



REMONDIS

Circularity for an emissions-neutral economy

RETHMANN-Group

Revenue *:	21,2 bn € ¹⁾
Equity:	> 4,5 bn € ²⁾
Legal entities	> 2.400 ³⁾
Employees:	88.000



34,0%

REMONDIS®

- Water
- Recycling
- Services

Revenue (€ mn)	11.500
Employees	40.000

RHENUS LOGISTICS

- Contract Logistics
- Freight Logistics
- Port Logistics

Revenue (€ mn)	7.000
Employees	37.500

SARIA®

- High-quality goods from animal by-products
- Producer of renewable energy
- Service provider for the agricultural and food sector

Revenue (€ mn)	3.000
Employees	10.500

transdev

- Operator and global integrator of innovative mobility solutions
- Operator of public transport networks (rail, bus, ferry, tram, cable car)
- Connected mobility and innovative on-demand solutions

Revenue (€ mn)	7.000
Employees	82.000

* The difference to the individual values of the three corporate divisions results from the consolidation at overall Group level. Excluding Transdev.

1) Preliminary figures
2) Estimated figures
3) Actual figures 2020

Two unchangable planetary limitations







- Mankind can only emit a limited amount of greenhouse gases into the atmosphere.
- The amount of degradable raw materials in this world is limited.

Global raw materials demand

- Global demand for raw materials will more than double by 2060 compared to 2011.

Materials use increase



	2011	2060
 Metals	8Gt	20Gt
 Fossil fuels	14Gt	24Gt
 Biomass	20Gt	37Gt
 Non-metallic minerals	37Gt	86Gt

Average global per capita income in 2060 will converge to 2011 OECD average levels

Global changes, 2011-2060

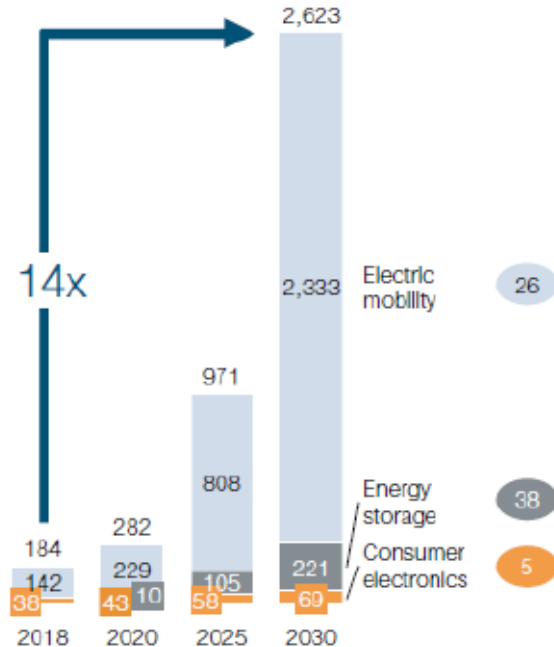


As the world's population grows, per capita consumption of raw materials would have to fall just to stabilize overall demand, but it actually continues to grow.

Growing global battery demand creates a need for recycling

Global battery demand by application
GWh in 2030, base case

CAGR,
% p.a.



- Global battery demand is expected to grow by a factor of 14 to reach 2600 GWh in 2030.
- Lithium-Ion batteries for recycling in the EU in 2030:
 - 500.000 tonnes
- The recycling capacity for lithium-Ion batteries in the EU in 2020:
 - 20.000 tonnes
- The recycling capacity needs to be increased by 25 times until 2030 to manage the flow of end-of-life batteries.

European Commission (2020): Impact Assessment Report. Proposal for a Regulation of the European Parliament and of the Council concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) 2019/1020

Battery-Recycling

- Batteries are a special case for recycling:
 - They contain a comparatively large amount of raw materials that are in particularly high demand.
 - With the current rapid increase in the number of alternative systems such as electric vehicles, the volume of end-of-life batteries will also increase with a certain time lag.
 - Incorrectly disposed of batteries cause an enormous fire hazard.



➡ Resource-saving and efficient recycling is particularly important.

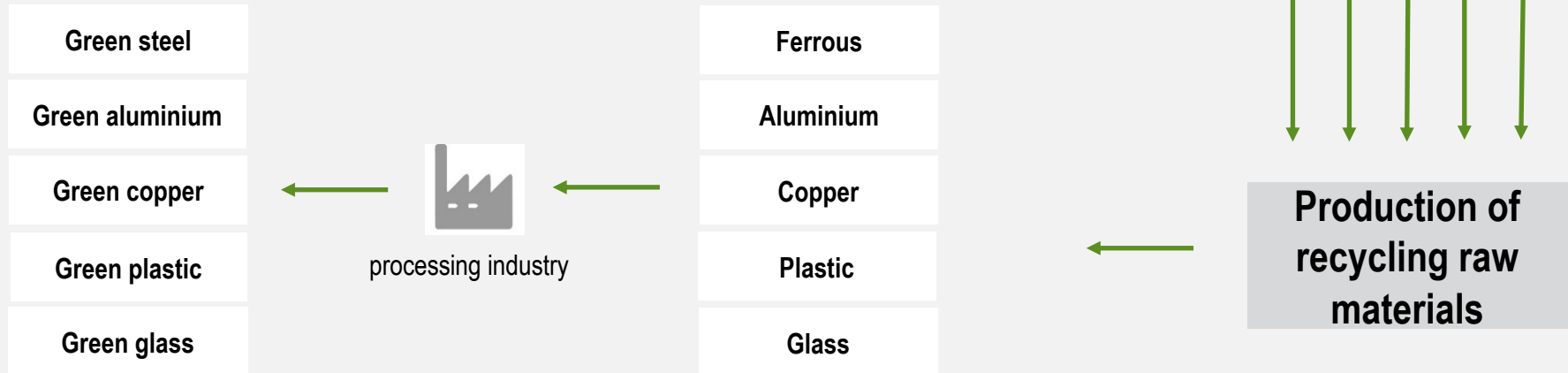
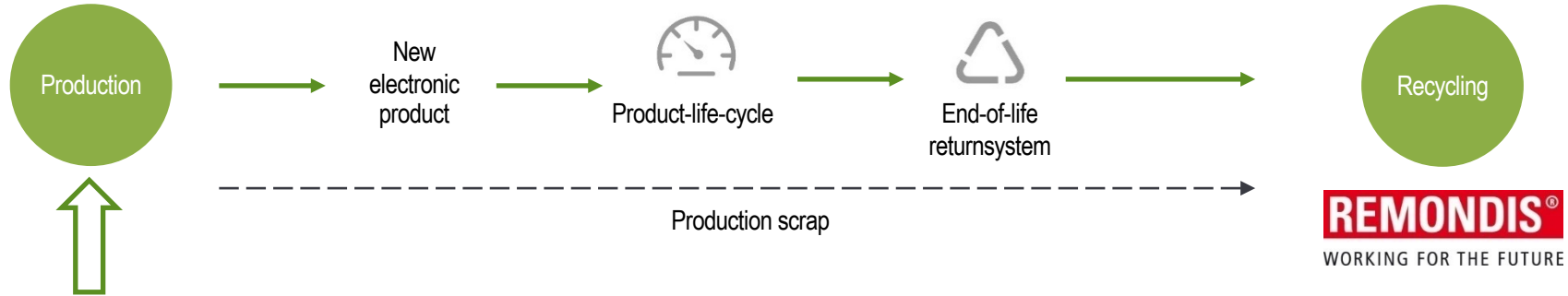
Battery passport

- The design variety of the battery packs and the use of different cathode materials, such as nickel-manganese-cobalt or lithium-iron-phosphate, pose major challenges.
 - Recycling-companies have to deal with hundreds of different types of batteries, with little to no information about the design and the used materials.
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- From the recycler's point of view, a certain degree of standardization would be desirable.
 - Different systems can be recycled if the necessary information is available, so batteries must have a digital passport that makes information easily and permanently accessible.

Waste from Electrical and Electronic Equipment (WEEE)

- WEEE will become increasingly important in the foreseeable future because of two main reasons.
 - 1. Depollution: WEEE contains a complex mixture of materials, some of which are hazardous. Without the right treatment WEEE would become a significant source of pollution.
 - 2. Recycling: Since many materials used in Electrical and Electronic Equipment are very scarce and raw material mining has severe ecological and geopolitical issues, recycling will become one of the main sources of critical raw materials.

Sustainability of WEEE recycling



Sustainability certificate of REMONDIS Electrorecycling GmbH

Savings using steel as an example

of
76.000 t/a

Output fractions of REMONDIS Electrorecycling GmbH

of
67.700 t/y

Substitution of primary raw materials

of
**360.000
MWh**

Energy in steelproduction

of
136.000 t/y

CO2-emission avoidance

of
190.000 t/y

Substitution of ores

*according to calculation by Fraunhofer Umsicht and TSR Recycling

Circularity starts with good products

- To make sure that recycled materials are once again used in the production cycle, there have to be incentives.
 - Only products that can be recycled to a high standard should be allowed onto the market.
 - Newly manufactured products should contain a minimum percentage of recycled materials.
 - Binding minimum criteria and targets are needed for environmentally oriented and sustainable public procurement.
 - In order for public and private buyers to be able to make environmentally oriented and sustainable purchasing decisions, the environmental compatibility and sustainability of all products must be accessible in the form of a label or product pass.