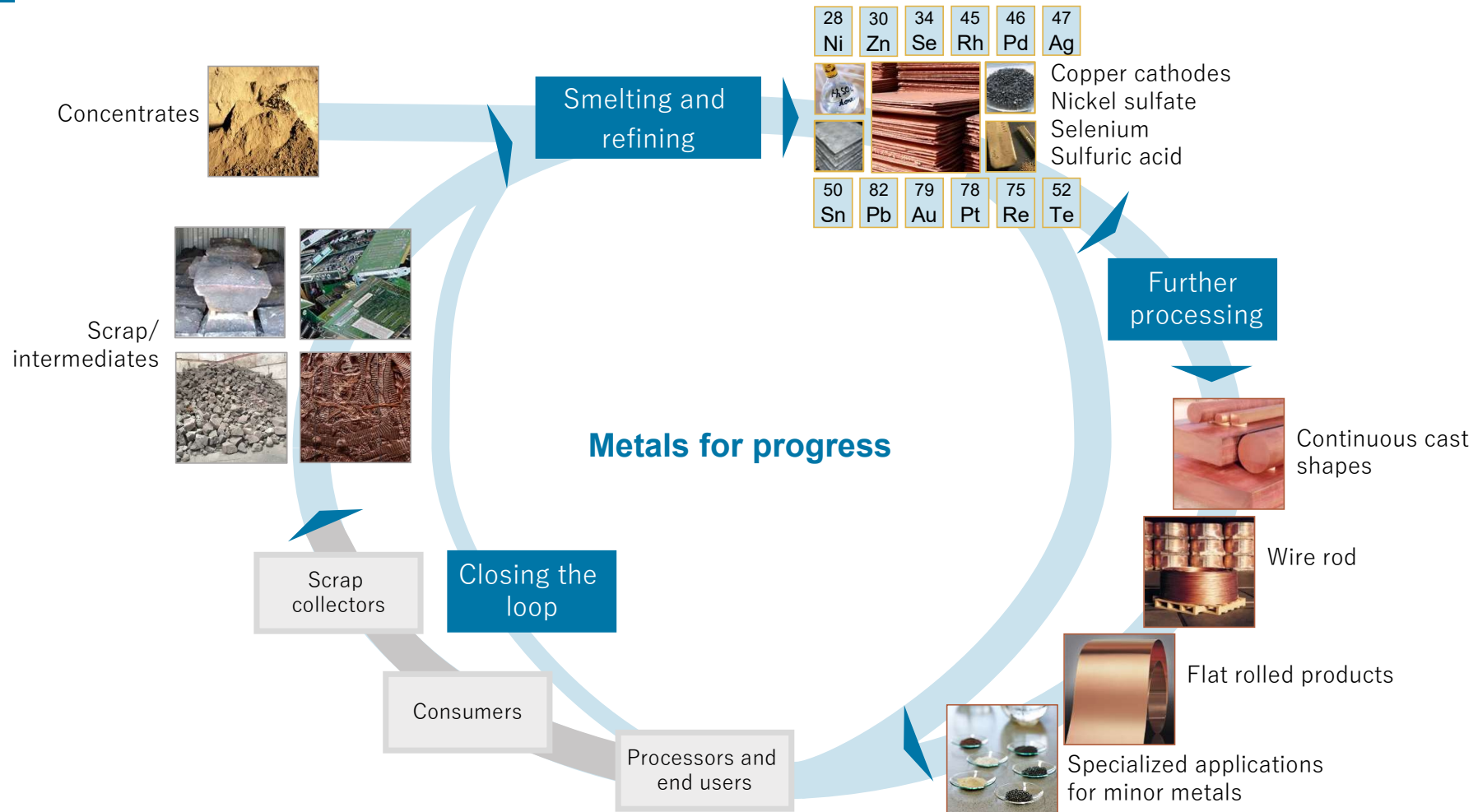
# Executive summary of first 6 months 2022/23

<p>Operating EBT 6M 2022/23 of <b>€ 291 million</b> (PY: € 331 million)<sup>1</sup></p>	<p>ROCE <b>15.6 %</b> (PY: 19.6 %)<sup>1</sup></p>	<p>Aurubis' positive development continues with the <b>second quarter at the very high level of the previous year</b></p> <hr/> <p>Good concentrate markets and product demand <b>led to good Q2 2022/23 figures</b>, despite lower sulfuric acid revenues and higher costs, with well managed energy costs</p> <hr/> <p>Lower metal result related to input materials; remains a significant contribution to Group's earnings</p>
<p>Net cash flow <b>€ 19 million</b> (PY: € 54 million)<sup>1</sup></p>	<p>Increased forecast range for FY 2022/23 <b>€ 450–550 million</b> op. EBT</p>	<p>Ongoing strong operating performance at our smelter in Pirdop; Hamburg performance stabilized in Q2</p> <hr/> <p>Net cash flow low due to temporarily high working capital</p> <hr/> <p>Upward adjustment: op. EBT for FY 2022/23 at <b>€ 450–550 million</b></p>









<sup>1</sup> Prior-year figures adjusted

**» Good operating performance in Q2 and ongoing strong metal demand led to an increase in the forecast**









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



# Increased concentrate throughput and strong product demand

	FY 2021/22	Change vs. prior year
 Concentrate processing <sup>1</sup>	2,429,000 t	+8 %
 Copper scrap/ blister copper input <sup>2</sup>	540,000 t	-1 %
 Other recycling materials <sup>2</sup>	524,000 t	-3 %
 Cathode output	1,111,000 t	+0 %
 Continuous cast wire rod output	880,000 t	+1 %
 Copper shapes output	218,000 t	+17 %
 Flat rolled products + specialty wire output	176,000 t	-8 %
 Sulfuric acid output	2,296,000 t	+9 %

<sup>1</sup> Custom smelter production <sup>2</sup> Prior-year figures adjusted

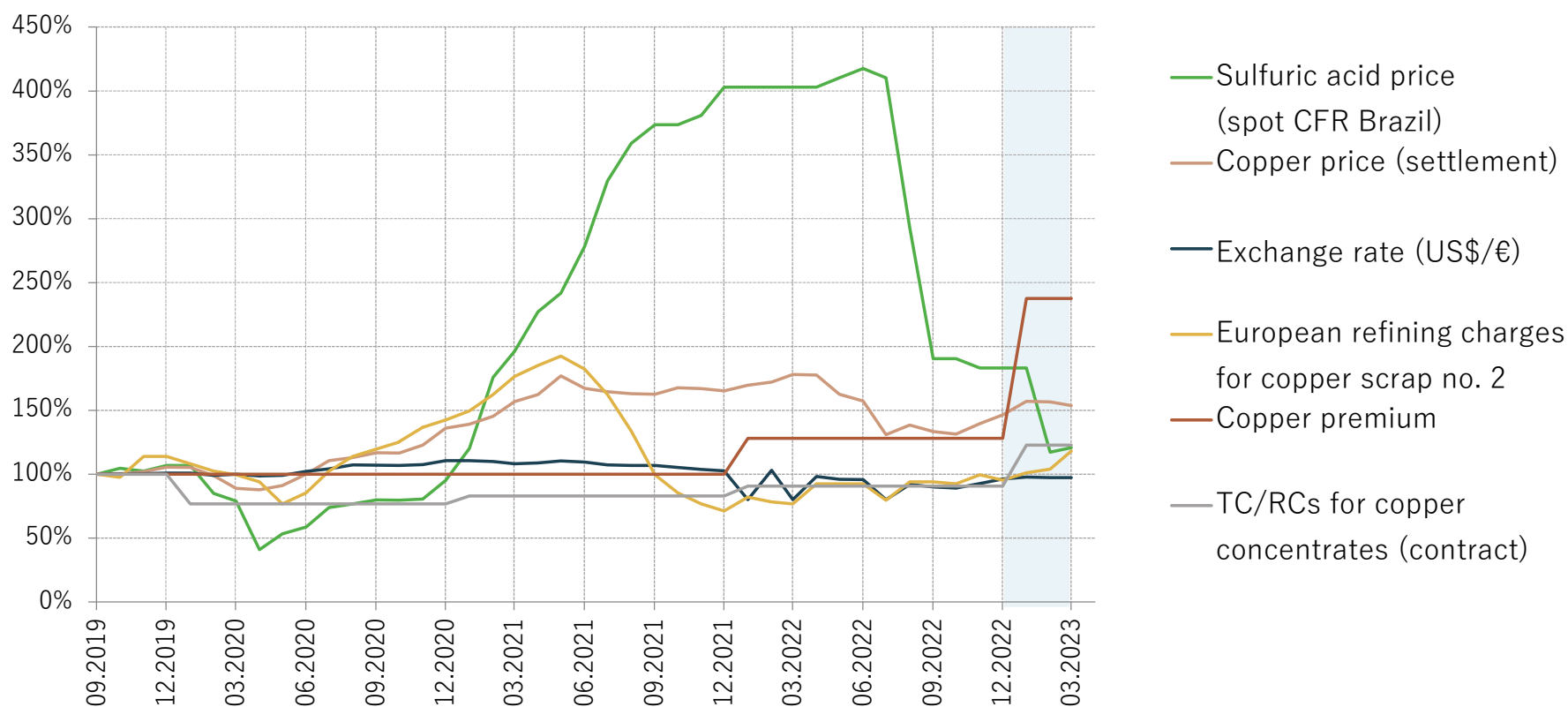
	FY 2021/22	Change vs. prior year
 Gold	47 t	-8 %
 Silver	911 t	-4 %
 Lead	44,016 t	+8 %
 Nickel	3,863 t	-1 %
 Tin	9,340 t	-7 %
 Zinc	13,917 t	-24 %
 Minor metals	867 t	-11 %
 Platinum group metals (PGMs)	9,514 kg	+9 %

# Sulfuric acid stabilizes at lower levels, other market conditions stable

Trend in significant market prices and refining charges



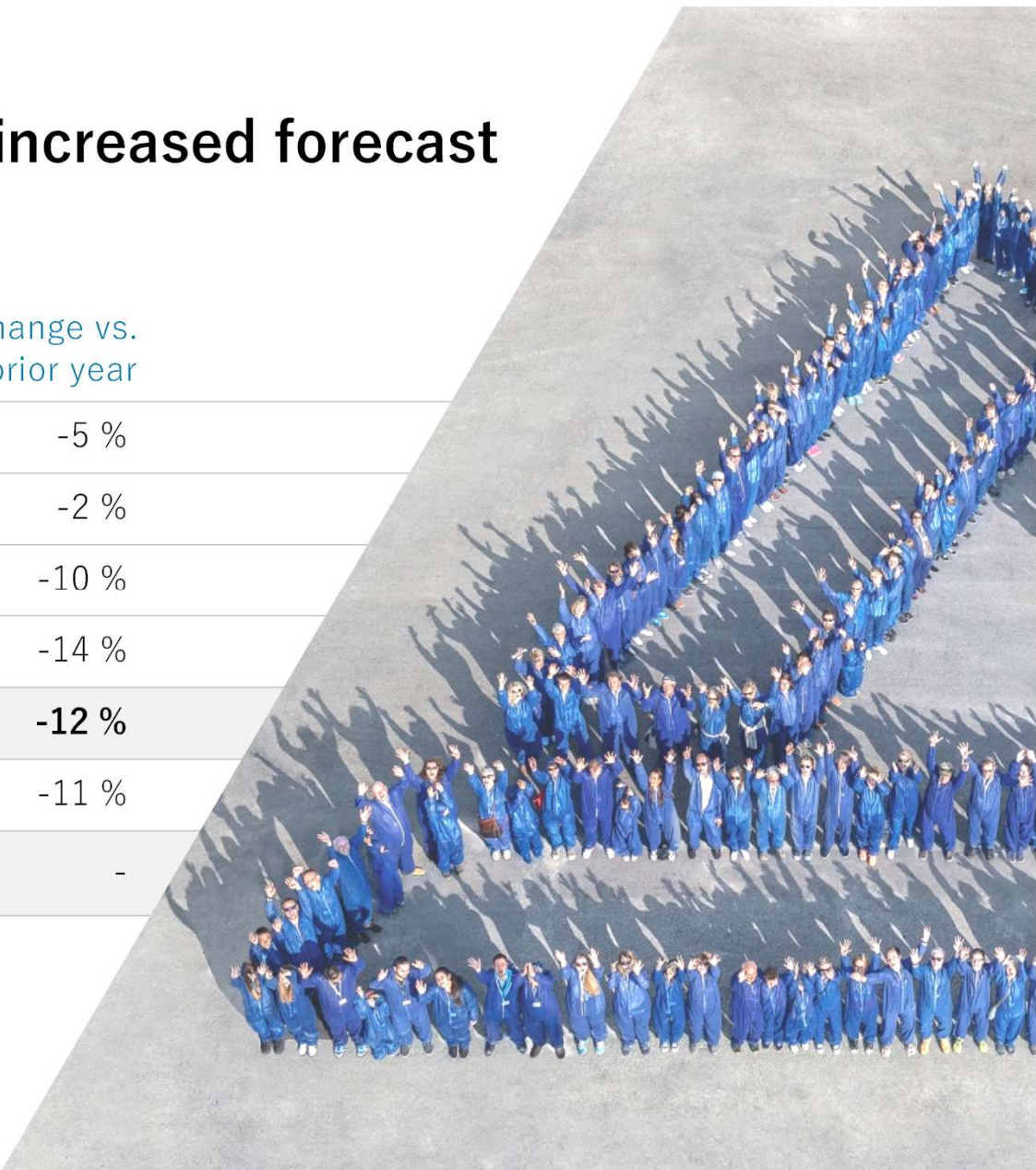
100 % = Sept. 2019



# Aurubis with strong Q2 results and increased forecast

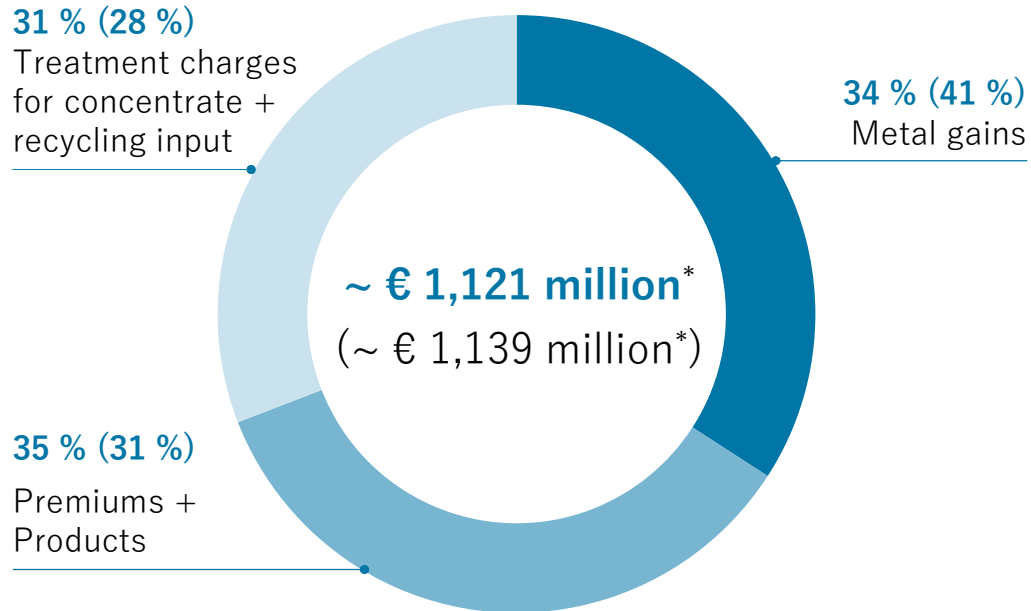
(operating IFRS)		6M 2022/23	6M 2021/22 <sup>1</sup>	Change vs. prior year
Revenues	€m	8,784	9,262	-5 %
Gross profit	€m	839	857	-2 %
EBITDA	€m	383	426	-10 %
EBIT	€m	286	332	-14 %
<b>EBT</b>	€m	<b>291</b>	<b>331</b>	<b>-12 %</b>
Consolidated net income	€m	230	257	-11 %
<b>Operating ROCE</b> (operating EBIT last 4 quarters)	(%)	<b>15.6</b>	<b>19.6</b>	-

<sup>1</sup> Prior-year figures adjusted



# Gross margin at prior-year level

Breakdown of income components in the Aurubis Group 6M 2022/23 YTD (YTD prior-year figures)



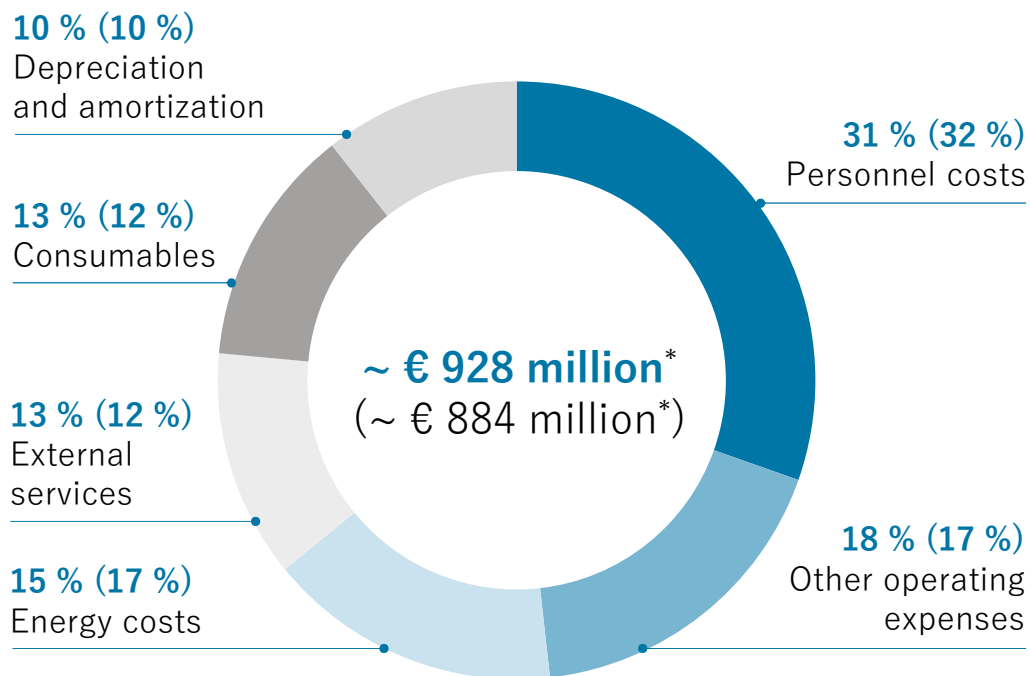
\* Gross margin = Total of earnings components metal result, treatment charges for concentrate + recycling input, and premiums + products

Aurubis / DZ Bank Reverse Roadshow Hamburg July 13<sup>th</sup> 2023



# Overview of Group costs – energy costs reduced

Overview of cost/expense positions  
6M 2022/23 YTD (YTD prior-year figures)



\* Figures adjusted by energy compensation and hedging transactions

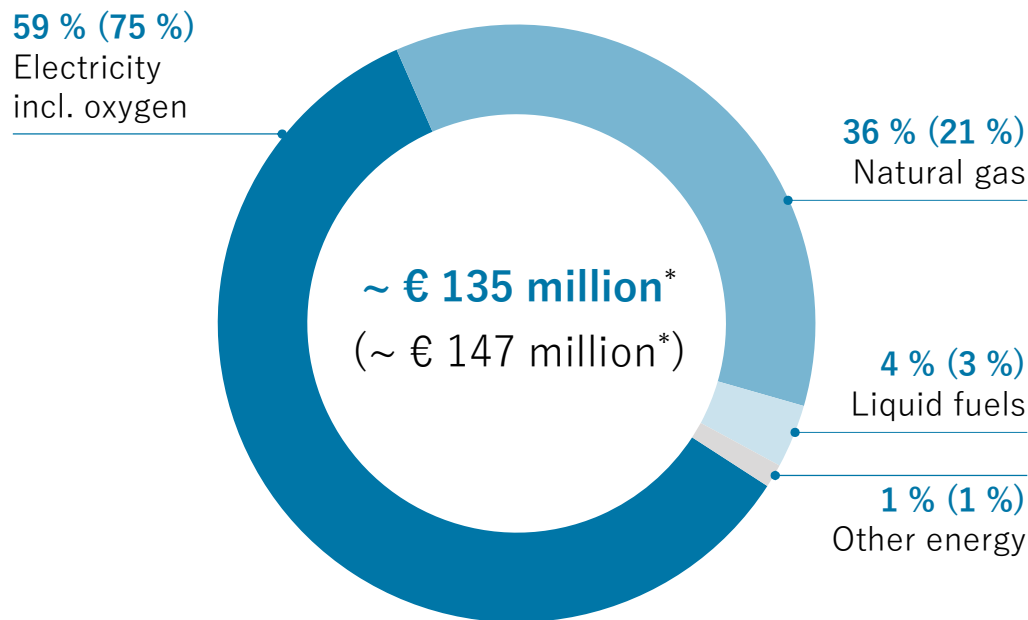
Aurubis / DZ Bank Reverse Roadshow Hamburg July 13<sup>th</sup> 2023





# Aurubis continues to manage energy costs

Breakdown of energy costs 6M 2022/23  
(YTD prior-year figures)



\* Figures adjusted by energy compensation and hedging transactions

Aurubis / DZ Bank Reverse Roadshow Hamburg July 13<sup>th</sup> 2023

Electricity incl. oxygen consumption in the Aurubis Group: approx. 1.81 TWh (2022)\*

CO<sub>2</sub> emissions of 1.31 million t (2022)\*

- 0.52 million t of direct emissions (Scope 1)
- 0.78 million t of indirect emissions related to purchased electricity; market-based (Scope 2)

Key influencing factors for reduction of energy costs in 6M 2022/23:

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

\* Preliminary figures

# Aurubis' financial position enables our growth strategy

		6M 2022/23	6M 2021/22 <sup>3</sup>	Target
ROCE <sup>1</sup>	%	15.6	19.6	15.0
Equity ratio (equity/total assets)	%	53.1	54.0	> 40.0
Debt coverage <sup>2</sup>		-0.2	-0.3	< 3.0
Additional KPIs				
		6M 2022/23	6M 2021/22	
Capital expenditure	€m	179	120	
Capital employed (balance sheet date)	€m	3,253	2,881	
Net cash flow	€m	19	54	

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

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

<sup>3</sup> Prior-year figures adjusted



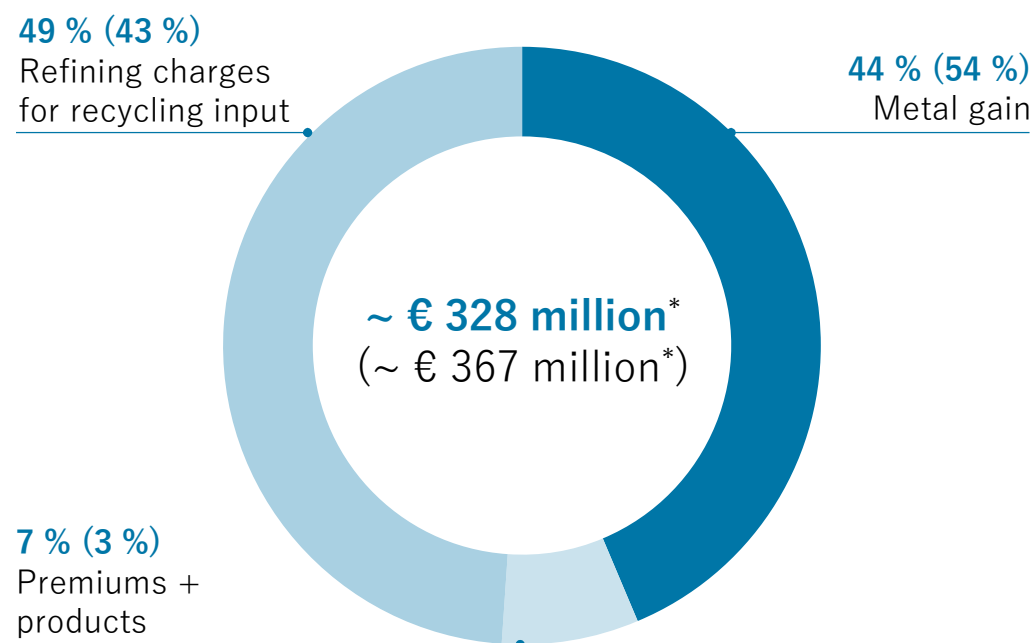
# Multimetal Recycling segment

		6M	6M
Operating results		2022/23	2021/22 <sup>2</sup>
EBIT	€m	102	158
<b>EBT</b>	<b>€m</b>	<b>103</b>	<b>158</b>
<b>ROCE<sup>1</sup></b>	<b>%</b>	<b>15.5</b>	<b>44.4</b>
Quantities			
Copper scrap/blister copper	mt	173	156
Other recycling materials	mt	268	251
Cathodes	mt	263	258

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

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

Breakdown of income components in MMR segment  
6M 2022/23 YTD (YTD prior-year figures)



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

# Custom Smelting & Products segment

		6M 2022/23	6M 2021/22 <sup>2</sup>
<b>Operating results</b>			
EBIT	€m	220	205
<b>EBT</b>	<b>€m</b>	<b>223</b>	<b>205</b>
<b>ROCE<sup>1</sup></b>	<b>%</b>	<b>19.1</b>	<b>13.7</b>
<b>Quantities</b>			
Concentrates	mt	1,262	1,314
Copper scrap/blister copper	mt	101	116
Sulfuric acid	mt	1,183	1,238
Cathodes	mt	305	301
Rod	mt	445	435
Shapes	mt	95	111
Flat rolled products and specialty wire	mt	67	88

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

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

## Breakdown of income components in CSP segment 6M 2022/23 YTD (YTD prior-year figures)

**24 % (21 %)**

Treatment charges  
for concentrate +  
recycling input

**30 % (35 %)**  
Metal gain

**46 % (44 %)**

Premiums +  
products

~ € 793 million\*  
(~ € 773 million\*)

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

## Promising market outlook for 2022/23

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### Copper concentrates

We anticipate an increase in concentrate supply from the mine side, underpinned by new greenfield projects and the expansion of existing mines. Our smelters are already well supplied into Q4 of FY 2022/23.

### Recycling input materials

We expect a stable supply of copper scrap and complex recycling materials for FY 2022/23. The smelter network is already supplied with a considerable amount of recycling materials up until Q4 of FY 2022/23.

### Sulfuric acid

Current outlook for FY 2022/23 shows reduced demand from the chemical and fertilizer industries. Both European and overseas markets show lower price levels. We anticipate lower income from sulfuric acid in FY 2022/23.

### Aurubis copper premium

Has been set at US\$ 228/t for 2023 (2022: US\$ 123/t).

### Other copper products

Outlook for FY 2022/23 shows a mixed picture; we foresee continued strong demand for wire rod, while demand for shapes and flat rolled products is expected to be reduced.

# FY 2022/23 guidance

## Our forecast range

Operating **EBT**  
between € **450** million  
and € **550** million

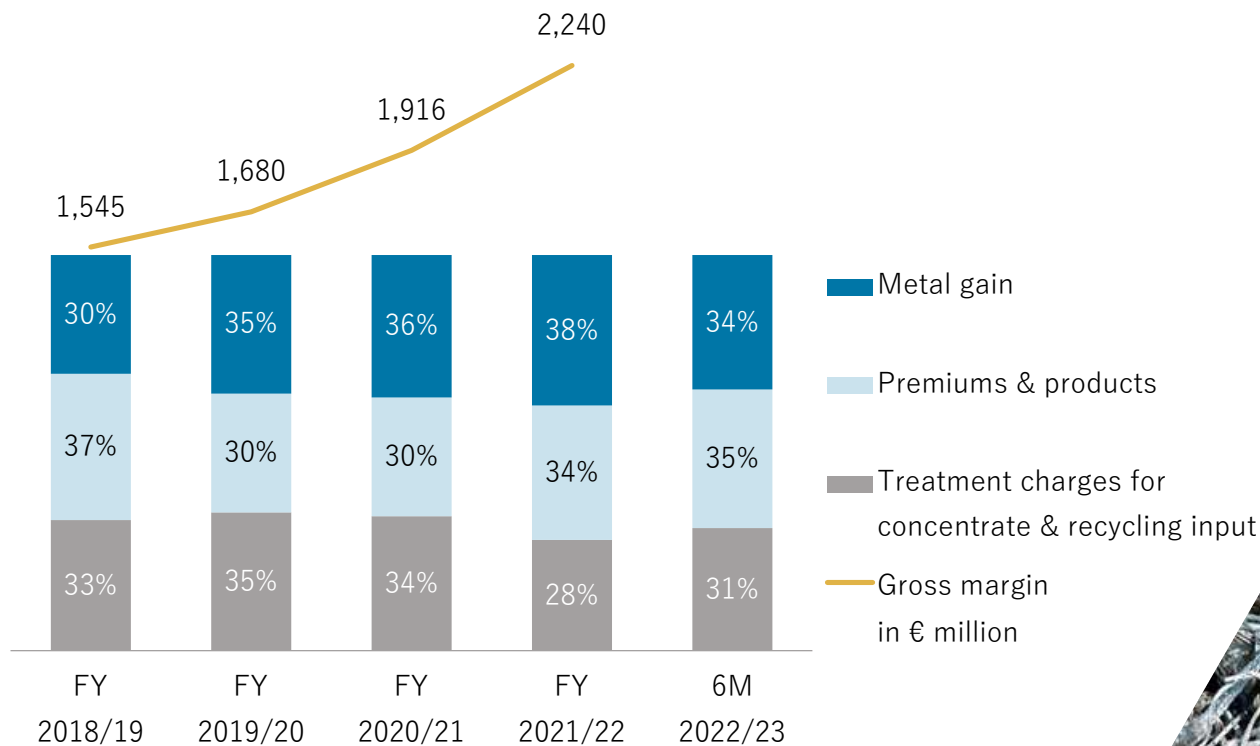
Operating **ROCE**  
between **14** %  
and **18** %

	Operating EBT in € million	Operating ROCE in %
Group	450–550	14–18
Multimetal Recycling	110–170	13–17
Custom Smelting & Products	390–450	18–22



# Business model resilience based on independence of income components, drives gross margin growth

Breakdown of income components in the Aurubis Group



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

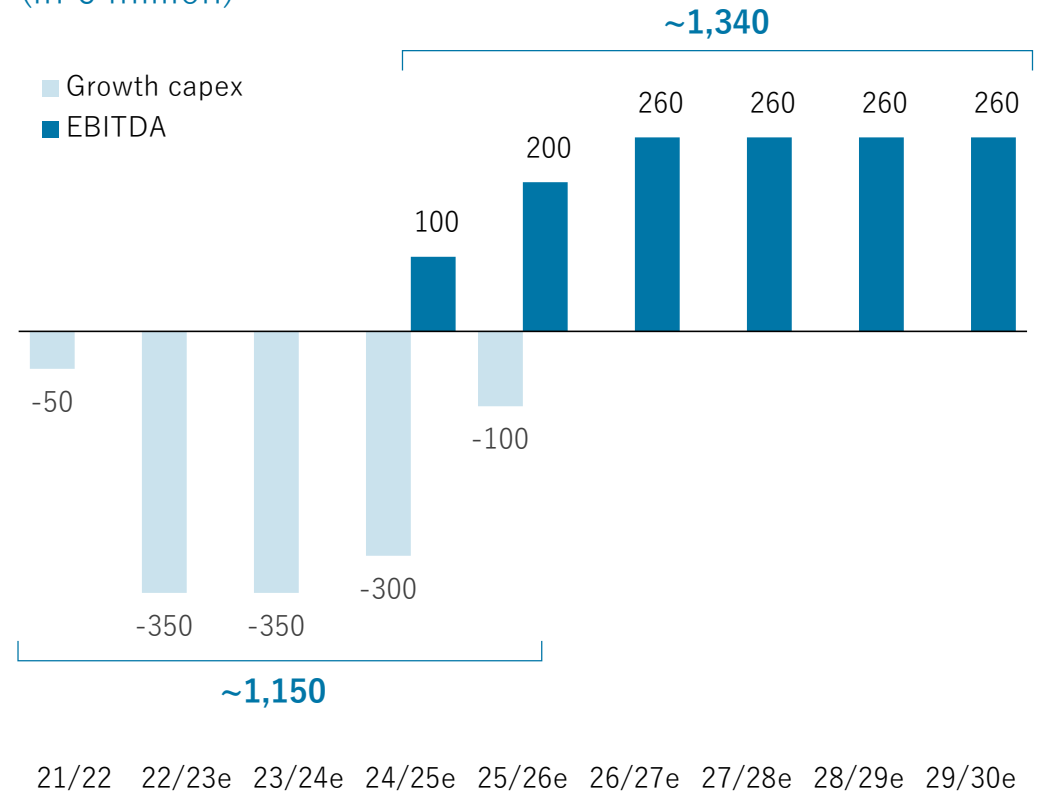


# Accumulated EBITDA to rapidly overcompensate investments

## Growth investments to be translated into profits

- Investing around € 1.1 billion in strategic growth options
- Rapid payback: accumulated EBITDA of € 1.3 billion overcompensates investments as soon as 2030
- Projects will be financed largely from own resources; current debt coverage offers additional headroom
- Balance sheet to become highly supportive for our EBITDA growth ambitions

## Capex & EBITDA contribution from 8 strategic projects (in € million)

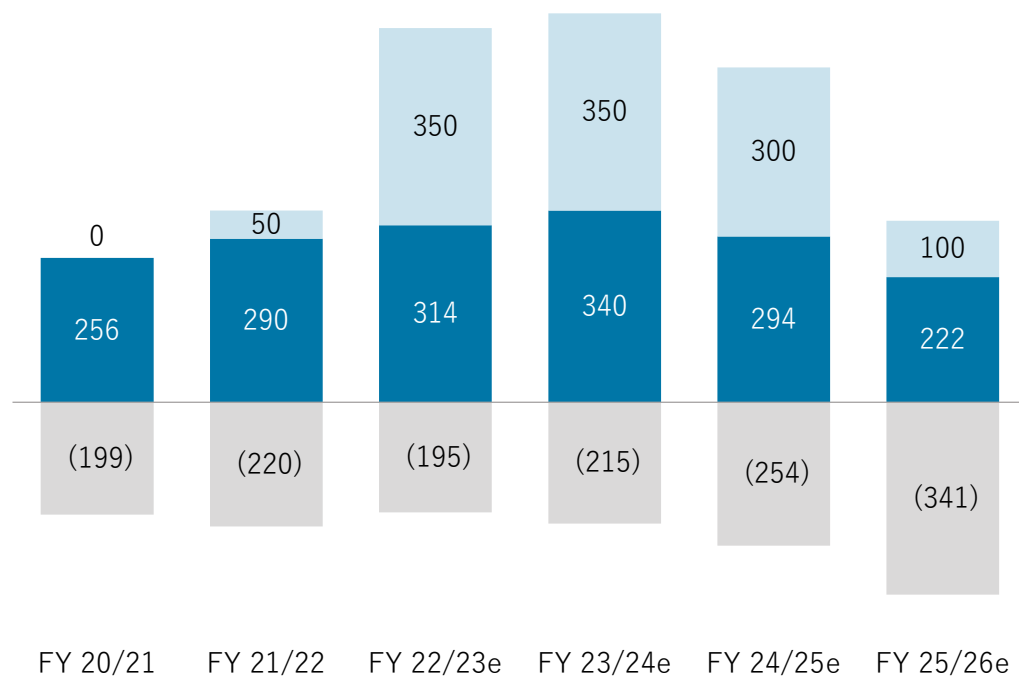




# Outflows from current project pipeline expected to peak in 2023/24

Capex planning broken down into baseline and strategic (in € million)

■ Baseline capex ■ Strategic capex ■ Depreciation

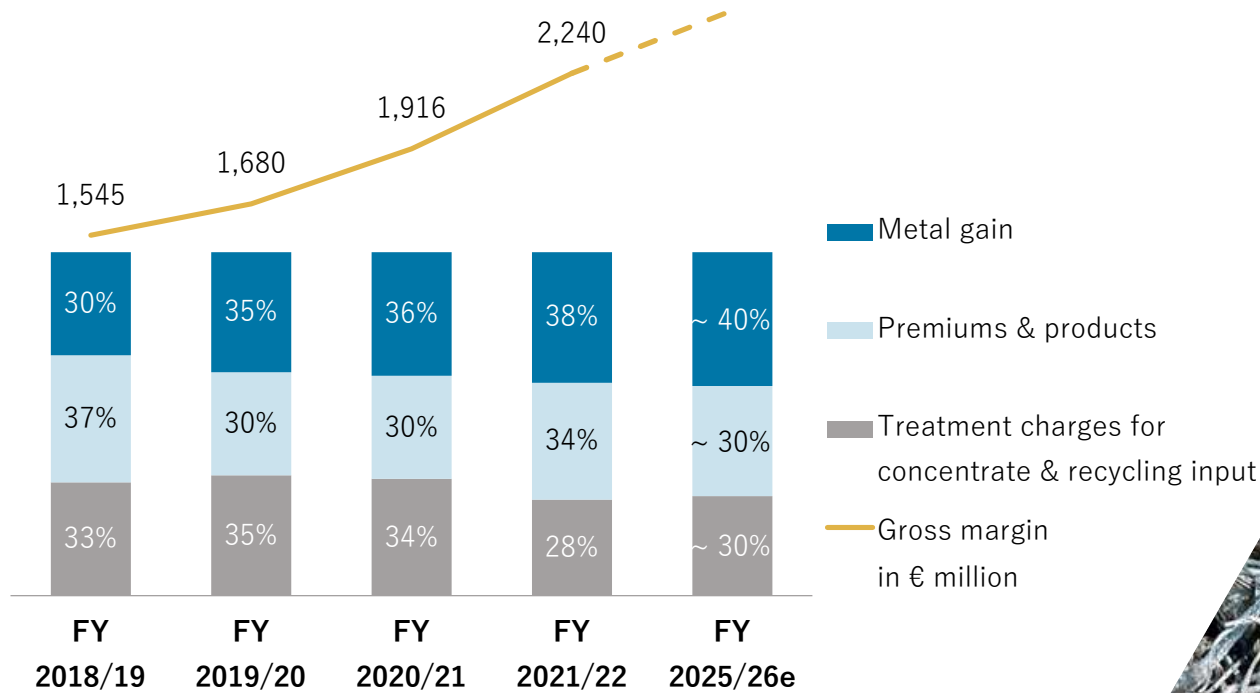


Investment horizon of the Group

- The planned maintenance schedule of the two primary smelters in Hamburg and Pirdop will change from planned maintenance every two years to a three-year cycle from FY 2025/26 onwards
- Depreciation will start substantially impacting the P&L after FY 2025/26, but all projects are accretive to P&L
- Total fixed assets expected to reach around € 3.5 billion by 2025/26

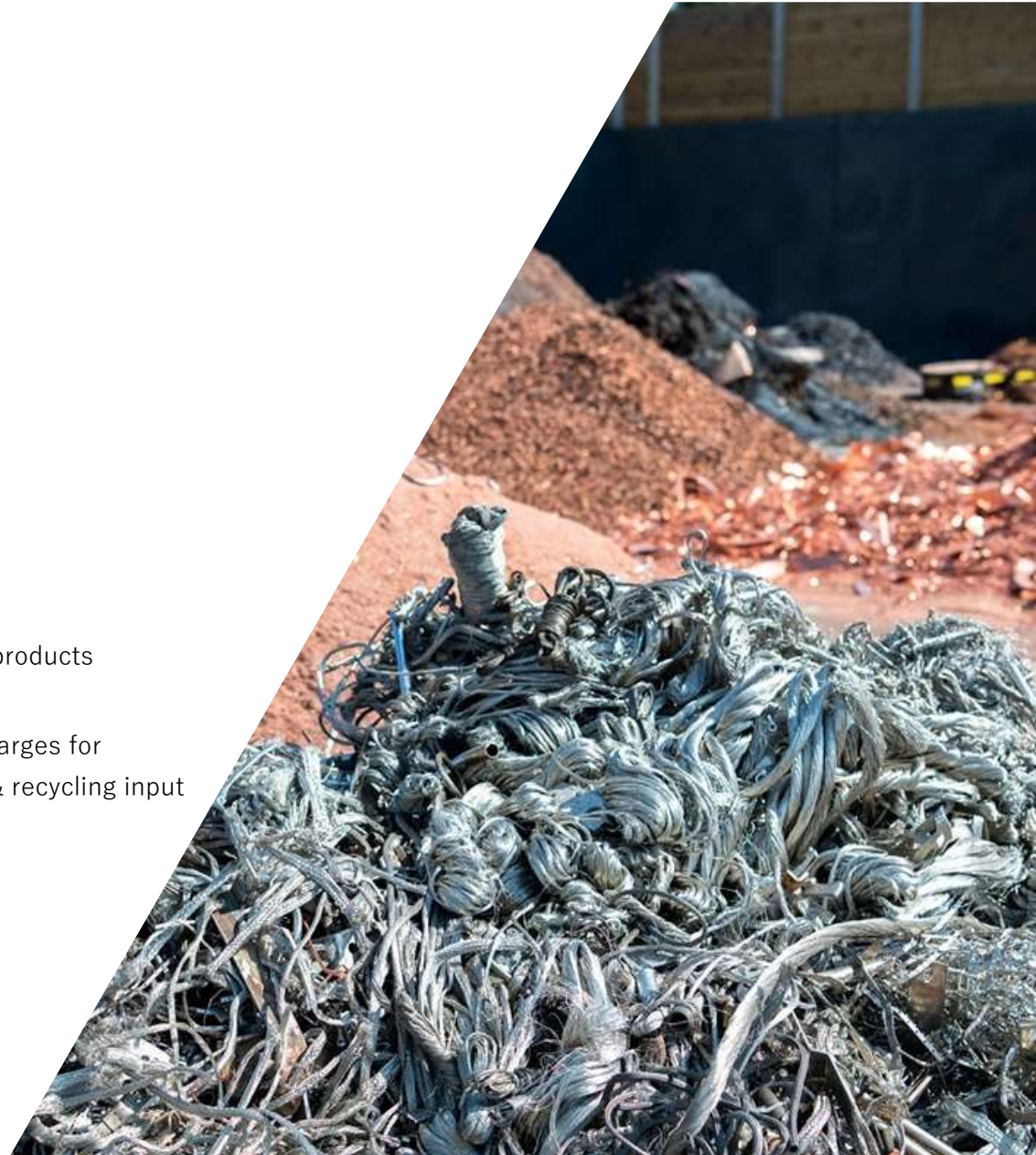
# Increased gross margin supported by balanced portfolio

Breakdown of income components in the Aurubis Group



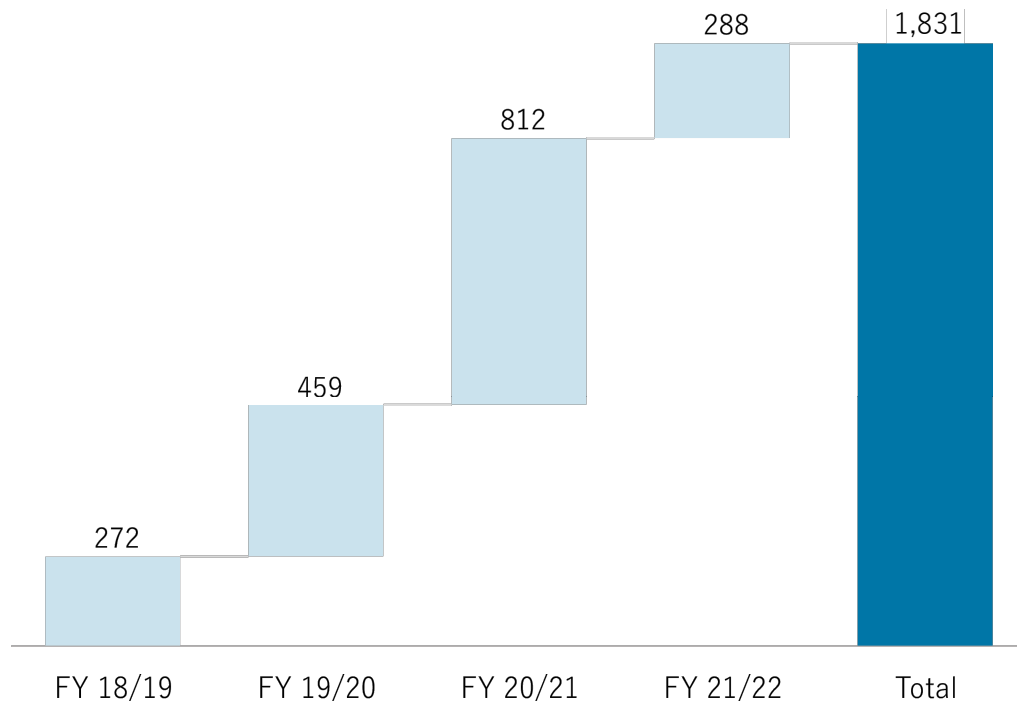
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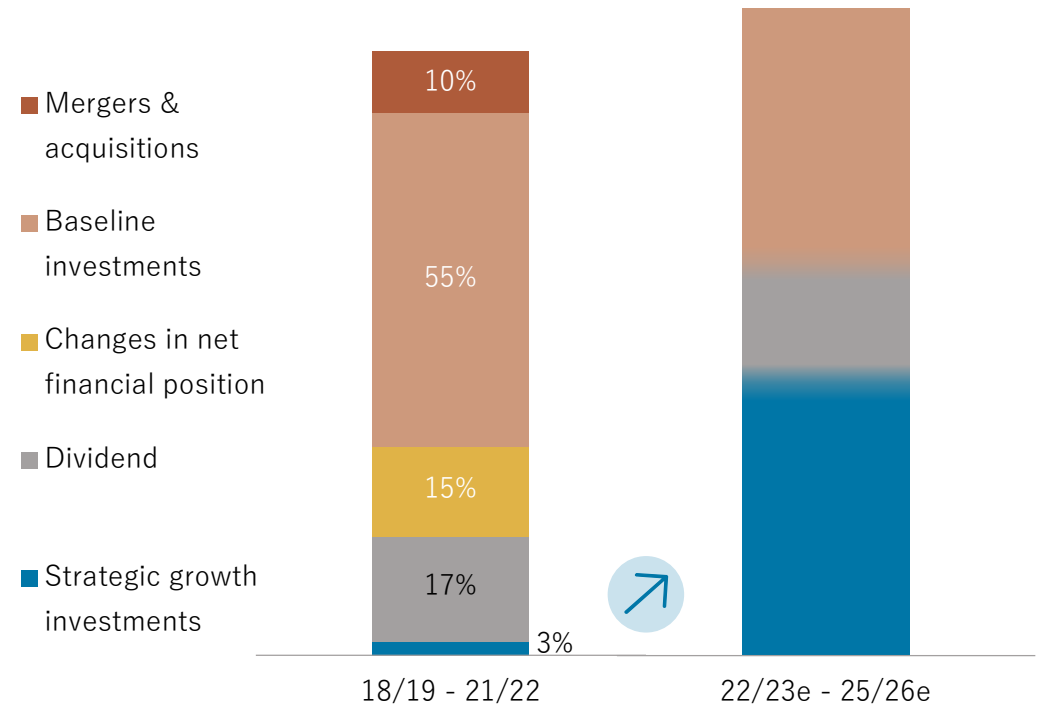


# Capital allocation will focus substantially on strategic growth investments

Net cash flow  
(in € million)



Capital allocation



# Our strategy builds on the sound mission of Aurubis and covers all relevant aspects to drive 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

# Growth strategy: CAPEX and EBITDA impact increase significantly

## Short term

Currently approved

- **Growth Capex ~€ 1,100 million approved**
- **Key projects** Aurubis Richmond Module 1 & 2, Tankhouse Pirdop, CRH, BOB, ASPA, Industrial-heat II, PV 2&3 Pirdop
- **EBITDA of ~€ 260 million** starting 2026/27, thereof **~€ 170 million** from Aurubis Richmond

## Medium term

Medium-term planning (next 4 years)

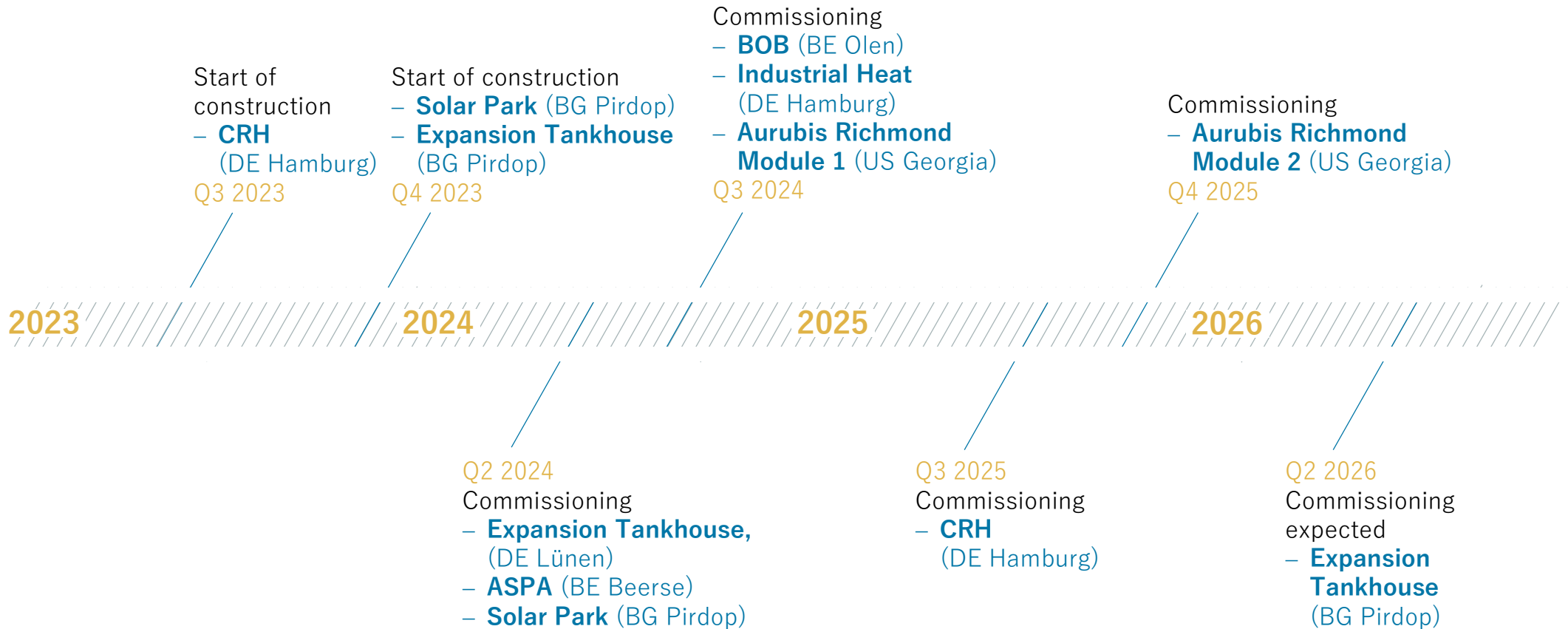
- **Growth Capex ~€ 280 million** are included in the medium-term planning
- **EBITDA ~€ 70 million** in addition from planned strategic projects
- Additional strategic projects, e.g., **the modular recycling system (€ 250–300 million Capex) / battery recycling**, not yet included, but are actively pursued

## Long term

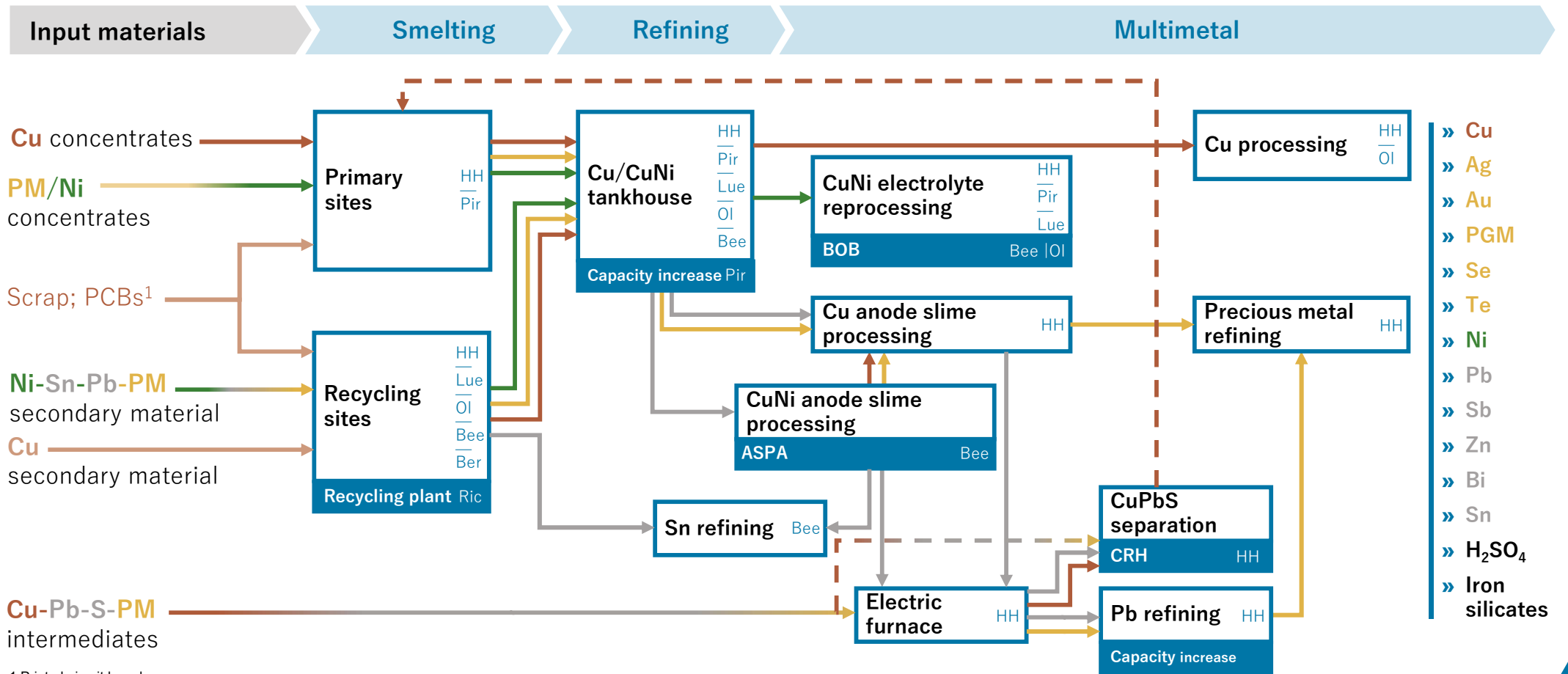
Until 2030

- **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)
- **Battery recycling remains a priority growth area**

# Timeline of strategic projects in implemetation



# Expanding our flowsheet with additional smelting furnaces and processes to drive multimetal growth strategy



<sup>1</sup> Printed circuit boards

# Growth options

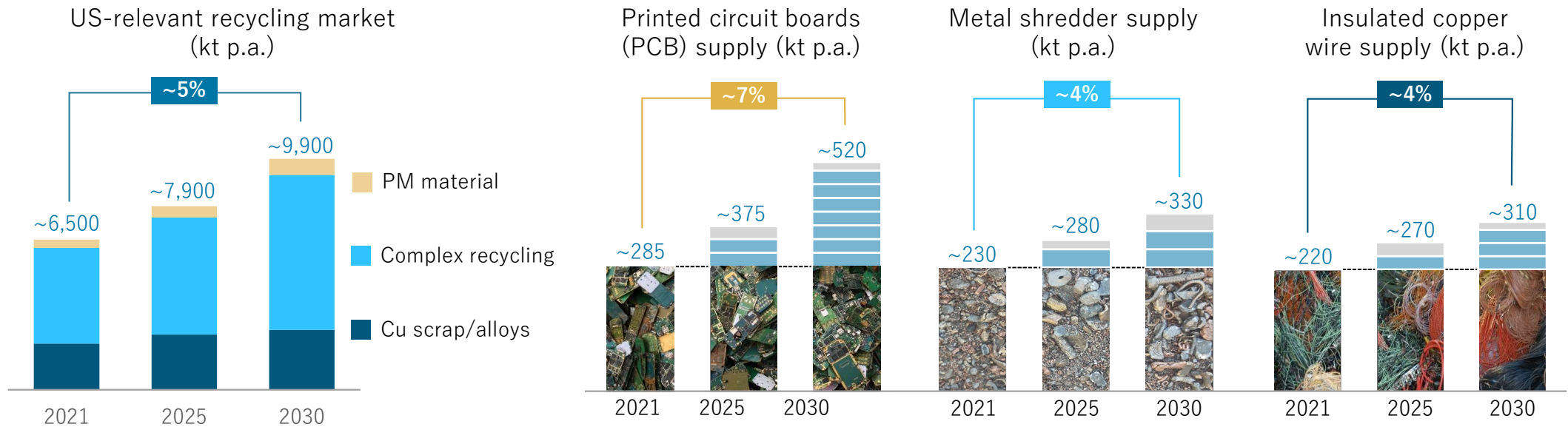
## Aurubis Richmond, US – construction work is progressing





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

Pursuing growth in North America



## 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

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



<p>Investment</p> <p><b>~ € 640 million</b></p>	<p>EBITDA p.a.</p> <p><b>~ € 80 million</b> (by 2025/26)</p> <p><b>~ € 170 million</b> (by 2026/27)</p>	<p> <b>Pursue Growth Options</b></p> <p>Aurubis Richmond complements and expands our international integrated smelter network with a highly attractive investment in a promising growth market.</p> <p>The total investment includes additional infrastructure investments and inflation.</p> <p>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.</p> <p>With this, Aurubis will become the leading processor of electrical and electronic scrap in the US, by doubling the throughput capacity and output.</p> <p>In total ~200 new jobs.</p>
<p><b>Start of production</b> following ramp-up phase</p> <p>Module 1: <b>2024</b></p> <p>Module 2: <b>2026</b></p>	<p><b>~ 180,000 t</b> input material</p> <p><b>~ 70,000 t</b> blister copper output</p>	

➤ **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 with significant progress since groundbreaking in June 2022 – first equipment received in May 2023



First equipment

June '22

June '23

November '23

June '24

May '23

Start of sampling/  
pre-processing

Start of cold  
commissioning  
(Module 1)

Start of hot  
commissioning  
(Module 1)

August '24

Groundbreaking



Status today



## Key project statistics:

- **Visible progress:** 24.7 t m<sup>2</sup> concrete poured, 17.5 t m<sup>2</sup> PEMB<sup>1</sup> erected
- **Module 1:** € 290 m capex contracted; € 87 m capex spent<sup>2</sup>
- **Module 2:** OEM & crane manufacturer **contracts signed** – construction and equipment installation contracts to follow shortly
- **Project & Operational teams:** key project roles & senior mgmt. team staffed (~60 FTE in May 2023) – strong hiring to continue until 2024
- **Forecast of € 392 m and project schedule substantiated** – proactive value engineering and pursuit of cost savings opportunities

<sup>1</sup> Pre-engineered metal buildings; <sup>2</sup> Status 6M 2022/23

# 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



<p>Investment ~ <b>€ 190 million</b></p>	<p>EBITDA p.a. ~ <b>€ 40 million</b> (at full production)</p>	<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  <p><b>Secure</b> Core Business</p> </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><b>Strengthen</b> Core Business</p> </div> </div>	
<p>Start of production following ramp-up phase <b>Q4 2025</b></p>	<p>~ <b>32,000 t</b> p.a. Input of external material</p>	<p>Aurubis is <u>strengthening its core business</u> and investing € 190 million for further optimization of the smelting process at the Hamburg site.</p> <p><u>Construction of a new TBRC at the Hamburg site incl. process gas cleaning system based on best available techniques (BAT).</u></p> <p>Processing <u>internal and external value-added complex intermediates and recycled materials</u> with additional treatment and refining charges and metal recoveries.</p> <p><u>Increase in metal yield (mainly precious metals) with lower process times.</u></p> <p>CRH is the prerequisite for further attractive strategic projects (e.g., higher yield of additional industrial and precious metals).</p> <p><u>Differentiation from competitors through expansion of metallurgical processes and extension of the value chain at the Hamburg site.</u></p>	

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

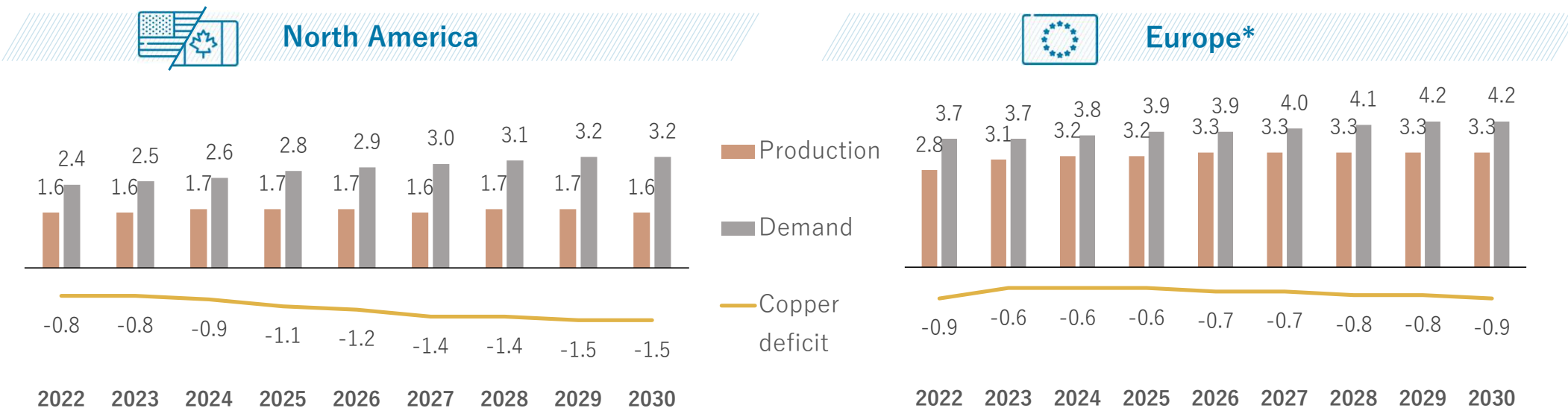
# Secure & strengthen core business

## Expanding the tankhouse in Pirdop



# Anticipated and growing metal supply deficits in North America and Europe drive key growth opportunities for our core business

Refined copper market balance (in Mt)



Relevant markets show structural undersupply of refined copper

Greater regionalization of the recycling business will require increased local production to fill anticipated supply gaps in key markets

Market trends confirm our strategy to expand existing and build new regional capacities

\* Europe incl. Turkey

Source: Wood Mackenzie Copper Outlook Q1/2023

# Secure & strengthen core business

## Expanding the tankhouse in Pirdop



<p>Investment ~ <b>€ 120 million</b></p>	<p>EBITDA p.a. ~ <b>€ 30 million</b> (at full production)</p>	<p> <b>Secure</b> Core Business</p> <p></p> <p> <b>Strengthen</b> Core Business</p>	
<p>Start of production following ramp-up phase <b>second half of 2026</b></p>	<p>~ <b>120,000 t</b> p.a. additional capacity</p>	<p>Aurubis is <u>strengthening its core business</u> and investing € 120 million in expanding the tankhouse at its Bulgarian site in Pirdop.</p> <p><u>Processing of around 340,000 tons of copper cathodes</u> in the future, which corresponds to an increase of around 50 %.</p> <p><u>Further optimization of material flows</u> in the smelter network.</p> <p><u>Reduction of our logistics costs and the CO<sub>2</sub> footprint</u> associated with them.</p> <p>Expansion also creates the conditions for additional strategic projects at other Aurubis Group sites.</p>	

➤ **By expanding production capacity, Aurubis is investing in a growing market and making another contribution to driving innovations and technological advances.**



# Secure & strengthen core business Advanced Sludge Processing by Aurubis (ASPA)






ASPA



# Secure & strengthen core business Advanced Sludge Processing by Aurubis (ASPA)



<p>Investment ~ <b>€ 33 million</b></p>	<p>EBITDA p.a. ~ <b>€ 7 million</b> <small>(at full production)</small></p>	<p> <b>Secure</b> Core Business</p> <p></p> <p> <b>Strengthen</b> Core Business</p>	
<p>Start of production following ramp-up phase <b>FY 2024/25</b></p>	<p>~ <b>2,500 t p.a.</b> input material in form of anode sludges</p>	<p>Aurubis is <b>strengthening its core business</b> and taking the next step towards becoming the <b>most efficient and sustainable integrated</b> smelter network worldwide.</p> <p>Construction of a state-of-the-art recycling facility at the <b>Beerse site (BE)</b>.</p> <p><b>ASPA</b>, a newly developed hydrometallurgical process, will extract <b>more</b> valuable metals such as Au, Ag, and Sn from anode sludge <b>faster</b>.</p> <p>Prime example of the <b>synergies</b> created by the Metallo acquisition and how the whole company benefits in developing new <b>innovative solutions together</b>.</p>	

➤ **Project capitalizes on synergies from the Metallo acquisition and contributes significantly to a well-functioning circular economy**

# Secure & strengthen core business Bleed treatment Olen Beerse (BOB) – Construction kick-off






BOB



# Secure & strengthen core business Bleed treatment Olen Beerse (BOB)

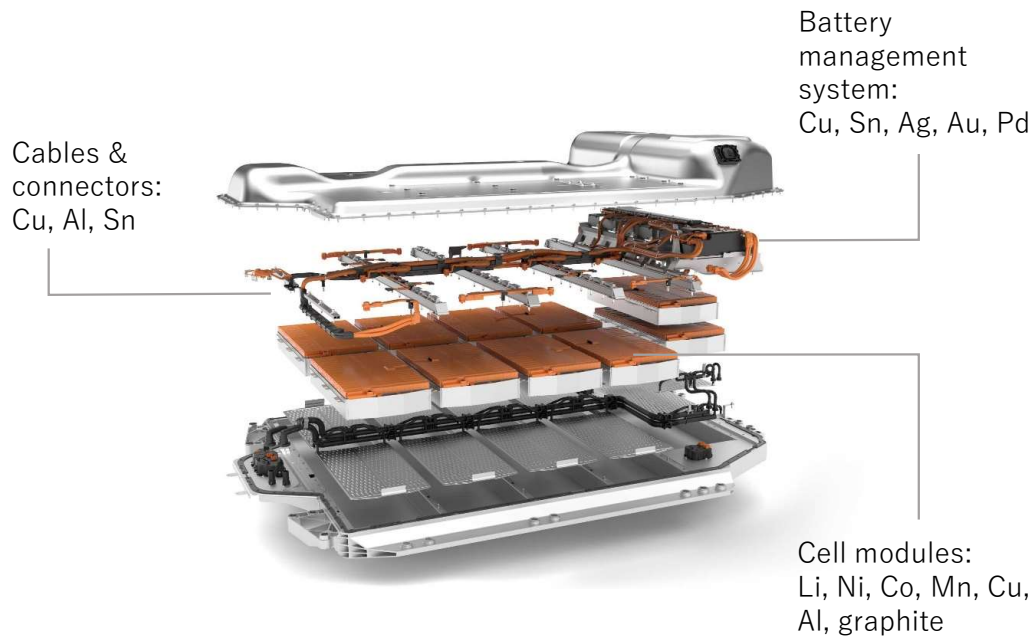


<p>Investment ~ <b>€ 70 million</b></p>	<p>EBITDA p.a. ~ <b>15 million</b> <small>(at full production)</small></p>	<p> <b>Secure</b> Core Business</p> <p></p> <p> <b>Strengthen</b> Core Business</p>	
<p>Start of production following ramp-up phase <b>Summer 2024</b></p>	<p>~ <b>81,000 t p.a.</b> Input metric tons bleed per year</p>	<p>Aurubis is <b>strengthening its core business</b> and investing € 70 million in the Aurubis site in Olen to increase recycling capacity of the important industry metals nickel and copper.</p> <p>BOB is a state-of-the-art energy-efficient <b>process to extract impurities from bleed</b> (also known as electrolyte) and optimize material streams of nickel and copper.</p> <p>Start of construction is planned for September 2022 with a planned start of the plant in <b>July 2024</b>. The facility does provide spare capacity for future expansion of the asset.</p> <p>Expected full EBITDA impact of about € 15 million, once in full operation in FY 2025/26.</p>	

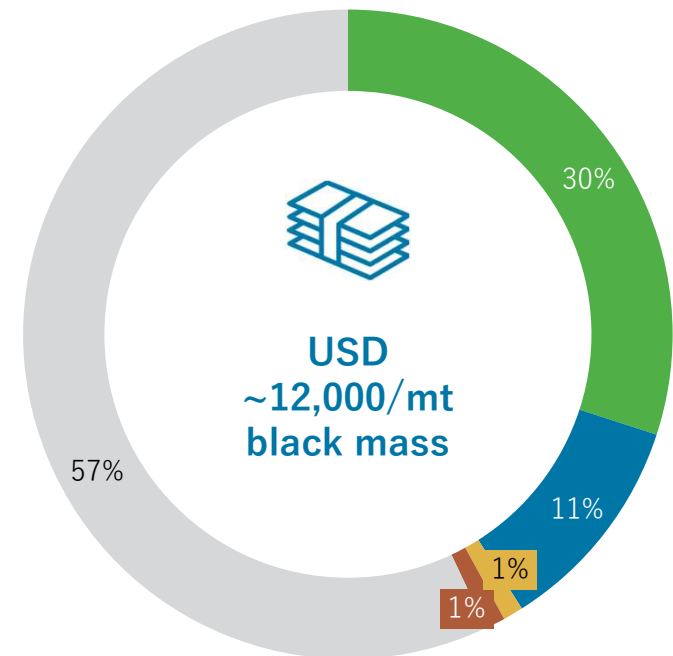
➤ **This project is another prime example of how Aurubis realizes synergies in its smelter network and contributes significantly to the European circular economy.**

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

Batteries are complex scraps that are of huge value



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



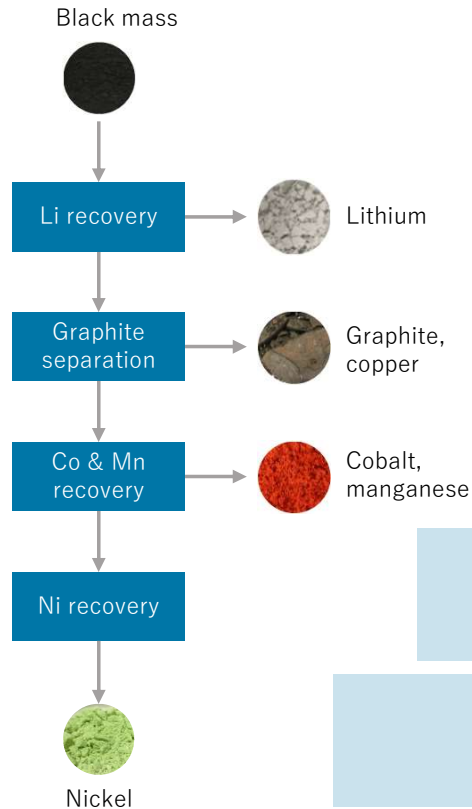
■ Nickel   
 ■ Cobalt   
 ■ Manganese   
 ■ Copper   
 ■ Lithium

➤ Average black mass content: ~40 %

Source: BMW Group

Source: Aurubis, Roland Berger, LME

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



## Benefits of the unique Aurubis process

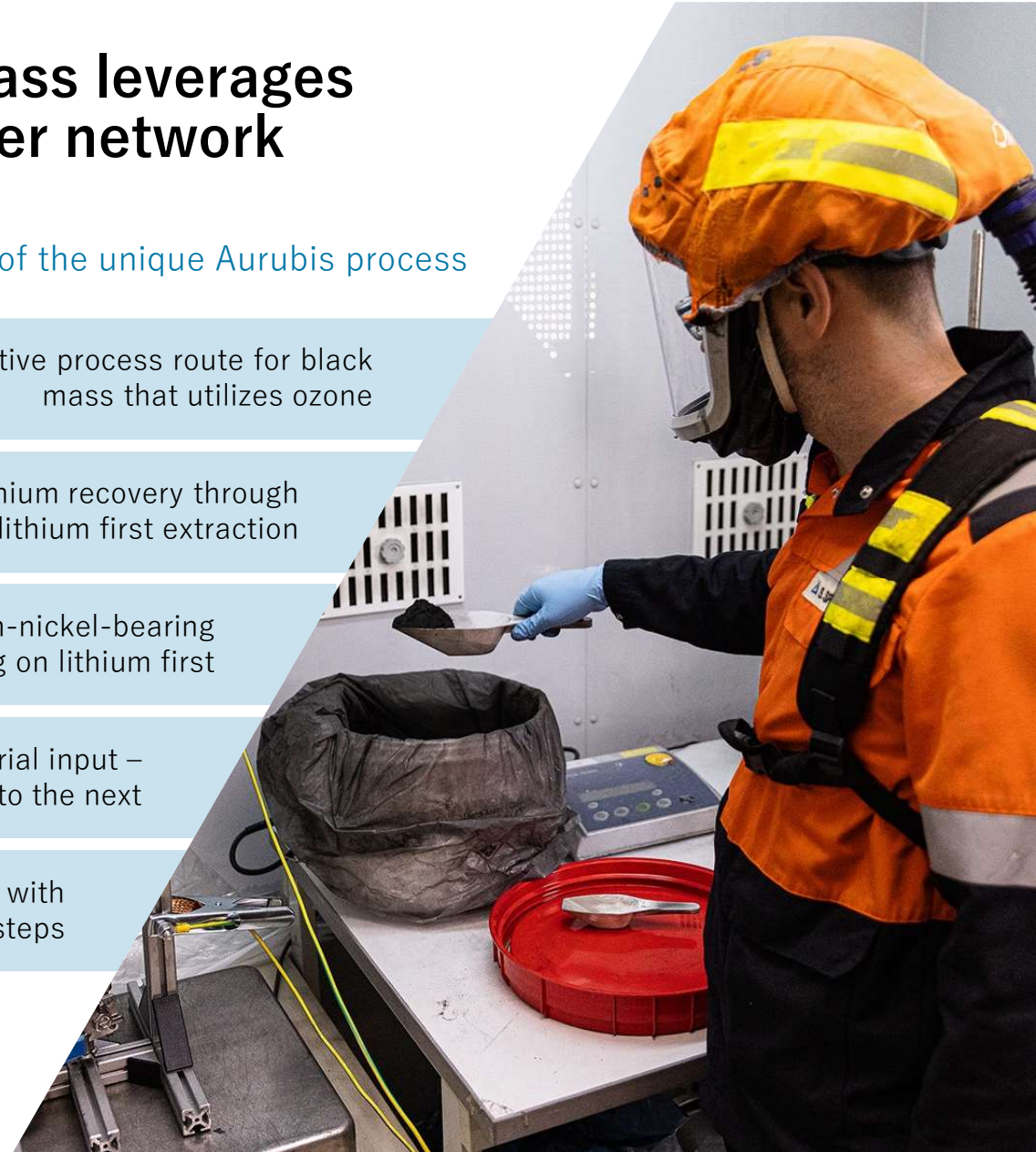
Innovative process route for black mass that utilizes ozone

High lithium recovery through lithium first extraction

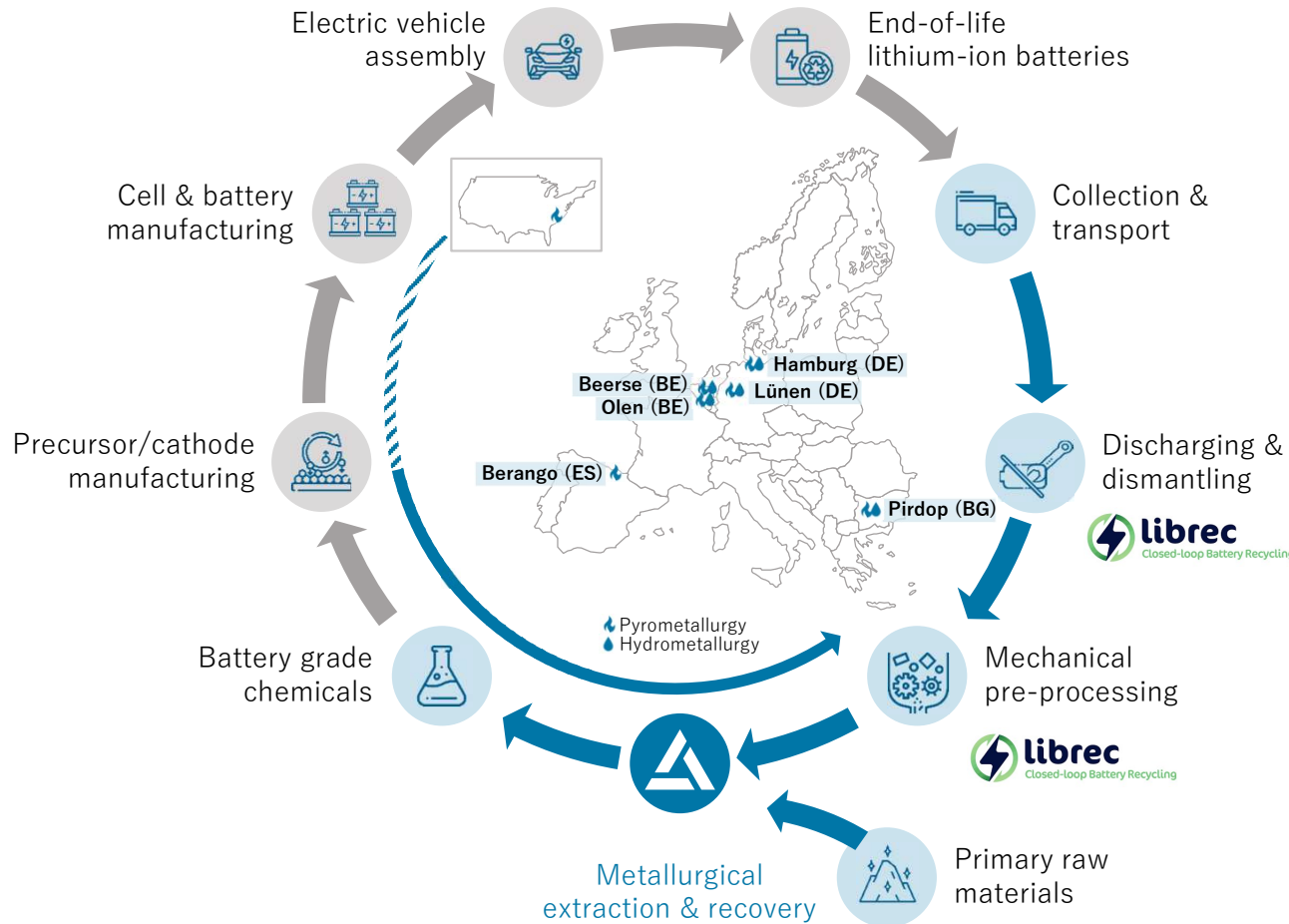
Ability to process non-nickel-bearing black mass by focusing on lithium first

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

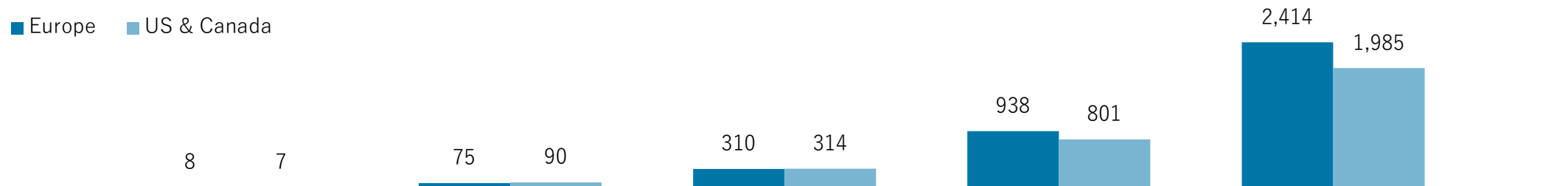
Aurubis' integrated smelter network offers unique benefits

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

Further pilot test work campaigns (pilot & demo)

Engineering & construction

Commissioning & operation

Feasibility study

First commercial activities with demo plant in 2024

Start of commissioning commercial plant in 2026/27

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

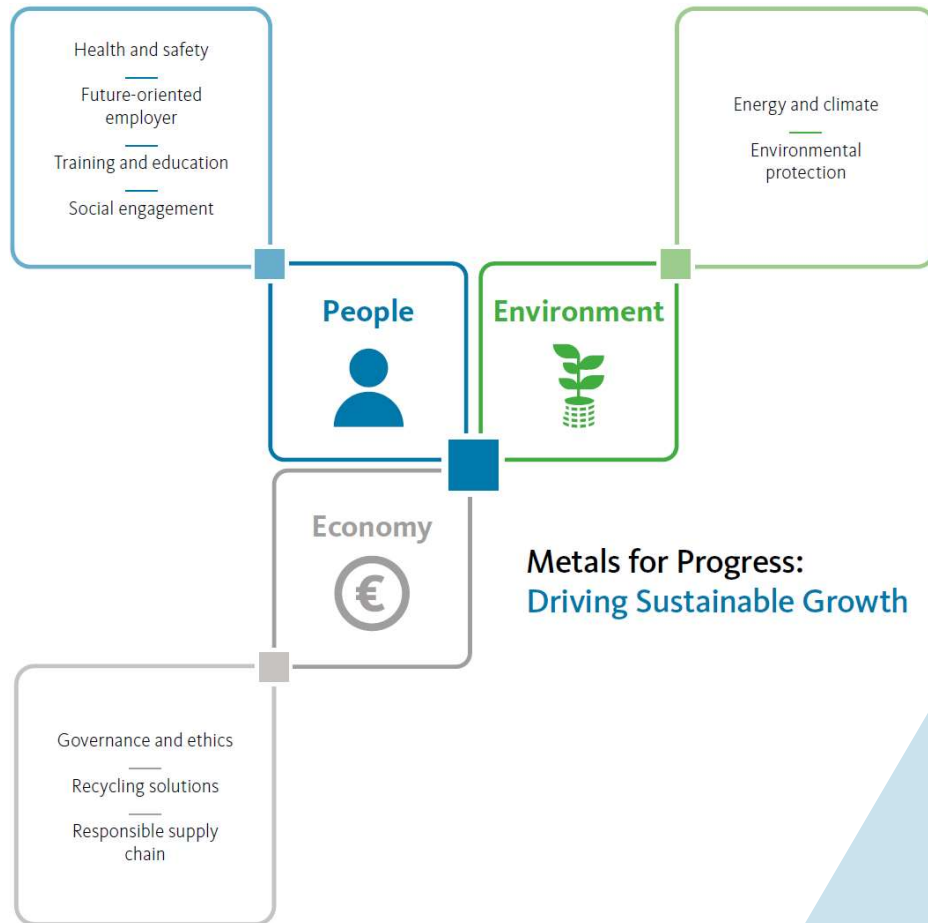
Industrial scale commercialization foreseen for 2026/27

Source: Rhomotion, Q2 2023

Aurubis / DZ Bank Reverse Roadshow Hamburg July 13<sup>th</sup> 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

# Renowned ratings show strong track record in sustainability



## Aurubis' main sustainability ratings & initiatives



# 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 Olen certification expected shortly



Basis: UN SDGs & Risk Readiness Assessment



Joint Due Diligence Standard enables effective due diligence



Review of 32 sustainability criteria



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



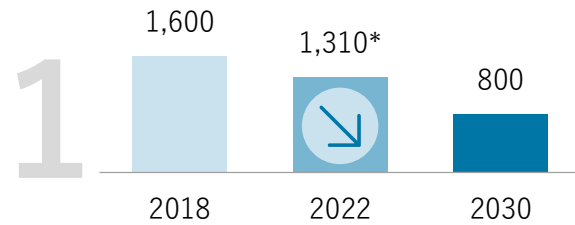
The copper value chain can be sustainable – promoting and driving this industry initiative demonstrates our responsibility and growing momentum for a more sustainable product.



# Our KPIs underline our sustainability ambitions and demonstrate momentum

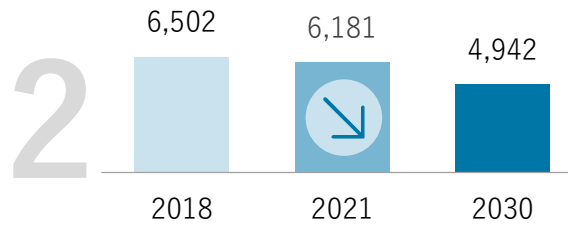


**Absolute Scope 1+2 CO<sub>2</sub> emissions**  
(in kt)

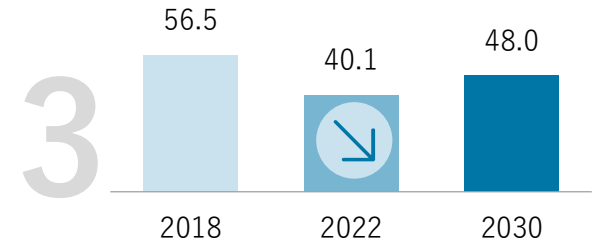


\* Preliminary figures

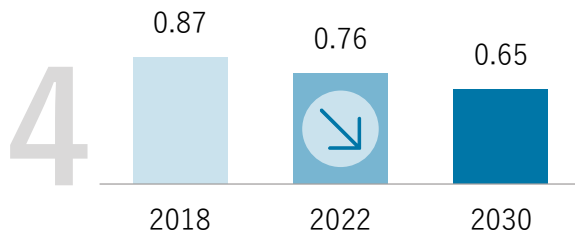
**Scope 3 CO<sub>2</sub> emissions**  
(in kt)<sup>1</sup>



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

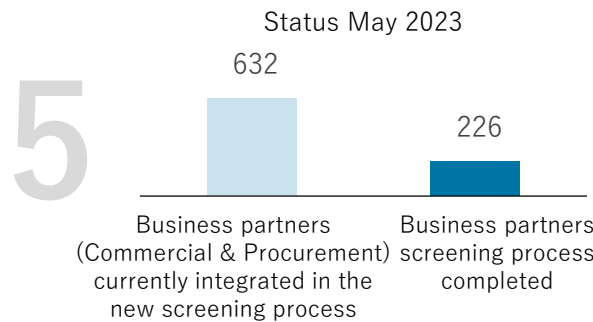


**Metal emissions to water**  
(in g per t of multimetal Cu equivalent)<sup>2</sup>

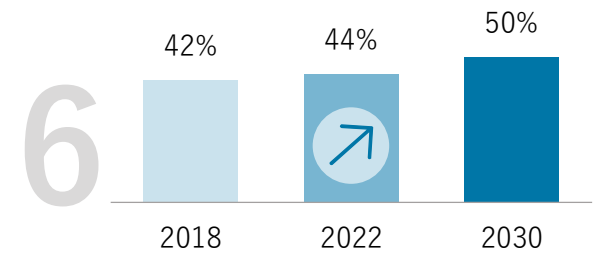


**Supply chain integrity**

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)

<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.

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



CO<sub>2</sub> footprint of Aurubis metals vs. global industry average

## Copper cathodes

in kg CO<sub>2</sub> eq./t Cu

Global industry average

2013: 4,027

-5 %

2019: 3,833



Aurubis

2013: 2,300

-36 %

2021: 1,460



Remark: The environmental profiles have been verified by TÜV Nord Cert in accordance with DIN EN ISO 14040:2021 and DIN EN ISO 14044:2021.

Source: International Copper Association 2019, Aurubis LCA 2021

## Tin

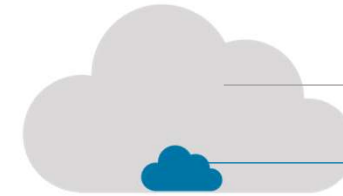
in kg CO<sub>2</sub> eq./t

2020: 6,632

Int'l Tin Association

2021: 1,570

Aurubis



## Silver

in kg CO<sub>2</sub> eq./kg

2021: 448

Ecoinvent

2021: 209



## Gold

in kg CO<sub>2</sub> eq./kg

2019: 36,400

World Gold Council

2021: 16,200

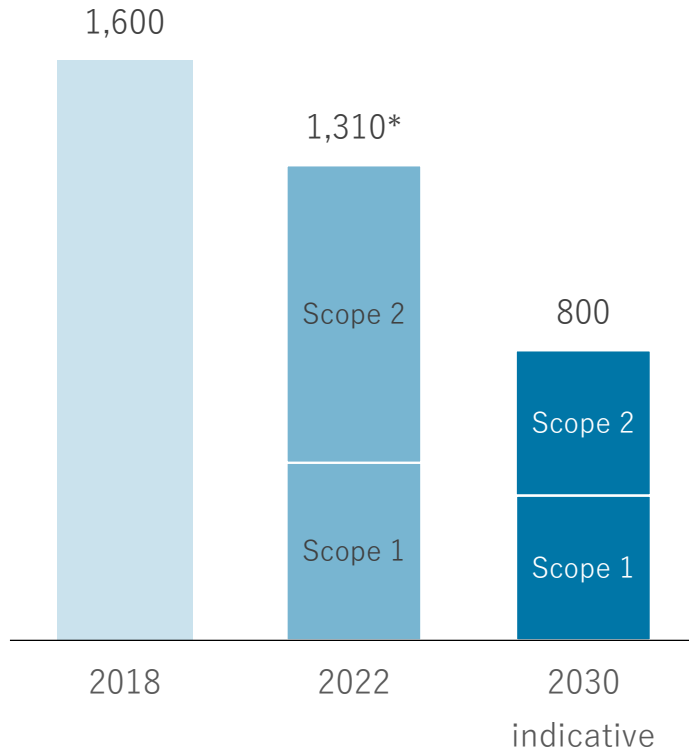


» Aurubis continuously pursues better energy efficiency: lowering costs, improving CO<sub>2</sub> footprint

# Achieving results: Using multiple technologies at our sites to decarbonize our production

## Scope 1+2 CO<sub>2</sub> emissions

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



\* Preliminary figures

Aurubis / DZ Bank Reverse Roadshow Hamburg July 13<sup>th</sup> 2023

## Identified further potential for reducing our Scope 1+2 CO<sub>2</sub> emissions

### Scope 2



Purchasing electricity from renewable sources, e.g., using new PPAs



Internal production of electricity from renewable sources



Energy efficiency measures

### Scope 1



Use of alternative energy sources (i.e., hydrogen, ammonia)



Further electrification of production processes



Energy efficiency measures

# Sustainability: Energy and decarbonization projects




PV Pirdop I-III



# Sustainability: Aurubis on its way to carbon-neutral production



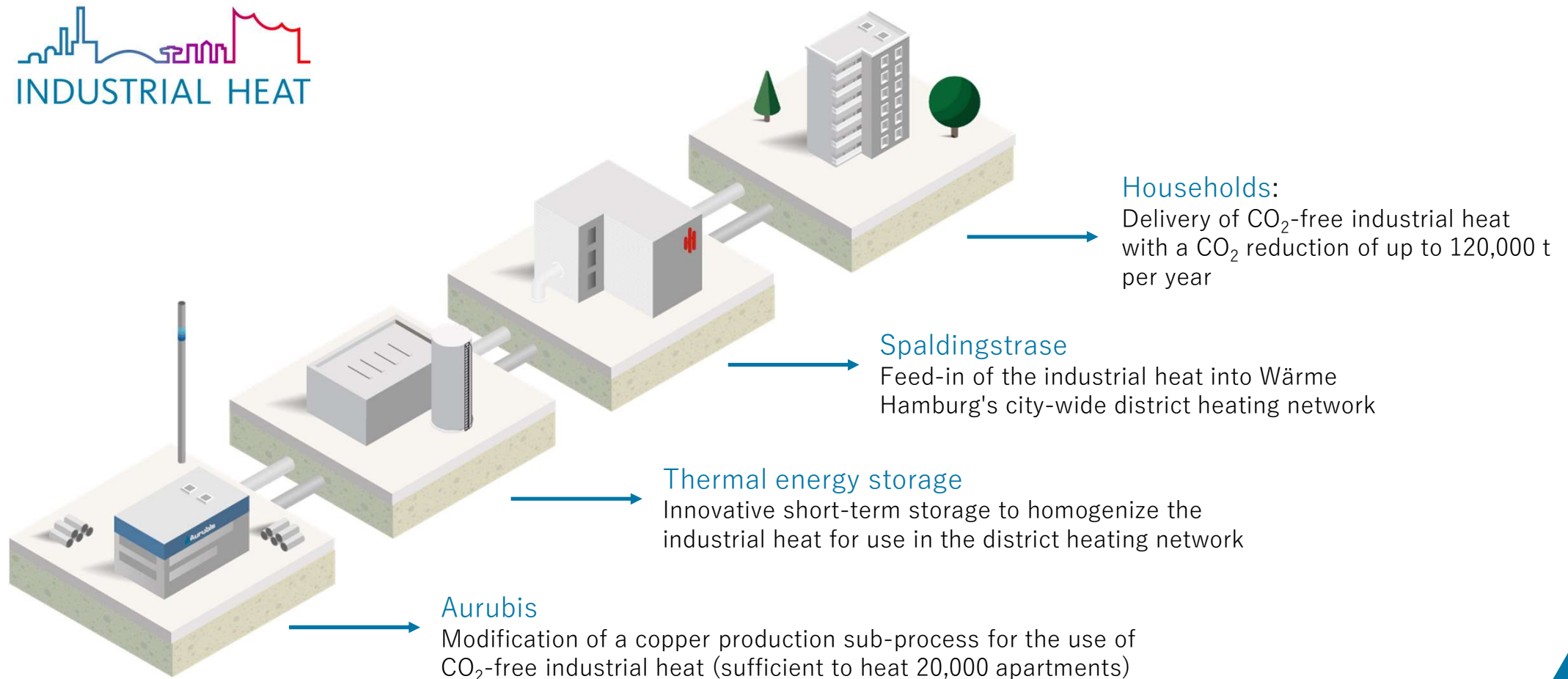
<p>Investment</p> <p><b>+~ € 12 million</b> (for 2024 expansion)</p>	<p>Optimizing electricity consumption p.a.</p> <p><b>~ 13,500 MWh*</b> (since PV 1)</p> <p><b>+~ 17,000 MWh</b> (by Q2 2024)</p>	 <h2>Industry Leadership in Sustainability</h2>
<p>Start of production</p> <p><b>Q2 2024</b></p>	<p>CO<sub>2</sub> savings p.a.</p> <p><b>+ ~ 34,000 t</b></p> <p>compared to coal-fired power generation</p>	<p>Expansion of solar park until 2024 in <a href="#">Pirdop</a>, Bulgaria, with a combined performance of 24 MWp.</p> <p>The solar park will reduce the <a href="#">smelter's external electricity consumption</a> by <a href="#">approx. 30,000 MWh</a> annually, and for the period of 15 years, the total renewable energy production will amount to approx. <a href="#">450,000 MWh</a>.</p> <p><a href="#">Further</a> expansions are planned with investments underway.</p> <p>Compared to coal-fired power generation, this will save up to <a href="#">34,000 t</a> of CO<sub>2</sub> emissions p.a. – or over <a href="#">500,000 t</a> over the operating period.</p>

\* Better performance than anticipated (11,000 MWh)

» **Further reduction of our already very small CO<sub>2</sub> footprint within the international sector and expansion of our leading position in environmental protection**



# Win-win project reduces our carbon footprint and makes Aurubis a highly valuable source for sustainable district heat supply



# Monetizing its industrial heat, Aurubis strengthens its symbiotic partnership with the city of Hamburg



Project generates carbon savings potential of up to **20,000 t of CO<sub>2</sub> p.a. for Hamburg**; Aurubis' follow-up project with remaining industrial heating potential will lead to even higher **carbon reduction of 100,000 t p.a.**



## Industry Leadership in Sustainability

Existing project supplies heat (as industrial by-product) to [Hamburg's HafenCity East](#) district, running successfully with [enercity](#) since 2018

Follow-up project helps the city of Hamburg to achieve its [climate goals](#) and supports Aurubis' [sustainability ambition](#) by further reducing our carbon footprint

Cost efficiency and project profitability achieved through [funding](#) from the German Federal Ministry for Economic Affairs and Energy and revenues from heat sales to [Wärme Hamburg GmbH](#)

» Our industrial heating delivers sustainable heat and will more than halve CO<sub>2</sub> emissions of the city of Hamburg by 2030.

# Thank you for your participation.

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For further questions, contact:  
[IR@aurubis.com](mailto:IR@aurubis.com)

 **Aurubis**



# Financial calendar

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- Q3 2022/23 August 7, 2023
- Annual Report 2022/23 December 6, 2023

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# 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 around [7,100 employees](#) worldwide



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



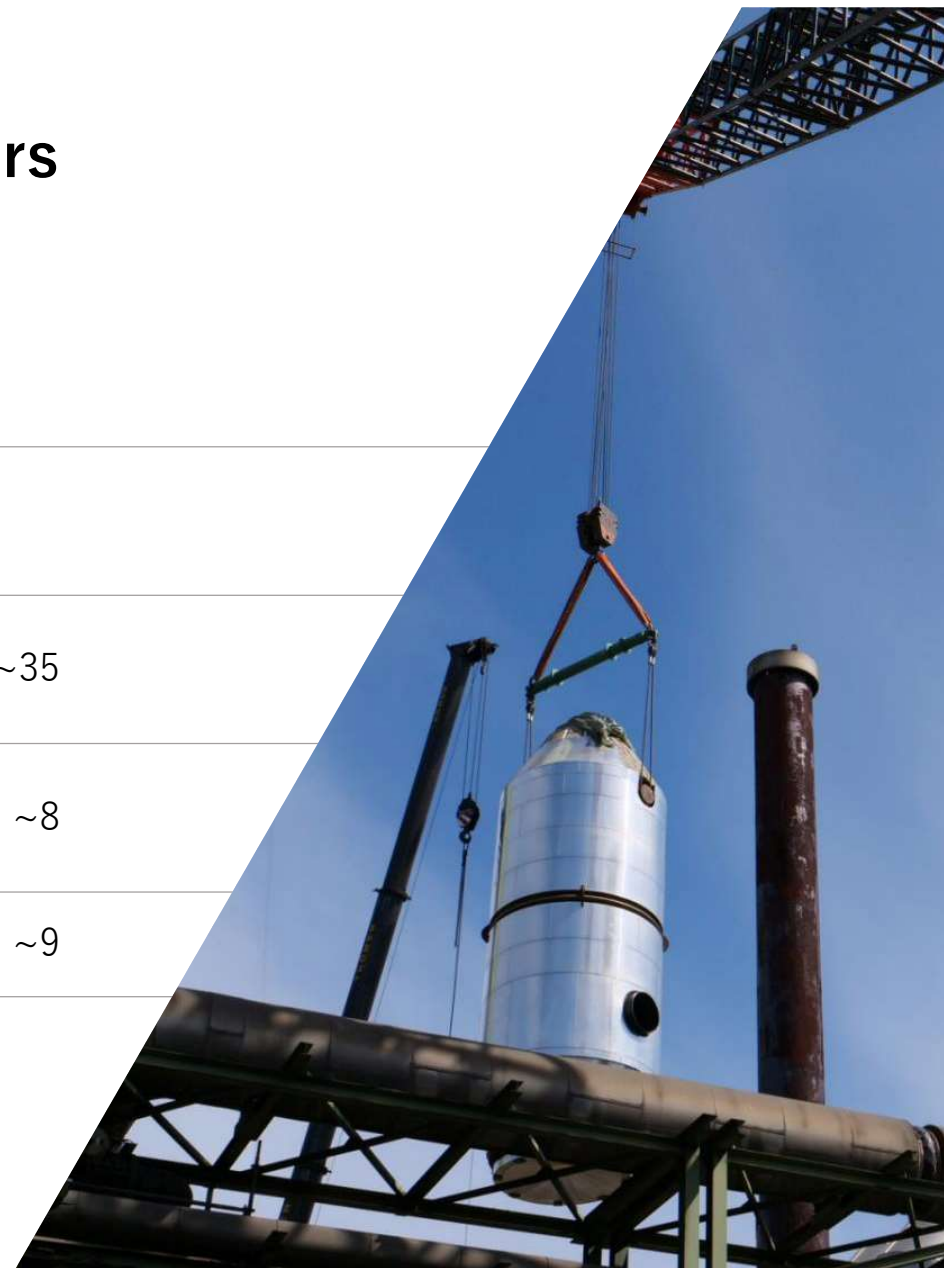
Aurubis is one of the world's leading producers of cathodes, rod, and flat rolled copper products

# Maintenance shutdowns in the next 3 years

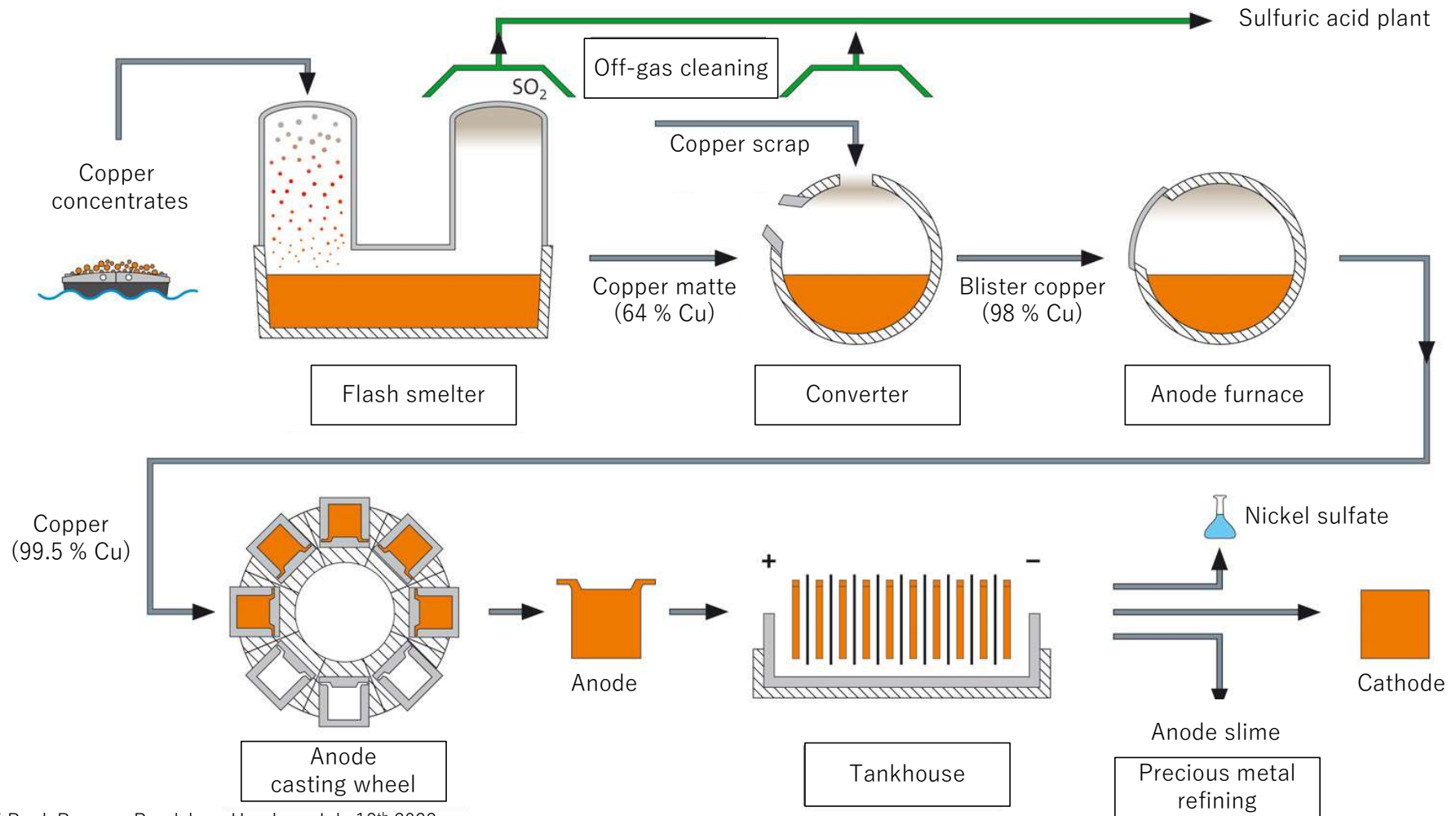


EBT effect from maintenance shutdowns (in € million)

	FY 2022/23		FY 2023/24		FY 2024/25	
Smelter maintenance Hamburg			May/June 2024	~36		
Smelter maintenance Pirdop	May/June 2023	~20			May/July 2025	~35
Anode furnace Lünen	Nov/Dec 2022	~7	Nov/Dec 2023	~8	Nov/Dec 2024	~8
KRS Lünen	May 2023	~9	May 2024	~9	May 2025	~9



# 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.

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