# nyrstar Nyrstar | Auby Site Visit

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# Safety On Site

- All the Safety instructions & PPE will be provided before the visit.
- Stay with your host and follow the pedestrian walkways.
- Don't touch anything.
- Smoking is not allowed on site excepted in designated areas.

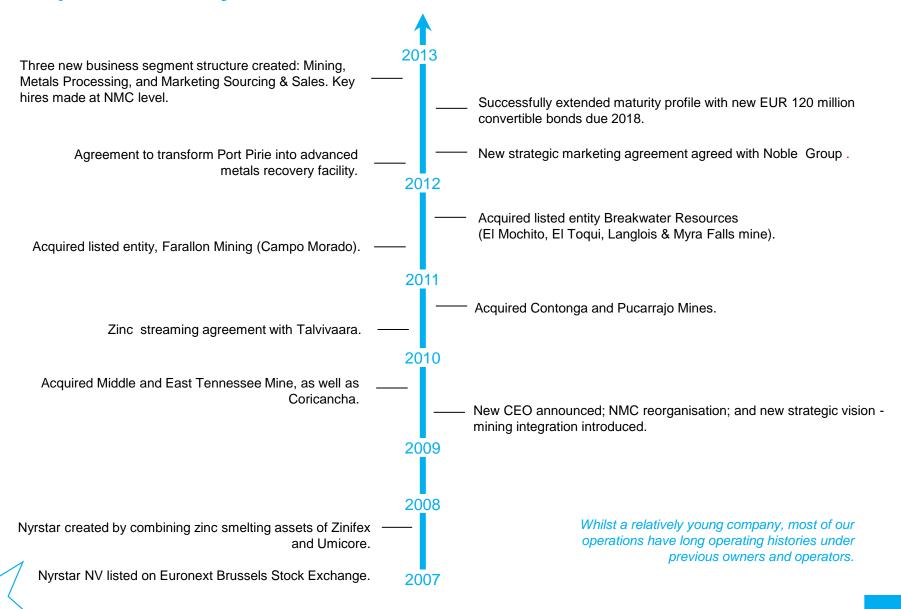
## **Programme**

- 1. Introduction to Nyrstar
- 2. Metals processing transformation
  - > Port Pirie Redevelopment
  - > Smelting Strategic Review
- 3. Auby & Indium: Nyrstar's vision in action
- 4. Outlook and strategic priorities



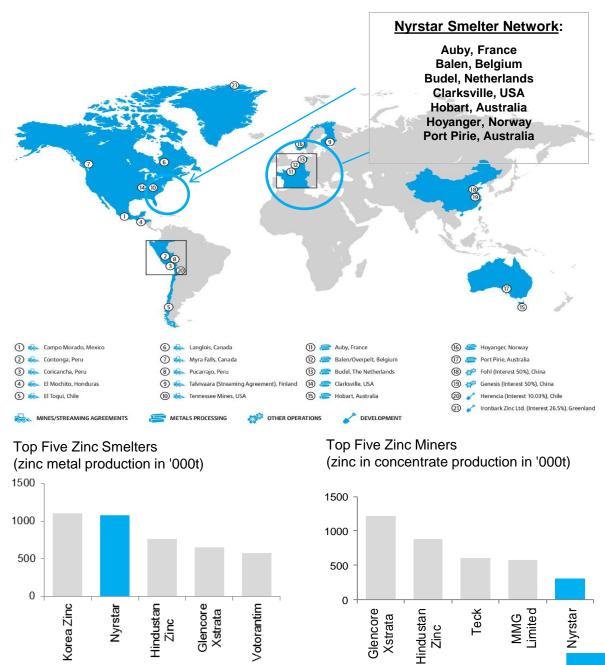
# Introduction to Nyrstar

## **Corporate history**



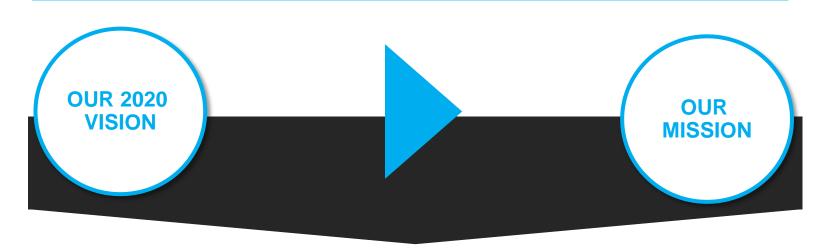
## **Nyrstar today**

- Integrated mining and metals business.
- One of the world's largest zinc producers.
  - 2013: 1.1 million tpa zinc metal.
  - 2013: 285,000 tpa zinc in concentrate.
- Market leading position in lead, and growing positions in other base and precious metals including copper, gold, silver.
- Strong exposure to resources fuelling urbanisation and industrialisation.
- Nine mining operations.
- Five zinc smelters, one lead smelter.
- Employing ca, 6,500 people across five continents. Corporate office in Switzerland.
- Primarily European and US institutional investor base; ca 40% Belgian retail investors.



## Nyrstar's vision

## Nyrstar 2020



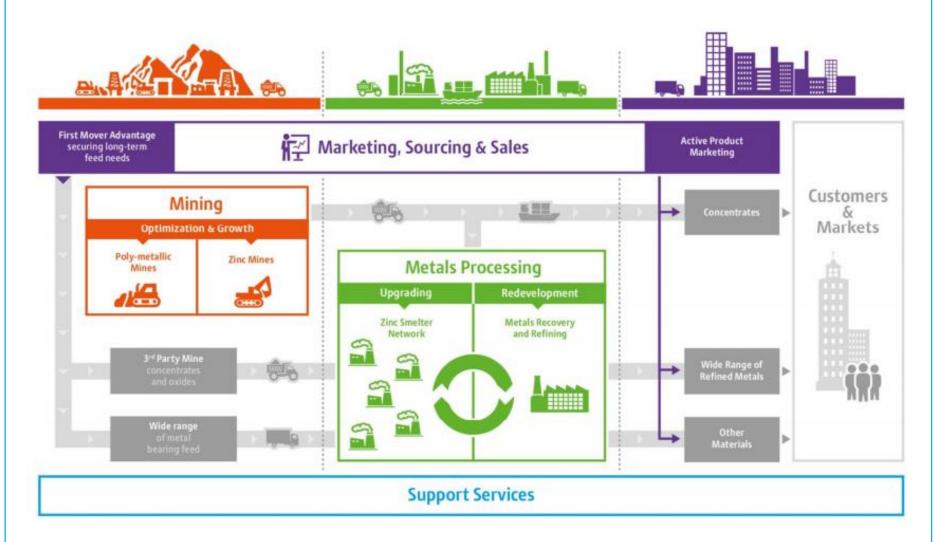
What we want to be

To be the leading integrated mining and metals business

What we need to do to get there

To capture the maximum value inherent in mineral resources through deep market insight and unique processing capabilities, generating superior returns for our shareholders

# Nyrstar operating model



# Outlook and strategic priorities

Port Pirie Redevelopment Metals Processing Transformation Mining Strategic Review

Focus on unlocking untapped value Minor metals extraction – e.g. Indium

Growth

**Operations** 

Strategy into Action

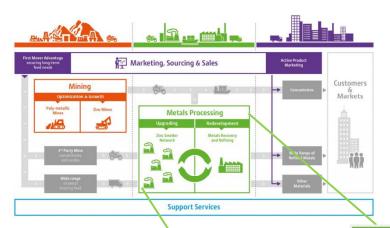
Support

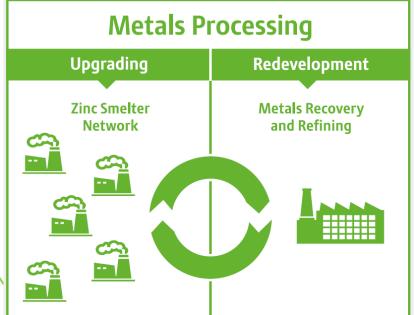
Cautious on short term outlook for commodities Remain confident in long term outlook and strategy Unique footprint and ownership of raw materials Clear commercial focus

CAPEX
Balance sheet
Continuous Improvement

# Metals Processing Transformation

# Metals Processing in context





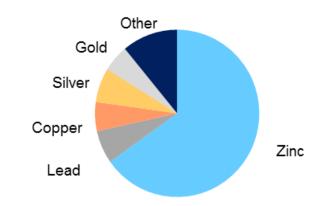
# Metals Processing: performance in 2013

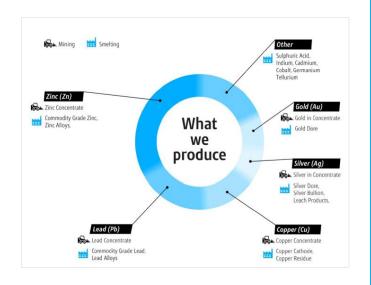
## • EBITDA EUR 149m – driven by higher realised premiums

### Production

- Production exceeded FY2013 expectations.
- 1,088,000 tonnes of zinc metal.
- 179,000 tonnes of lead metal.
- H2 2013: new half yearly record: 569,000 tonnes (+10% on H1 2013).
- Successful cost reductions realised through Project Lean
- CAPEX at EUR96m down 16%
  - EUR 74m for sustaining capex and shutdowns.
  - EUR 17m invested in growth and Transformation projects.
- Investing in the Metals Processing segment
  - Port Pirie Redevelopment; investment decision 30 April.
  - Smelting Strategic Review: Transformation of the Metals Processing Segment.

### FY 2013 Gross profit per metal





## Metals Processing: the opportunity

- Our industrial footprint provides a unique step change opportunity to deliver on the Nyrstar Mission and unlock untapped value.
- Nyrstar is one of the world's largest zinc producers.
  - **Metals Processing**: Leading position in zinc smelting, and one of the world's largest primary lead smelting facilities.
  - **Mining**: Top 5 zinc miner by volume, producing significant volumes of other metals.

- Three key value drivers:
  - 1. Value in raw material flows in particular, our own mines and residues from zinc smelting.
  - 2. Our industrial footprint (Mining and Metals Processing).
  - 3. Our marketing, Sourcing & Sales strategy.

# Metals Processing: leveraging our footprint

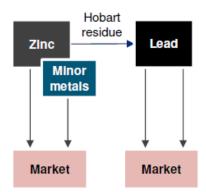


Redevelopment



Debottlenecking projects

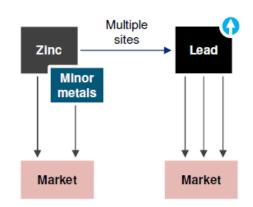
#### **Current operations**



#### TC driven zinc and lead sourcing

- · Largely volume focused in zinc and lead
- Focus on treatment charges and zinc free metal

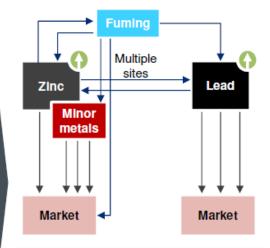
#### Port Pirie Redevelopment



#### Residue driven lead strategy

- Replace aging sinter plant with new oxidation furnace and upgrade other parts of site
- · Technology proven and highly flexible
- Increases process flexibility to treat significantly increased volumes of zinc residues and complex lead concentrates
- Increased integration with zinc sites

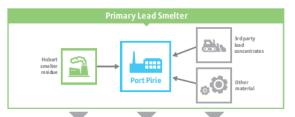
### **Metals Processing Transformation**



#### Value in feed material strategy

- View raw material flows through a different lens: significantly increases value
- Unlock increased value through investments into debottlenecking smelters, building fuming capacity and minor metals extraction
- Blueprint includes ≈25 projects

# **Update on Port Pirie Redevelopment and Metals Processing Transformation projects**







### **Port Pirie Redevelopment**

- Completion of pre-feasibility study in 2013. Q1 2016 commissioning is viable.
- Discussions with stakeholders for the funding and support package progressing well.
- Investment decision expected with Q1 ÎMS.
- Construction anticipated in 2014 / 2015.

## **Metals Processing Transformation**

- Completed first investment in Q4 2013 of EUR 5m with acquisition of ERAS Metals in Norway (now Nyrstar Hoyanger).
- Further investments planned for 2014 (EUR15-40m).
- Beyond 2014, potentially through a self funding sequential investment approach including third party contributions.

# **Metals Processing Transformation**

Smelting Strategic Review

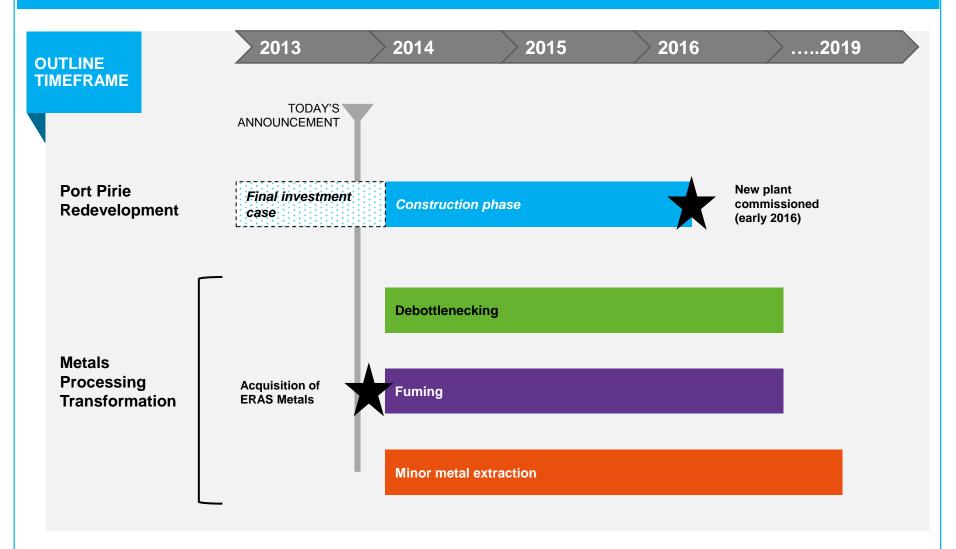
- Key outcomes from the SSR:
  - Identified significant amount of non-realised value in feed materials.
  - Compelling business case to apply technical modifications across smelting network: **Metals Processing Transformation.**
- Metals Processing Transformation
  - To drive earnings and free cash flow by higher gross profits and margins.
  - Capital investment: approximately EUR280m, covering around 25 unique projects with an expected IRR of 25-30%.
- Projects fall under three categories of investments:

Debottlenecking smelters

Building fuming capacity

Minor metals extraction

## MPT blueprint could be fully operational by 2019



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Auby &	Minor	Metals	Extract	tion: N	yrstar's	s vision	in act	ion
$\checkmark$								

## Metals Processing Transformation: Auby

- Mid-scale electronic zinc smelter acquired in 2007
- Connected to essential infrastructure & European Smelter Network
- Technology: roast, leach, electrolysis (RLE) smelting
  - Output: Zinc (Special High Grade and battery zinc), sulphuric acid, indium.
- Innovation key element
- Implementation of MPT
  - Increase the range of metals and recovery capacity and increase capacity for minor metals extraction.
  - Primary metal: zinc > Increasing focus on zinc by-products: sulphuric acid, Auby leach product, copper, indium cement and indium metal.
- Minor metals extraction: Indium started in 2012



- Strong, growing global demand: main application in LCD screens.
- Available through feed materials.
- Compelling financials: availability of feed materials and low cost of extraction versus high commodity price and margins.





**Production/Capacity (2013)** 

Zinc metal: 152,000

tonnes/172,000tonnes

Sulphuric acid: 164,600 tonnes

Indium metal: 32,7000

tonnes/48,000 tonnes

# Auby: the metals

## **Zinc**

- **Applications**
- Galvanization
- Alloys
- Industrial uses
- Vitamin/Mineral supplements

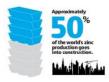
## **Sulphuric Acid**

Industrial production of chemicals



- LCD screens
- Electric components
- Solders and alloys

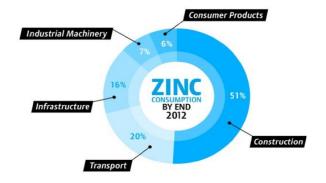
#### CONSTRUCTING A GREAT FUTURE FOR ZINC.



ZINC. A MOVING STORY.



ZINC. AND THE WHEELS OF INDUSTRY.



#### **LEAD'S FUTURE IS ELECTRIC.**





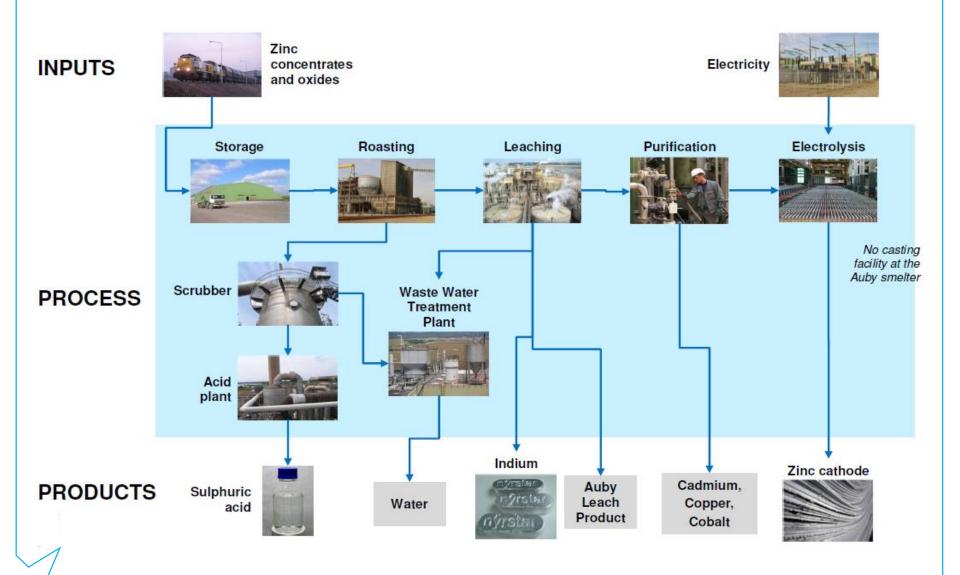






Zinc consumption by first use (2012)

# Auby: process flow



## Indium

## **Characteristics**

- · Very soft, silvery-white metal with a brilliant lustre.
- Classed in "rare metals", 61st in crystal abundance.

# Indium market dynamics

- Price dynamics: increasing influence of speculative forces.
- The **cost of Indium is inelastic**: relatively low amounts used in final products.
- · Limited availability of Indium substitutes.
- Demand mainly driven by consumer electronics industry and PV installations flat screen TVs and tablets in both emerging and developed countries.
- Global market key customers: Japan, Korea, China.

## **Primary Use**

To thin film coating - flat panel displays

PV panels, LCD, and semiconductors









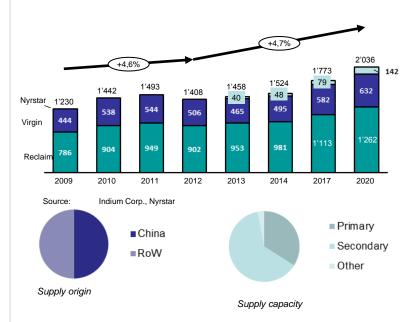


### **Supply**

2012 global supply: 1,408mt

### China primary supplier of refined Indium (50%)

#### Indium supply 2009 - 2020



Historic price levels: USD/kg 85-1,040

2012: USD 525/kg

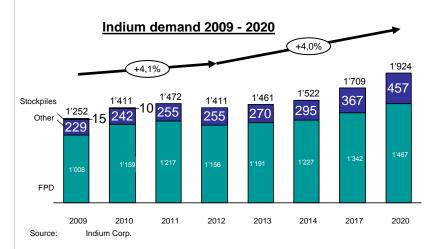
Short-medium term price projections: USD 400-550/kg

**Price drivers**: supply/demand, Fanya exchange, lack of substitutes

#### **Demand**

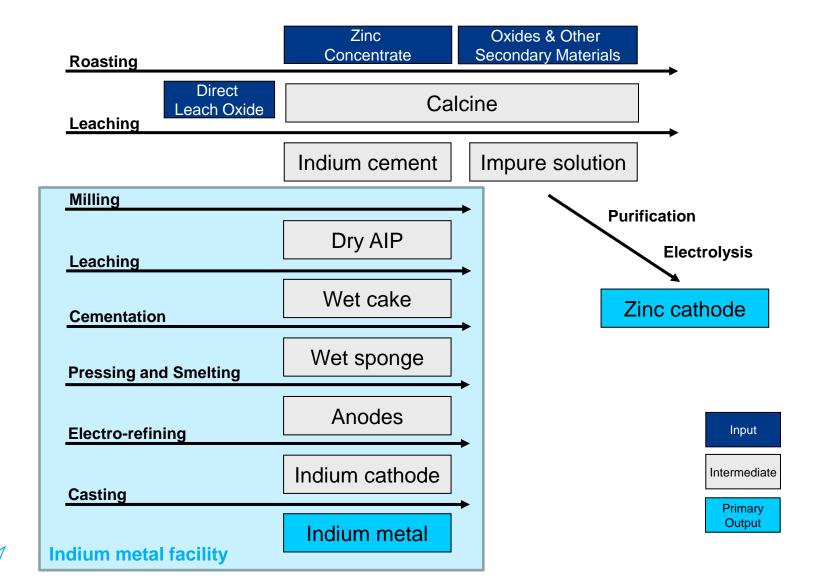
Demand primarily driven by growth in FPD volumes and size Secondary demand driver: solar PV panels

#### Expected growth rate ~4.0% until 2016



- FPD 2012-14 CAGR ~ 3.03%
- Other Indium uses ~ 7.6%
- Future growth projections range from 5-15% p.a.- Nyrstar maintains conservative estimate of ~ 4.0%
- Previous demand forecasts assumed a constant recovery rate in the secondary cycle – however, increased recoveries within the ITO circuit resulted in lower than anticipated demand for primary Indium
- While Japan accounted for approx. 30% of primary Indium demand in 2009, China is now the leading consumer of Indium

## **Process overview**



# The product



- The indium metal produced at Nyrstar Auby is available in 4N8 grade (99.998% purity).
- ITO grade, can be used in flat panel displays (FPDs).

**Pre-casting** 



**Cast ingot** 

Chemical specification	Composition (%)		
Indium (In)	99.998		
Lead (Pb)	0.005		
Tin (Sn)	0.005		
Copper (Cu)	0.002		
Nickel (Ni)	0.005		
Iron (Fe)	0.001		
Cadmium (Cd)	0.001		
Thallium (TI)	0.002		
Zinc (Zn)	0.002		
Aluminium (AI)	0.002		

Shape / package	Normal weight	Value
Ingot 1kg	1.0 ± 0.1	150 x 40 x 25
Ingot 5kg	$5.0 \pm 0.5$	252 x 92 x 32

Physical property	Unit	Value		
Density	kg/dm³	7.310		
Melting point	°C	156.6		
Solid (at 20°C)				

# Outlook and strategic priorities

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