

## Positioning for growth

Investor presentation October 9, 2018

## Positioning for growth



Investment highlights of new 500kt world-scale MDI plant in USA



Attractive MDI industry with above GDP growth requires new world-scale capacities



Satisfy global demand and accompany industry growth
by increasing Covestro global MDI nameplate capacity of 1,470kt by 2018e to 2,230kt by 2024e



Extend leadership positions in the industry to become global #2 and USA #1 by 2024e<sup>(a)</sup>



Improve cash cost position worldwide for long-term competitiveness by investing in full chemical chain including precursors and operating world-scale units on existing sites



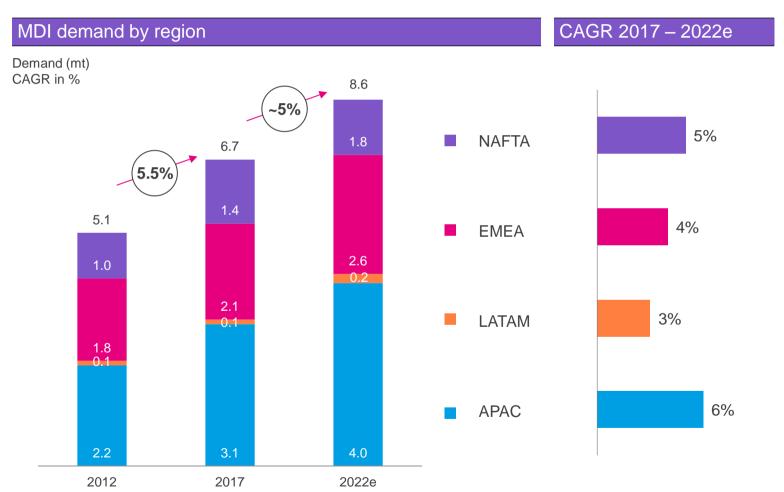
Deliver attractive returns

with mid-term debottlenecking and world-scale investment into long-running assets

## Diverse end-markets in all regions support robust growth



## Global MDI industry demand



Underlying application growth driver <sup>(a)</sup>	
CASE <sup>(b)</sup>	4%
Apparel	7%
Appliance	4-5%
Construction	5%
Automotive	4%
Diverse industries	4%

- Growing demand for insulation foam to comply with regional energy efficiency directives, particularly in developed economies
- Increase in global construction activity
  - broader macro upturn
  - high growth in emerging economies
- Higher consumption of appliances (refrigerators)
- Steady GDP-driven growth in other applications, e.g. CASE<sup>(b)</sup>, textiles and footwear

Positioning for growth | MDI

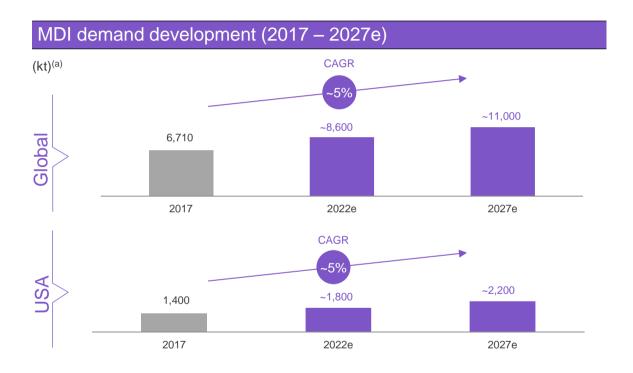
(a) Figures represent CAGR 2017-2022e; assumes global GDP CAGR 2017–2022e of ~3% (b) CASE: Coatings, adhesives, sealants and elastomers

Source: IHS. Covestro estimates

## Demand growth to outpace forecasted supply additions



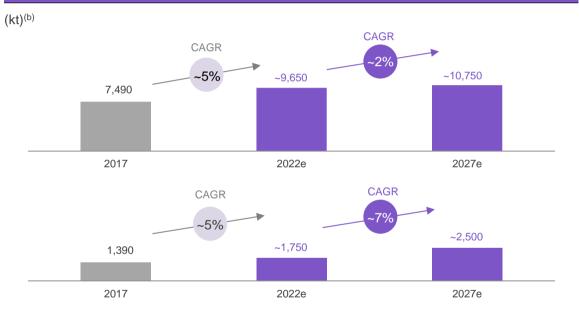
## MDI industry demand and supply







#### MDI supply development (2017 – 2027e)



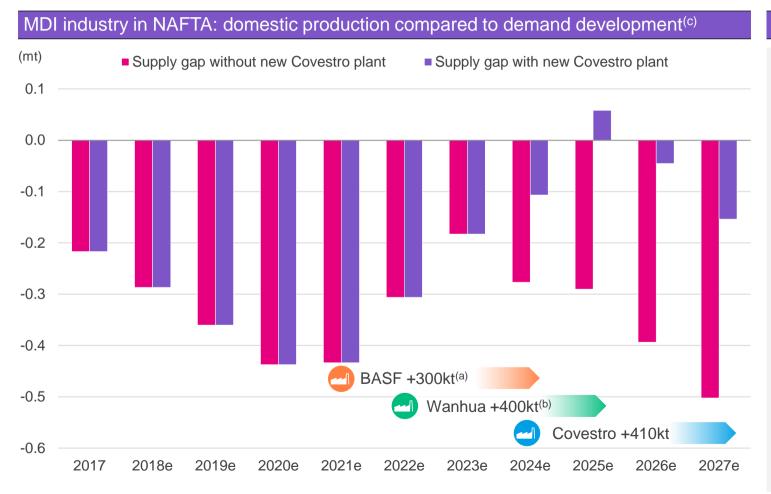
- Major additions expected until 2022e: BASF, Covestro, Dow/Sadara, MCNS, SLIC, Wanhua
- Major additions expected between 2022e and 2027e: Covestro, BASF, Wanhua
- CAGR 2017-2027e at 3.5%, thus still new capacities missing to cover demand

Notes:

## Regional demand growth requires new world-scale plants



### MDI imports to be substituted by local production



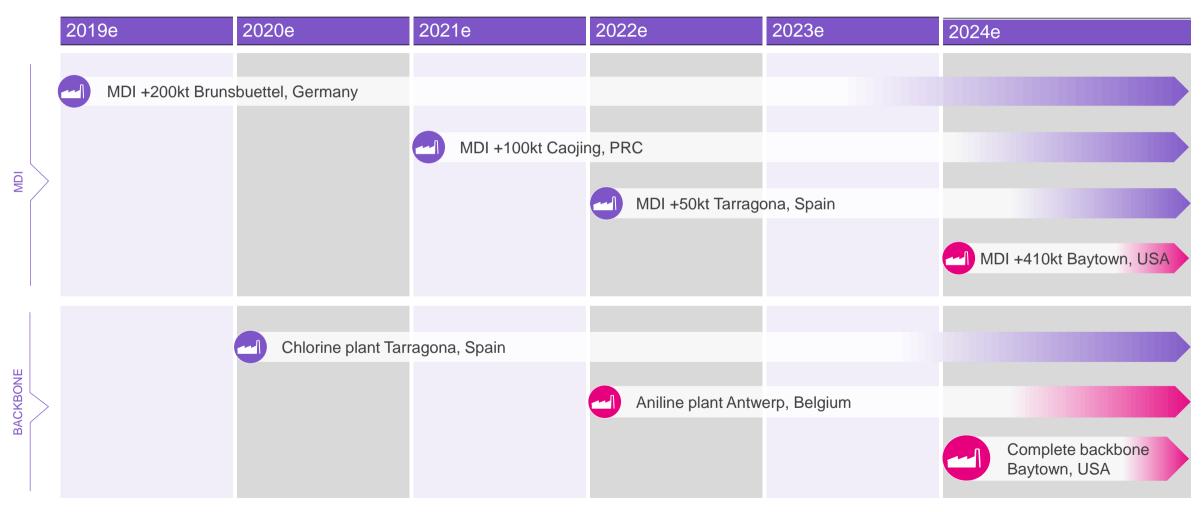
#### Covestro industry assumptions

- MDI demand: above GDP growth rate at CAGR ~5%
- NAFTA region is currently net MDI importer with further increasing supply gap
- Announced capacity addition by BASF expected to start 2021e and ramp up until 2025e<sup>(c)</sup>
- Announced capacity addition by Wanhua expected to start in 2022e and ramp up until 2023e<sup>(c)</sup>
- As of 2024e, a new supply gap would build up without another local world-scale plant
- Covestro world-scale plant with net capacity addition of +410kt expected to start in 2024e and to be quickly absorbed soon thereafter

## Growth through debottlenecking projects and world-scale plant



## Covestro planned MDI capacity additions



## Newly announced Covestro MDI investment projects

## New world-scale MDI plant in Baytown and aniline plant in Antwerp





#### New world-scale MDI plant of 500kt p.a., including complete chemical backbone

- Investment of around €1.5bn in new, highly efficient world-scale 500kt MDI plant on existing Baytown site, USA
- New plant to expand Covestro's Baytown capacity from currently 330kt p.a. to 740kt p.a. by 2024e
- Replacement of 90kt sub-scale plant, in operation since 1974, to extend leading cash cost position in NAFTA



#### **Tailored aniline supply ex Antwerp for Tarragona**

- Investment of around €0.3bn in aniline production in Antwerp, Belgium, by 2022e
- Ensuring a highly efficient, sustainable and independent supply for the Tarragona operations
- Design and process technology based on the newest comparable facility in Caojing, China.



Net capacity addition

740kt

Covestro capacity in USA by 2024e<sup>(a)</sup>



MDI producer in USA<sup>(a)</sup>

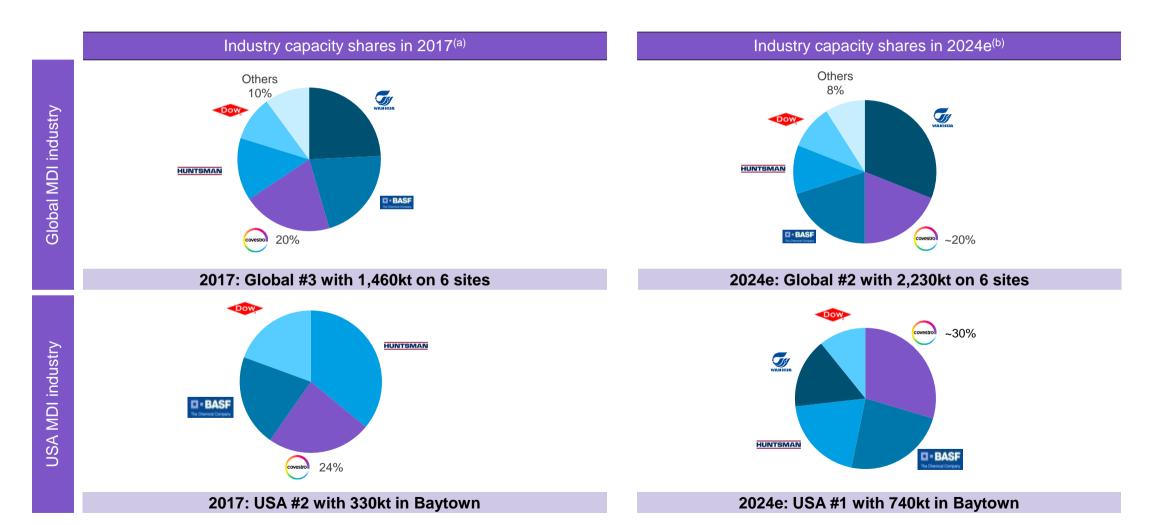


Attractive ROCE

## Covestro expanding its leadership position

## MDI production capacities and industry positions

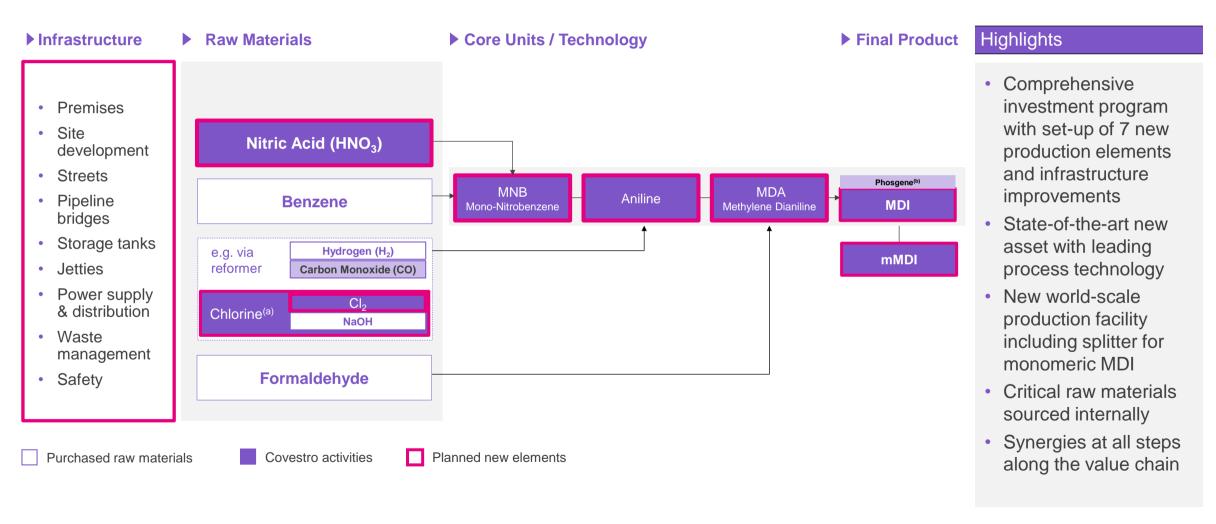




## Investments into full chemical chain for best synergies in scale



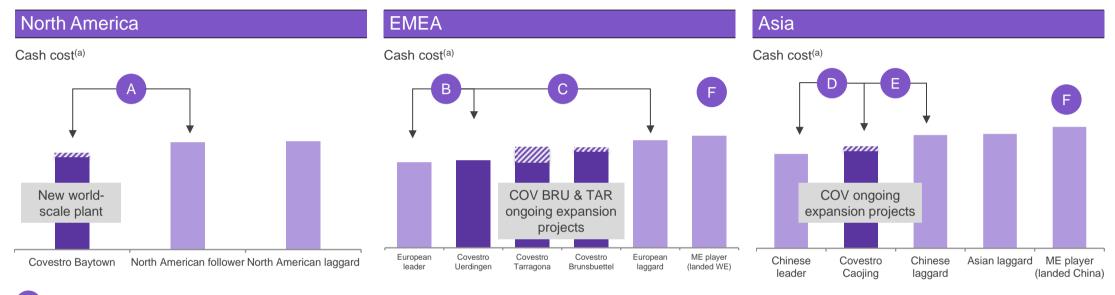
MDI Baytown: infrastructure, precursors and full MDI train, including monomeric splitter



## Further improving the leading cost positions in all regions

# covestro

## MDI industry cost curves per region



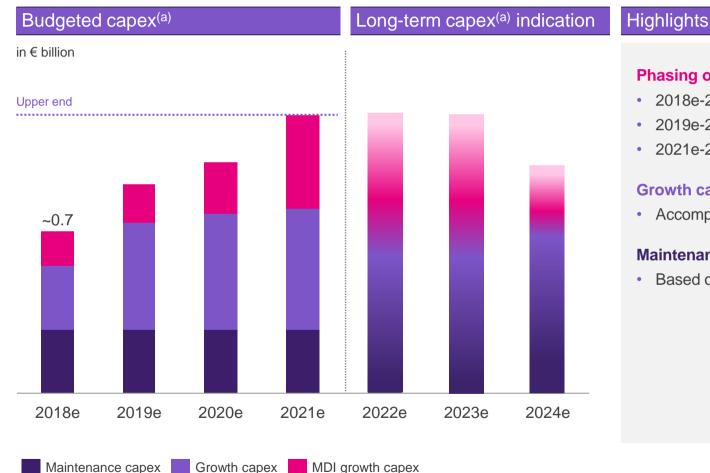
- A Extension of Covestro cost leadership through highly efficient world-scale plant and backward integration
- B European leader with large and energy-efficient MDI capacity plus cost-efficient raw material supply
- C Uerdingen more cost efficient relative to other Covestro facilities in Europe due to level of backward integration; expansion projects for BRU and TAR
- D Chinese leader with very strong backward integration including energy supply
- E Covestro ahead due to larger MDI train capacity and energy efficiency further specific cost reduction through expansion projects
- Benefits from low energy and natural gas prices, suffers from high investment level and required costly HCl recycling via ODC<sup>(b)</sup> electrolysis (no benefit from caustic soda by-product sales); plus estimated 90-140 \$/t bulk freight plus 6.5% import duty to WE and China

Notes:

## Investment into organic growth to deliver attractive returns



Covestro Group capex<sup>(a)</sup> development 2018e-2024e



#### Phasing of capex for MDI and precursors

- 2018e-2022e: ~€0.2bn for chlorine plant and debottlenecking Tarragona
- 2019e-2022e: ~€0.3bn for aniline plant Antwerp
- 2021e-2024e: ~€1.5bn for fully integrated MDI train Bavtown

#### **Growth capex for PCS, Polyols and TDI**

Accompany industry growth by adding new capacity

#### Maintenance capex at ~€250-300 p.a.

Based on risk assessment



~5%

Solid underlying MDI global demand growth



500kt

New world-scale MDI train by 2024e

€1.5bn

Capex on existing site with attractive ROCE

#1

MDI producer in USA with 740kt by 2024e

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