



# From Exploration to Recycling

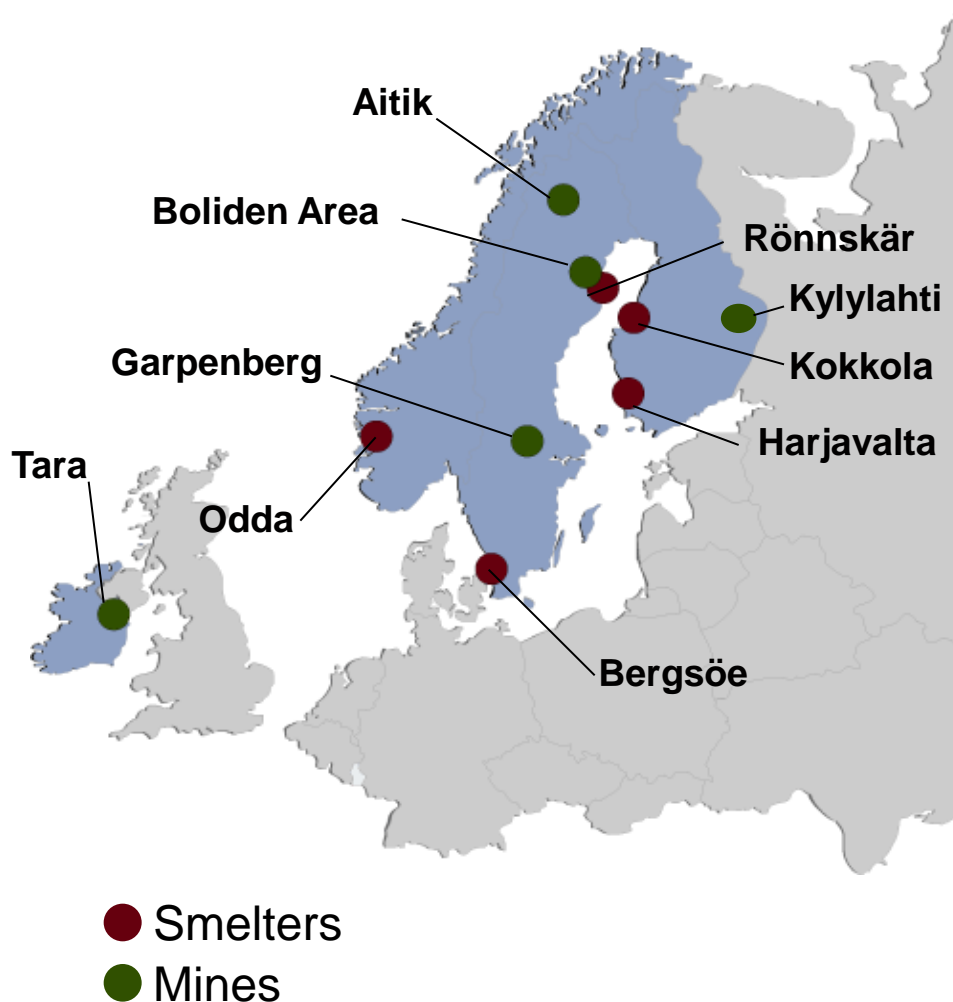
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**THE BOLIDEN**

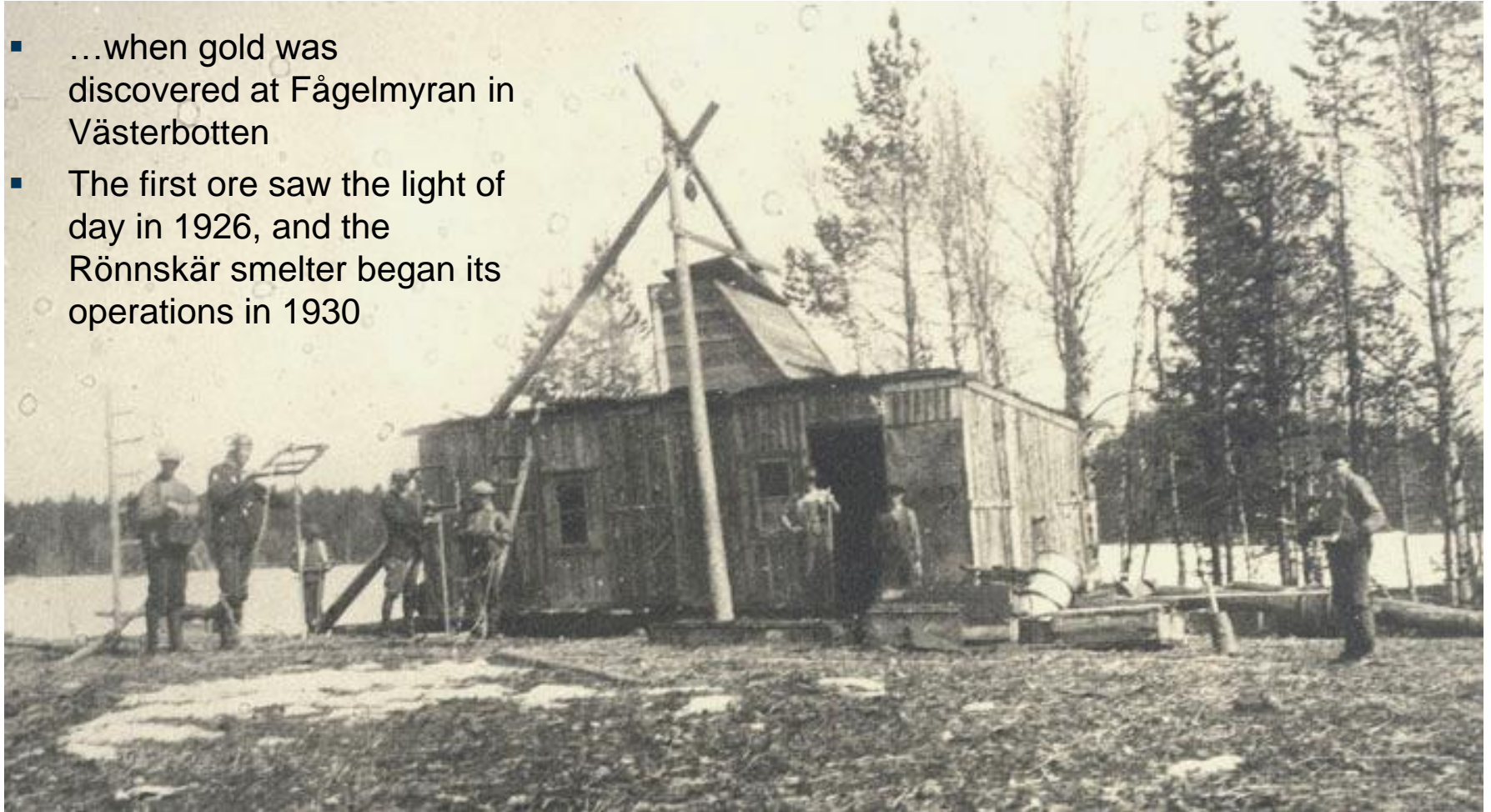
# A European base metals company



- Zinc, Copper, Gold, Silver, Lead
- Mining and Smelting
- Global leader in e-recycling
- High environmental performance
- In-house project execution resources
- Tech leader

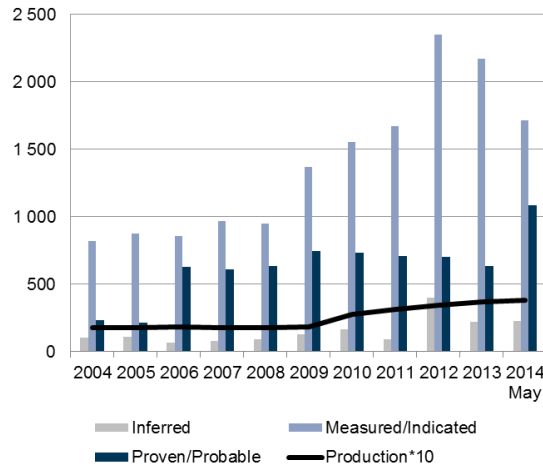
# It all started with exploration...

- ...when gold was discovered at Fågelmäran in Västerbotten
- The first ore saw the light of day in 1926, and the Rönnskär smelter began its operations in 1930

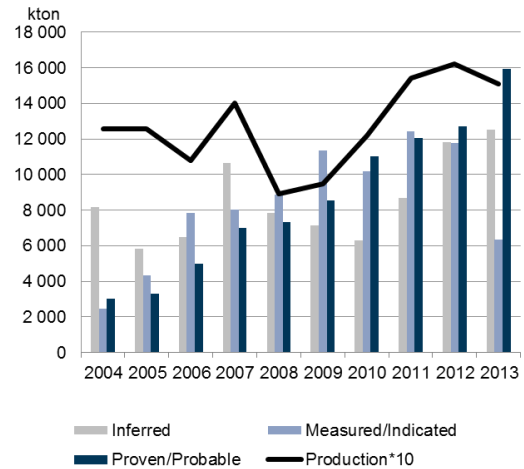


# Mineral Resources and Reserves

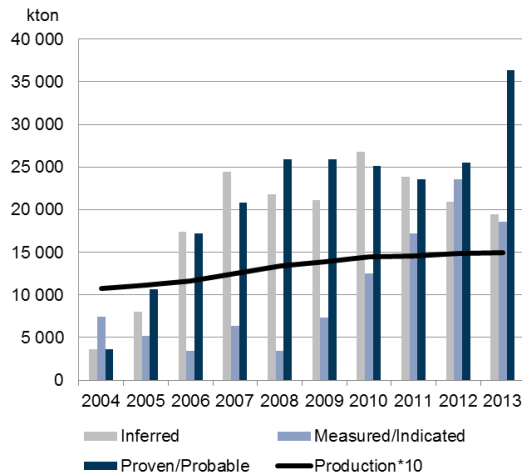
## Aitik



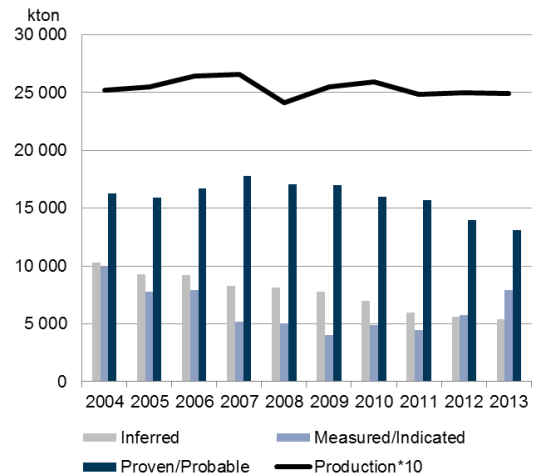
## Boliden Area



## Garpenberg



## Tara



# Aitik expansion 2009-2014

- Competitive position
  - High productivity
  - Favorable stripping ratio
  - Gold by-product
- From 18 to 36 mt of ore
  - Target 36 mt reached 1 year ahead of plan
- Capex SEK ~6.2 billion 2006-2010



Mt	2009	2010	2011	2012	2013
Ore production	18.8	27.6	31.5	34.3	37.1

# Kankberg – mid 2012

- One of five mines in the Boliden area
- Production
  - Ore 320 kt
  - Gold 37,000 troz<sup>1)</sup> (high yearly variations)
  - Tellurium 41 t<sup>1)</sup>
- Life of mine >8 years
- Capex MSEK ~1,000



<sup>1)</sup> Metal in concentrate

# Expansion Garpenberg

- Capex SEK ~3.9 billion
- Profitable investment with robust financials
  - Period 2011 - 2014
- New industrial area
  - New underground facilities
  - New concentrator
  - New infrastructure
- From 1.4 to 2.5 mt of ore/year
  - 2 Mton 2014
  - 2.5 Mton pace end 2015
- Productivity increases from high levels
- Improved competitive position
  - Production cost per tonne of ore decreases



# Silver recovery at Kokkola

- Increasing silver content in Zn concentrates
- Proven technology
- 25 t silver
- Full production expected end Q3 2014
- Capex 27 MEUR (~240 Msek)
- High return





# Aitik45

- Decision to invest 600 MSEK 2014-2015, primarily for
  - Crusher at surface
  - Water management
  - Electricity supply
  - Smaller de-bottlenecking
- A first step to enable 45 mton/y
- Mine plan
  - Reserves 1 085 (633) mton
  - Life of mine 2040
  - Average reserve grade
    - Cu 0,22 (0,24) %
    - Au 0,14 (0,14) g/ton
- Continued evaluation of
  - In pit crushers, conveyor system
  - Tailings management
  - De-sulphurization
- Maintenance capex
  - Pushback, tailings
  - Other including mobile equipment



# Rönnskär – no 1 electronics recycling plant

An aerial photograph of the Rönnskär electronics recycling plant. The plant is a large, complex industrial facility located on a peninsula surrounded by water. It features numerous buildings, including several large, long, low-profile structures with gabled roofs, and a dense network of pipes and infrastructure. The surrounding area includes some greenery and smaller buildings, suggesting a residential or administrative area nearby. The water is a deep blue, and the sky is clear.

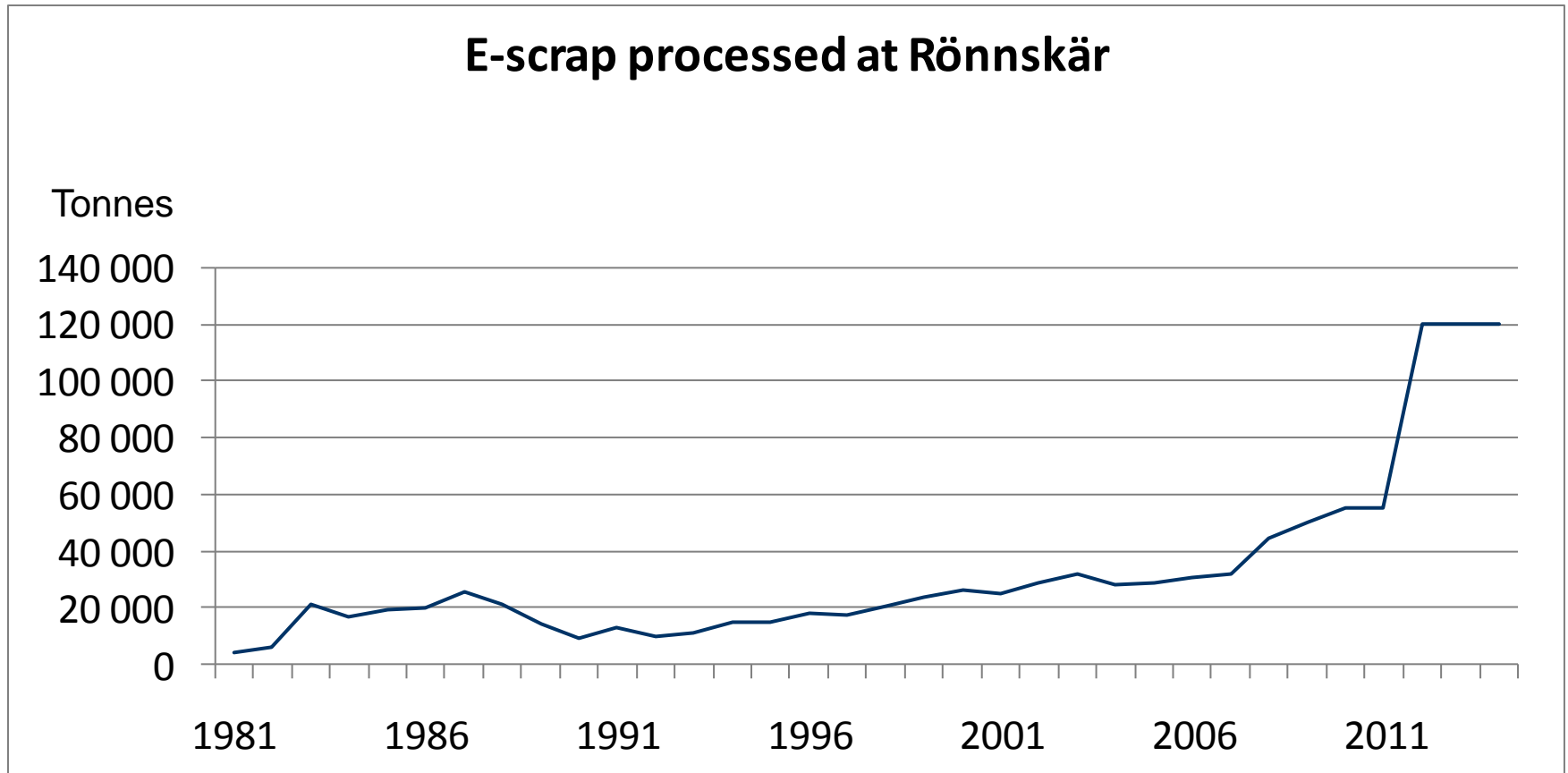
## Project execution

- Production started on time
- Capex, MSEK ~1,300 – on budget

## Project data

- Raw materials scrapped electronics
- 120,000 t/year capacity
- Gold, silver, copper production

# More than 30 years of experience in e-scrap smelting and recycling



# E-scrap recycling within EU – legislation will drive e-scrap volumes

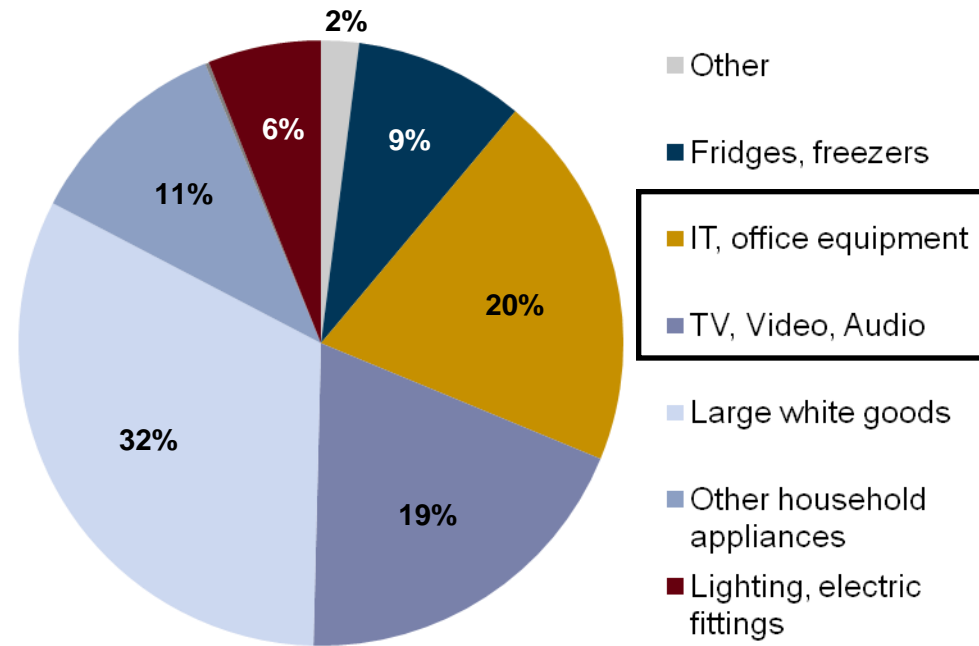
Existing WEEE\*-directive

Target to collect 4 kg per person and year

WEEE-directive 2016 (not yet decided)

Target to collect approx. 13 kg per person and year

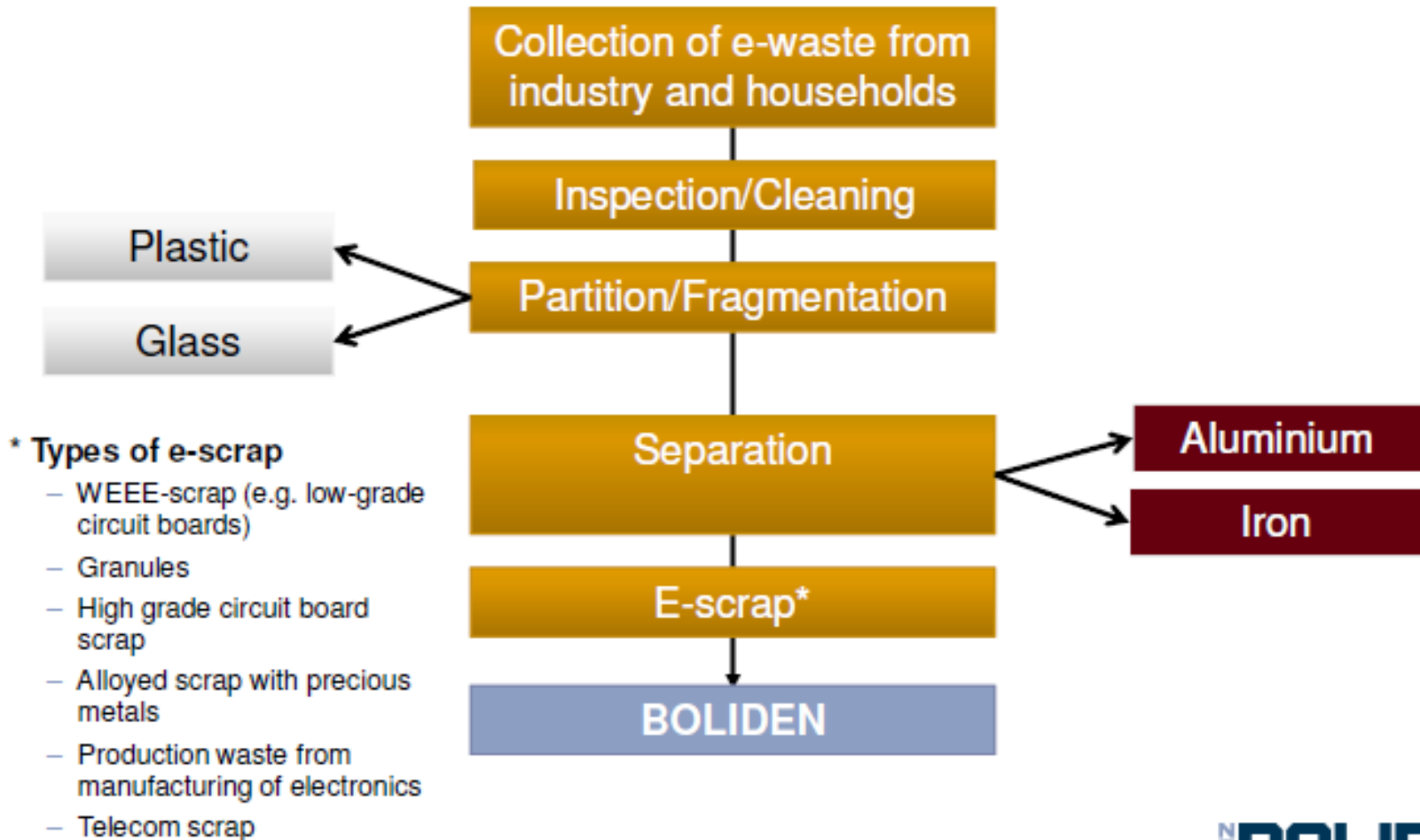
The average EU citizen's electronic product purchases currently equate to 24 kg of e-scrap per year



=main source of supply

\*WEEE = Waste from electrical and electronic equipment

# The value chain for electrical and electronic waste



# Electronic scrap's ways to Rönnskär



Europe:	70% of volume
Scandinavia:	20% “-
North America:	5% “-
Others:	5% “-

# Material handling



# New E-kaldo



**NEW BOLIDEN**



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*NINETY YEARS OF KNOWLEDGE*

