

# View and update on circuit boards and E-scrap

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Portfoliomanager circuit boards and e-scrap

# Agenda

1 Market outlook

2 Aurubis news – US plant

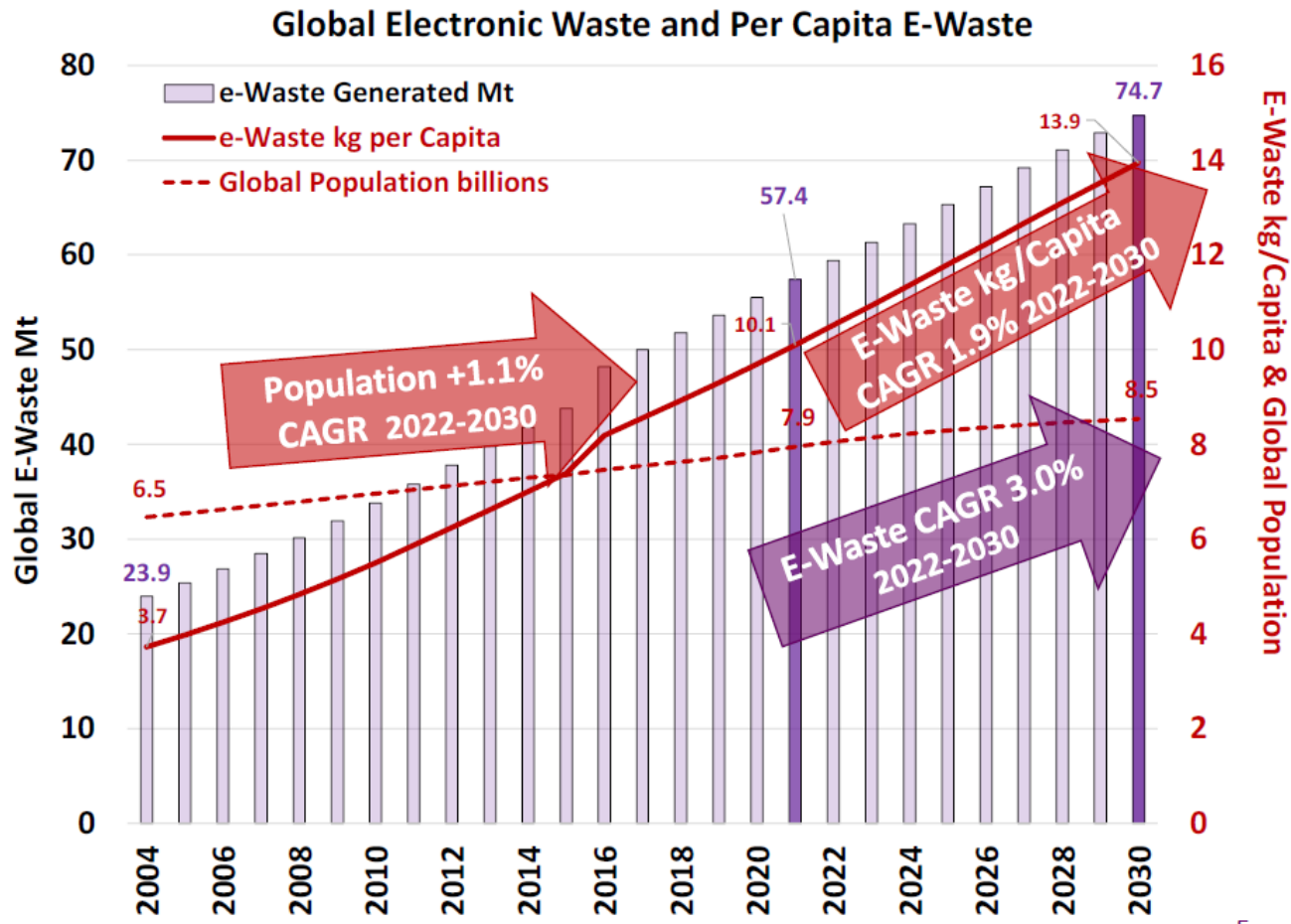
3 New Basel regulations

# Total market size Circuit boards

Volumes by Origin (in kt)	2018	2019	2020	2021	2022	CAGR 2018-22
Europe	290	295	300	240	252	-3%
Middle East	20	25	30	27	29	10%
North America	235	250	265	228	245,1	1%
South America	20	25	30	27	28,4	9%
ROW	100	125	150	120	129	7%
<b>Total</b>	<b>665</b>	<b>720</b>	<b>775</b>	<b>642</b>	<b>683,5</b>	

- This is basically in line with smelter capacities

# So why are we seeing investments



- Higher level of disposable income
- Urbanization
- Industrialization
- Higher consumption rates of Electronics
- Short life circles
- IoT (Internet of things)
- **New regulations to push recycling rates**

# Approx market volumes

Total worldwide WEEE volume: approx. 53million t (2020) and 73Mt (2030)

Only approx. 17 - 20% got recycled

(8% end up in household bins in EU)

Recycling rates:

Europe: 42 %

Asia: 11%

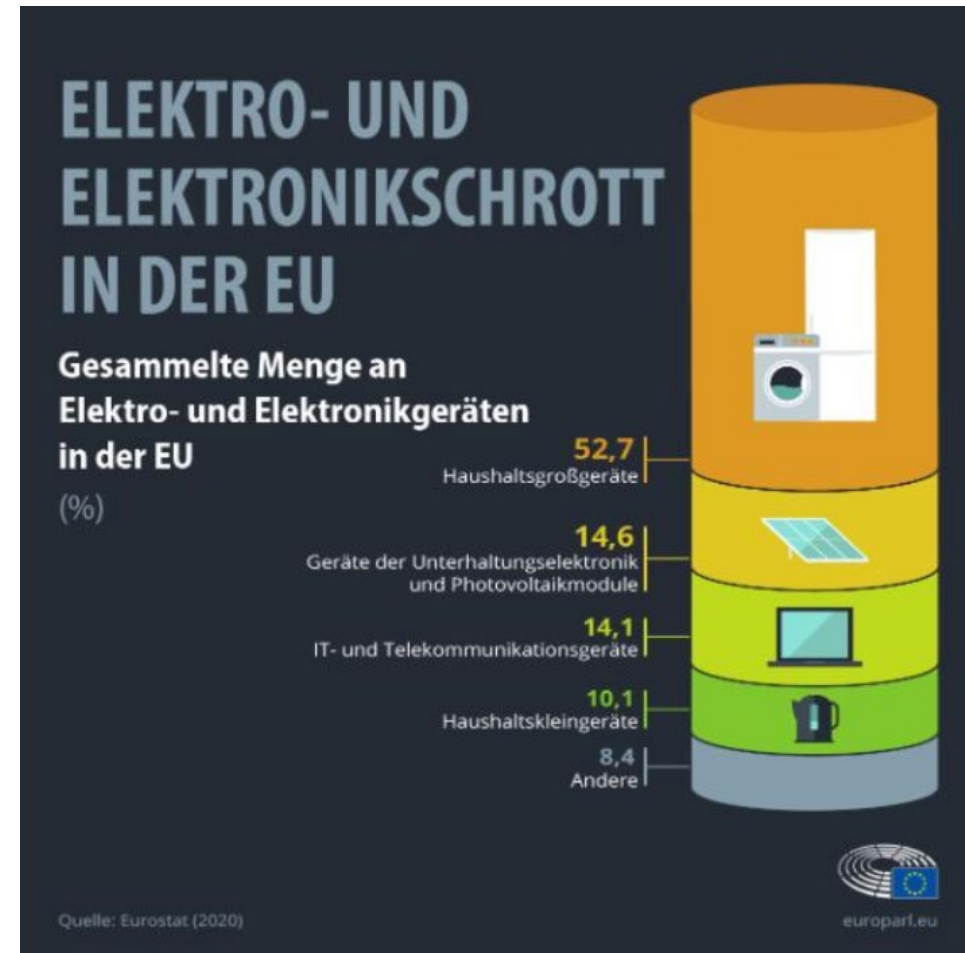
Americas: 9%

Oceania: 8%

Africa: < 1%

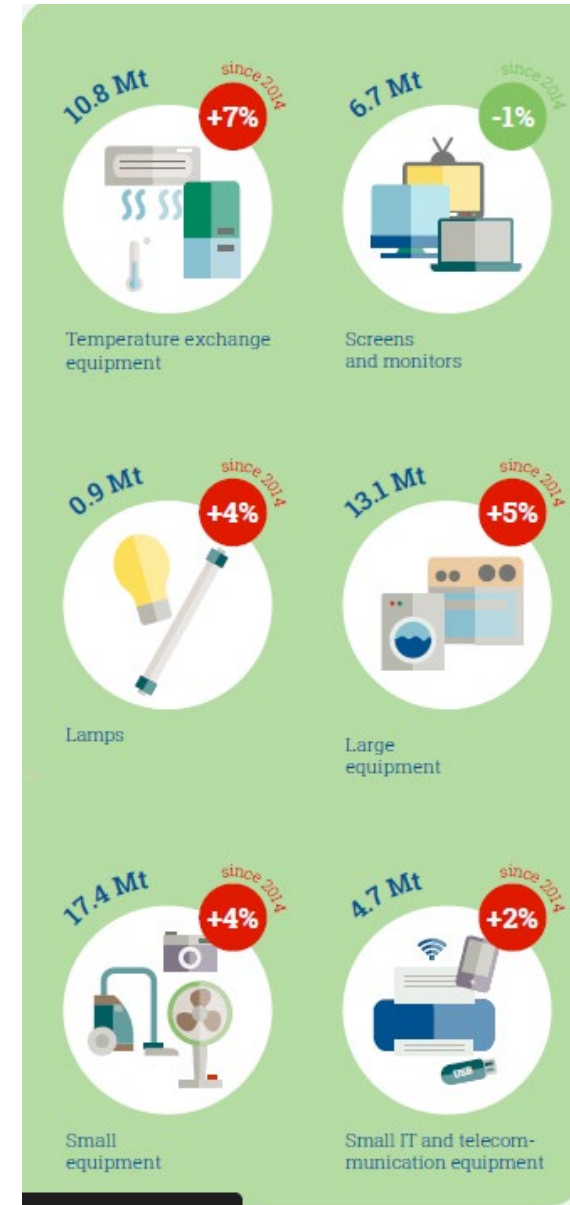
Approx. 7 - 15% as second hand products

Second hand normally to regions with lower recycling quotas



# What is growing on WEE

- Highest growth (7%) in temperature exchange equipment
- Larger equipment 5%
- Lamps 4%
- Small equipment 4%
- Small IT and telecommunication equipment 2%
- Screens and Monitors down 2%





# Aurubis Richmond: Pursuit of growth options in North America

Aurubis Richmond



# Pursue growth options: Aurubis recycling plant in Richmond, USA, as a modular concept



## Pursue Growth Options

Investment  
~ **€ 650 million**

EBITDA p.a.  
~ **€ 160 million**  
(by 2025/26)

Start of production  
following ramp-up  
phase  
**mid CY 2024**

~ **180,000 t**  
input material  
~ **75,000 t**  
blister copper output

Aurubis creates frontrunner position in highly attractive US recycling market with very limited competition and significant annual growth rates of 4-6 % (CAGR) through 2035.

Aurubis Richmond marks milestone to deliver on updated growth strategy, unlock new growth areas, and further strengthen earnings profile.

Attractive location in Richmond, Georgia, competitive advantage by capitalizing on existing know-how and proven technologies.

Expansion of multi-metal portfolio with new materials.

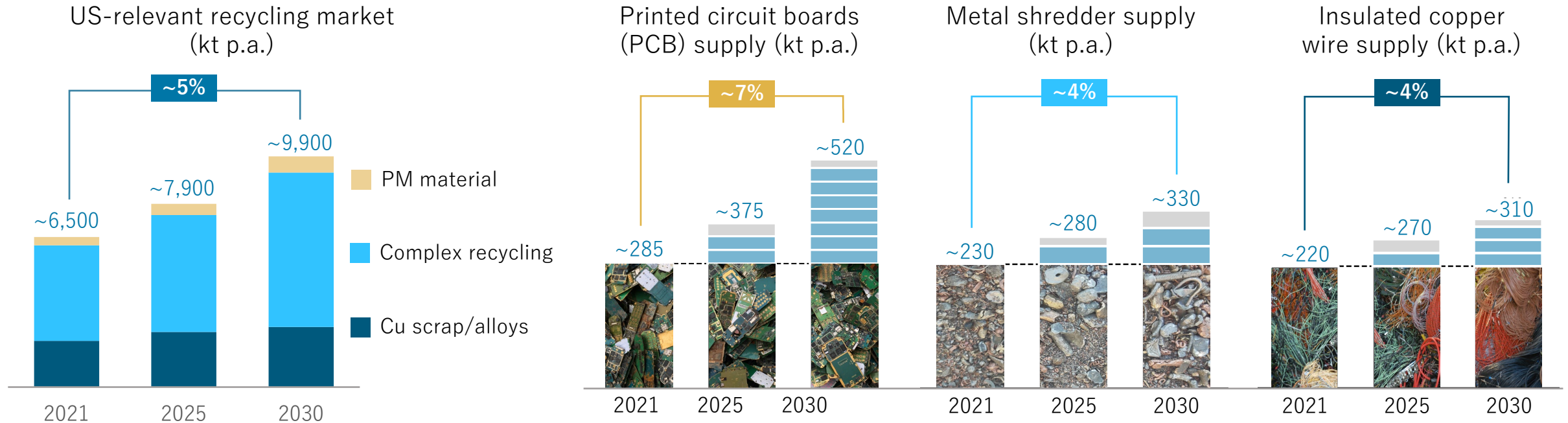
Easily adjustable approach allows for quick adaptation to changing market demands.

» Project fully in line with Aurubis' sustainability targets and ambition to strengthen and expand our position as the most efficient integrated smelter network worldwide.



# 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

# New Basel regulation

## Basel Convention E-waste Amendments



**The fifteenth meeting of the Conference of the Parties to the Basel Convention (face-to-face segment of COP-15 , 6-17 June 2022) adopted amendments to Annexes II, VIII and IX to the Convention with the objectives of enlarging the control of transboundary movements of e-waste and making all electronic and electrical waste subject to the prior informed consent (PIC) procedure.**

The following changes were made to Annexes II, VIII and IX to the Convention:

- Annex II (waste that requires special consideration: subject to the PIC procedure): addition of new entry Y49 covering all e-wastes, its components and wastes from the processing of e-waste (e. g. fractions from shredding), except for those e-waste covered by entry A1181 (in Annex VIII);
- Annex VIII (waste presumed to be hazardous: subject to the PIC procedure): addition of new entry A1181 covering hazardous e-wastes, its components and wastes from the processing of e-waste (e. g. fractions from shredding), and deletion of existing entry A1180;
- Annex IX (waste presumed not to be hazardous: not subject to the PIC procedure): deletion of the existing e-waste entries B1110 (e-wastes) and B4030 (single-use cameras).

The new entries become effective as of 1 January 2025.

# New Basel regulation

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- Small amendment -> big impact
- All transboundary circuit board shipments and Electronic scrap shipments to be notified
- In Europe we have seen this for the UK and Switzerland already
- Will authorities have enough capacities and are they aware of what is coming?
- Besides paperwork it also involves money (bank guarantees).
- Only for Aurubis we expect well over 100 new notifications.



**Start the process early**



# Thank you