Borealis at a glance

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Chief Financial Officer

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Borealis at a glance

- Produces and markets **polyolefins, base chemicals** and **fertilizers**
- Production plants in Europe, Brazil and USA with **world class safety standards**
- Proprietary **Borstar®** and **Borlink™** technologies
- +6,800 employees
- 2nd largest polyolefin producer and 3rd largest fertilizer producer in Europe
- Strong presence in the Middle East and Asia through Borouge JV - **world’s largest integrated polyolefin site**
- **Bayport Polymers JV** in USA
- Two polyolefin recycling operations in Europe
- **Focused on innovation:** 6,400 granted patents and 2,800 pending patents as of 2018

Shareholder structure:

- **Borealis** 40%
- **OMV** 36% (24.9% controlled by Mubadala)
- **Borouge** 60%
Borealis and Borouge command top positions in polyolefin production capacities

Capacities end 2018 in mn tons, based on ownership share

**Europe**

- **LyondellBasell**: 4.7
- **Borealis**: 3.8
- **Ineos**: 3.1
- **SABIC**: 2.9
- **Total**: 2.3
- **Dow**: 2.1
- **ExxonMobil**: 1.4
- **Repsol**: 1.3
- **Mol**: 1.2
- **Versalis**: 1.0

**World**

- **Sinopec**: 13.2
- **ExxonMobil**: 12.7
- **LyondellBasell**: 11.0
- **Dow**: 9.8
- **SABIC**: 9.3
- **CNPC/Petrochina**: 8.8
- **Borealis&Borouge**: 8.2
- **Braskem**: 7.8
- **Reliance**: 6.0
- **Ineos**: 3.8

Source: Borealis & IHS
Global footprint

Stenungsund
- Ethylene: 625 kt
- PE: 770 kt

Porvoo
- Ethylene: 420 kt
- Propylene: 230 kt
- PE: 390 kt
- PP: 220 kt

Shanghai (Borouge)
- PP TPO: 90 kt

Ruwais (Borouge)
- Ethylene: 3,600 kt
- PE: 2,300 kt
- LDPE: 350 kt
- PP: 1,760 kt

Borouge (Borealis / ADNOC JV)
- Ethylene: 625 kt
- Propylene: 230 kt
- PE: 390 kt
- PP: 220 kt

Itatiba
- Comp: 60 kt

Grand-Quevilly
- Ammonia: 405 kt
- Nitric Acid: 945 kt
- Fertilizers: 1,100 kt

Grandpuits
- Ammonia: 440 kt
- Nitric Acid: 400 kt
- Fertilizers: 620 kt

Linz
- Ammonia: 545 kt
- Nitric Acid: 600 kt
- Fertilizers: 1,100 kt
- Melamine: 54 kt

Ottmarsheim
- Fertilizers: 300 kt

Piesteritz
- Melamine: 90 kt

Burghausen
- PP: 560 kt

Monza
- Comp: 30 kt

Rosier
- Fertilizer: 300 kt
- Fertilizer: 500 kt

Geelen
- Others: 120 kt

Geleen
- Phenol: 185 kt
- Acetone: 115 kt
- Comp.: 42 kt

Antwerp
- PE: 120 kt
- Comp: 90 kt

Kallo
- Propylene: 530 kt
- PP: 300 kt

Beringen
- PP: 385 kt
- Comp: 72 kt

Ruwais
- Ethylene: 3,600 kt
- PE: 2,300 kt
- LDPE: 350 kt
- PP: 1,760 kt

Shanghai
- PP TPO: 90 kt

Borealis

Borouge (Borealis / ADNOC JV)
Borealis product range

**Base Chemicals**
- Feedstocks, Olefins & Co-products
  - Ethylene
  - Propylene (Polymer, Chemical and Refinery grades)
  - Butadiene, Butylenes, Raff-1, Pyrolysis Gasoline (Benzene), ETBE

- Phenol & Acetone

- Energy
  - Sourcing of Natural Gas & Power
  - Steam & Boiler Feed Water
  - Nitrogen & Hydrogen

**Polyolefins**
- Pipe and fittings
  - Water & Gas
  - Sewerage & industrial
  - Plumbing & heating
  - Oil & gas

- Energy
  - AC/DC extra high, high, medium & low voltage
  - Fiber optic & data network cable
  - Automotive, building, photovoltaic, & industrial cables

- Automotive
  - Bumpers & body panels,
  - Exterior & interior trims,
  - Dashboards & central console
  - Door cladding
  - Under body shielding
  - Cooling systems & battery tray

- Consumer products
  - Flexible packaging
  - Rigid packaging
  - Fibers
  - Appliances (washing machines, dish washers, fridges/freezers, vacuum cleaners, coffee makers, microwave oven etc.)

- Healthcare
  - Medical pouches
  - Syringes
  - Sachets
  - Medical devices
  - Bottles

**Fertilizers**
- Nitrogen Fertilizer
- Specialties
- Technical N Products
- Melamine

**Circular Economy Solutions**
- PolymerSolutions
Sales split product group and geography

Total Sales by segment, 2018

- 19% Base Chemicals
- 65% Polyolefins
- 2% Non-Allocated
- 14% Fertilizer & Melamine (NITRO)*

Total Sales by region, 2018

- 83% Europe
- 6% Middle East & Asia
- 3% USA
- 8% Other regions

*NITRO = Segment Reporting amendment as of January 1, 2019 for Fertilizers & Melamine
Financials

Total Sales, EUR bn

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<th>Year</th>
<th>2014</th>
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<th>2016</th>
<th>2017</th>
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ROCE, %

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Net Profit, EUR bn

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<th>2016</th>
<th>2017</th>
<th>2018</th>
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<td>1.1</td>
<td>1.1</td>
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Gearing, %

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<td>10</td>
<td>12</td>
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Borealis innovation addresses global challenges

**Design for plastic packaging recycling**
- Design for recycling (DFR) is an important aspect of eco-efficient design
- DFR means designing a product so it can be collected, sorted, and recycled, by making appropriate material choices and intelligent design decisions

**AdBlue® helps reduce NOₓ emissions**
- AdBlue is a high-purity aqueous urea solution that reduces NOₓ emissions to help meet European emission limits
- It is used in diesel vehicles with a selective catalytic reduction system (SCR), which transforms nitrous oxides into harmless nitrogen and water vapour

**Efficient and reliable energy transmission**
- Security of electricity supply is crucial for the grid development plans around the globe
- **Borlink™** energy cable insulation material reduces the environmental impact by efficiently and reliably connecting renewable energy sources to grids

**Value adding healthcare solutions**
- Increased need for safer, more accessible and convenient medical applications
- With its **Bormed™** healthcare product range Borealis offers reliable medical and pharmaceutical applications that add value to healthcare
Automotive industry is embracing the circular economy and increased PP use is part of the solution

- Volvo Cars’ aims that ***at least 25% of all plastics in cars*** launched after 2025 will be made from recycled material

- ***Volvo SUV demonstrator vehicle*** showcased at the “Ocean Summit” event in Gothenburg, Sweden in 2018

- ***Two Borealis Daplen PCR grades*** containing post-consumer recycled (PCR) content were ***used in five parts for the Volvo demonstrator***

- Growth and diversification of parts made in PP
- Low density
- Light-weight
- Performance/cost balance
- Recyclability

- Increasing requests for PP compounds containing recycled content from post-industrial/post-consumer sources

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- Average mid-size SUV has ~300 kg of plastics
- ***Decreasing the vehicle weight by 1 kg means 0.1 g/km of CO₂ emissions less***
- Car looks almost identical to the existing model, but over 60 kilos (~20%) of its plastic parts or **170 parts** were replaced with those made of recycled materials.
Growth in polyolefin demand 2015 – 2025

Regional PE and PP market development 2025 (mn t)

- **North America**: 29 mn t (2015: 24 mn t)
- **Europe**: 27 mn t (2015: 23 mn t)
- **Russia**: 5 mn t (2015: 2 mn t)
- **Asia**: 142 mn t (2015: 79 mn t)
- **Middle East**: 13 mn t (2015: 10 mn t)
- **Africa**: 8 mn t (2015: 5 mn t)

Source: IHS/Borealis
Key strategic drivers

1. **Polyolefins**
   - Grow polyolefin business with a focus on **advanced applications and differentiated products**
   - Strengthen the European base

2. **Base Chemicals & Fertilizers**
   - Maximize the value of Base Chemicals
   - Strengthen the cracker asset base with increased feedstock flexibility
   - Focus on turning around Fertilizers

3. **Borouge**
   - Pursue operational excellence in Borouge, including leveraging into Europe
   - **Further grow** in UAE: Borouge 4 & PP5

4. **Innovation & Circular economy**
   - Achieve a step change in **innovation**
   - Build on opportunities from **sustainability** megatrends and circular economy
   - New Circular Economy Solution unit set up to find new growth opportunities in mechanical **recycling** and design for recyclability
   - Increased focus on **CO2 reduction & carbon footprint** improvement
Our foundation for sustainable growth

Our key criteria
- Access to market
- Access to advantaged feedstock
- Right technology
- Ability to fund
- Fit to Borealis businesses

Sustainable growth

Our unique strengths
- Running complex chemical assets safely
- Borstar® technology
- Ability to build large complex projects
- Application focus
- Access to ME & Asia + strong brand name
Organic growth portfolio

- **New PDH Kallo (100%)**
  - 750 kta PDH plant
  - Start-up 2022

- **PP2 retrofit (100%)**
  - Retrofit Beringen PP2 to Borstar and adding 270 kton capacity
  - Start-up 2022

- **Baystar (Bay-Pol) (25%)**
  - 1,000 kta ethane cracker
  - 625 kta Borstar PE plant
  - 400 kta polyethylene (Total)
  - Start-up 2021

- **Fertilizers & melamine (100%)**
  - Europe’s largest fertilizer production facility and center of melamine production

- **Ethane (100%)**
  - Upgrade of cracker and storage of imported ethane
  - Start-up 2020

- **Project K (Kazakhstan) (40-50%)**
  - 1,170 kta cracker
  - 2 x 625 kta Borstar PE
  - Start-up 2025

- **Borouge 4 (40%)**
  - 1,800 kta mixed feed cracker and related Borstar units
  - Start-up 2025

- **PP5 (40%)**
  - 480 kta PP plant

- **Steam cracker (100%)**
  - Enhances yield of propylene and crude C4

% in brackets represent Borealis’ stakes

- Feasibility
- FEED
- Execution
Borouge – a very successful joint venture

Evolution
Abu Dhabi, United Arab Emirates

- 1998 Established
- 2001 Borouge 1
- 2010 Borouge 2
- 2015 Borouge 3
- TBC Borouge 4
- 2018 PPS

Ownership
- 60% Borouge
- 40% Adnoc

Employees
+3,500 employees
170 secondees in
Abu Dhabi, Singapore, & Shanghai

Facilities

- Biggest integrated ethylene complex (3,600 kt per year)
- Largest polyolefin site (19 operating units, 13 shift supervisors, & 180 operators per shift)

Polyolefins production
Min tons / year

- 2001 Borouge 1 0.45
- 2005 Borouge 2 0.60
- 2010 Borouge 3 2.5
- 2015 Borouge 3 4.5

Net Profit (2018)
Record net profit after tax of USD 1,793 million

Evaluating the Borouge 4 opportunity to open the next chapter in the Borouge success story
Expanding to USA – JV with Total and Nova in Texas

Total brings the award-winning Bayport facility and its employees who operate and produce safely and efficiently.

Borealis brings its proprietary Borstar® technology for the first time to North America and the Bayport site for unique polyethylene (PE) grades for the most demanding applications.

NOVA Chemicals brings a deep customer and technical expertise in PE that will allow the partnership to offer a broad range of products to help meet the growing global demand for plastic products.

**JV Scope**

- Construction of 1 Mt p.a. ethane steam cracker in Port Arthur, Texas
- Total's existing polyethylene 400 kt p.a. facility in Bayport, Texas
- Construction of a new 625 kt p.a. Borstar® polyethylene unit
Recycling – key element of our strategy

- 2016: Acquired 100% of mtm plastics
  - German technology leader in mechanical recycling of mixed post-consumer waste
  - One of the world’s largest producers of recycled polyolefin pellets
  - Two renown brands Dipolen® and Purpolen®

- 2018: Acquired 100% of Ecoplast
  - Austrian high quality post consumer LDPE and HDPE recycler

- Signed MOU with OMV to explore synergies in chemical recycling
Contribution to marine litter prevention: Project

- Launched in 2017. First city partnership was in Muncar, East Java, Indonesia in early 2018

- The project helps a city to introduce a dependable, low-cost management system of plastics collection

- Targets wider impact through government policy and industry practices and supports organizations and communities working on the topic

- Aims to prevent +10,000 t of plastics from leaking into ocean over the next 5 years