



# Braskem



**MEETING WITH  
INVESTORS**

SÃO PAULO, NOVEMBER 13, 2018

## DISCLAIMER

### on forward-looking statements

This presentation includes forward-looking statements. These forward-looking statements are not solely historical data, but rather reflect the targets and expectations of Braskem's management. The terms "anticipate," "believe," "expect," "foresee," "intend," "plan," "estimate," "project," "aim" and similar terms are used to indicate forward-looking statements. Although we believe these forward-looking statements are based on reasonable assumptions, they are subject to various risks and uncertainties and are prepared using the information currently available to Braskem.

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## AGENDA

- ▶ Brazil
- ▶ US and Europe
- ▶ Mexico
- ▶ 3Q18 Results
- ▶ Governance and Compliance
- ▶ Circular Economy
- ▶ Scenario
- ▶ Priorities

BRAZIL



Braskem 

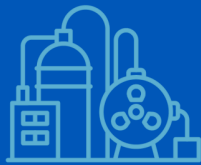
# BRAZIL

## Chemicals

### MAIN APPLICATIONS - CHEMICALS

#### FEEDSTOCK

Naphtha	82%
Ethane/Propane	8%
Refinery off-gas	2%
Propylene	6%
Ethanol	3%



#### PRODUCTION CAPACITY (KTON)

Ethylene	3,952
Propylene	1,585
BTX*	1,367
Gasoline	889
Butadiene	480
Cumene	320
Others	1,075
<b>TOTAL</b>	<b>9,668</b>

\*benzene, toluene and paraxylene

#### ETHYLENE



- ▶ Polyethylene (Packaging)
- ▶ Polystyrene (EPS)

#### PROPYLENE



- ▶ Polypropylene (Consumer goods)

#### BENZENE



- ▶ Nylon (Clothing, hygiene)

#### PARAXYLENE



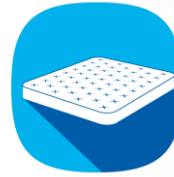
- ▶ Polyester (Clothing, PET bottles)

#### BUTADIENE



- ▶ Synthetic Rubber (Tires)

#### TOLUENE



- ▶ Polyurethane (Foams)

#### CUMENE



- ▶ Phenol / Acetone (Polycarbonate, Cosmetics)

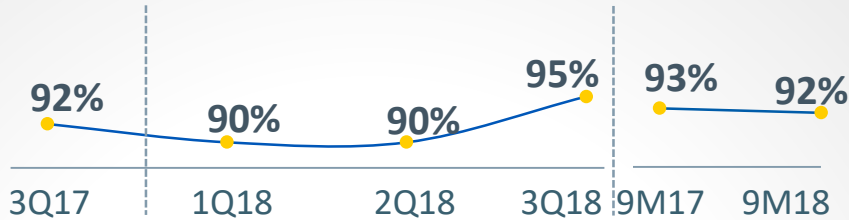
Approx. 50% of the chemicals production is sold to third parties, the remainder is transferred internally



# BRAZIL

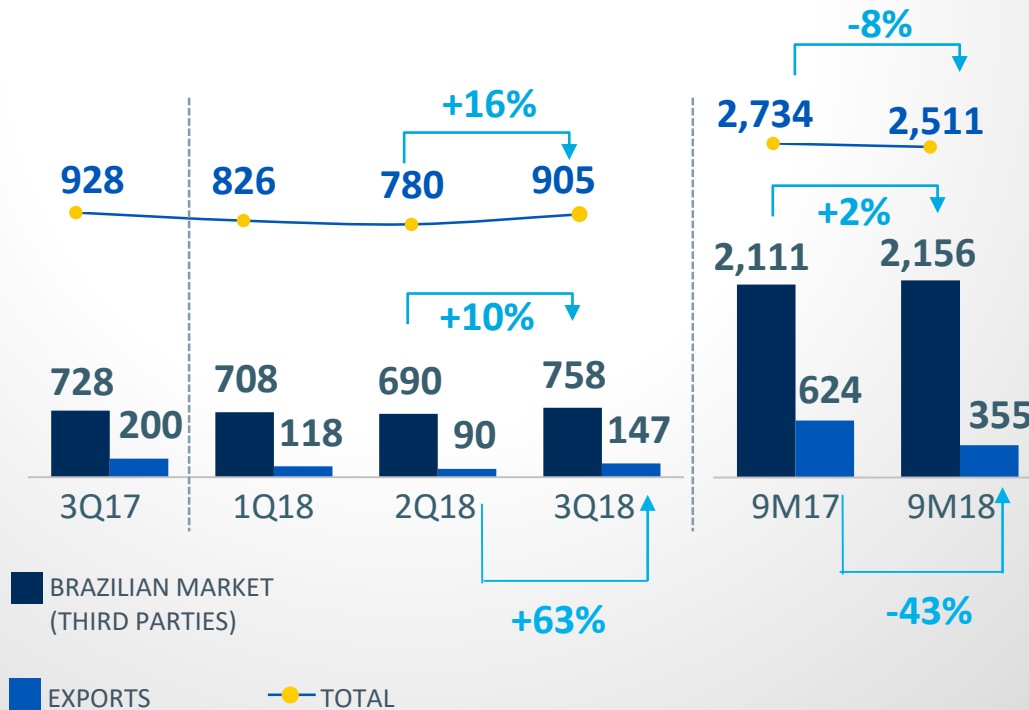
## Chemicals

AVERAGE UTILIZATION RATE (%) - CRACKERS



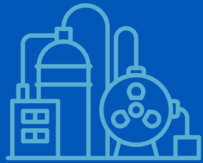
SALES MAIN CHEMICALS\*\* (KTON)

\*\*Ethylene, propylene, BTX, butadiene, cumene, gasoline



### FEEDSTOCK

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Ethanol	3%

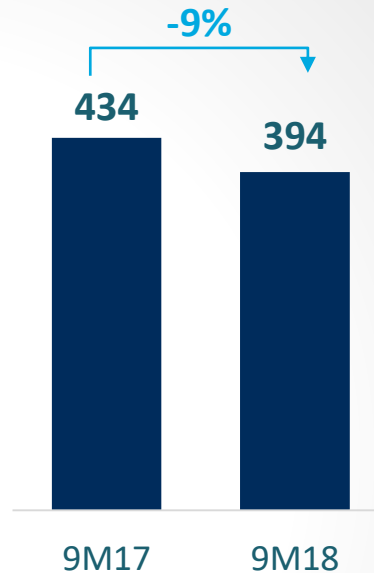
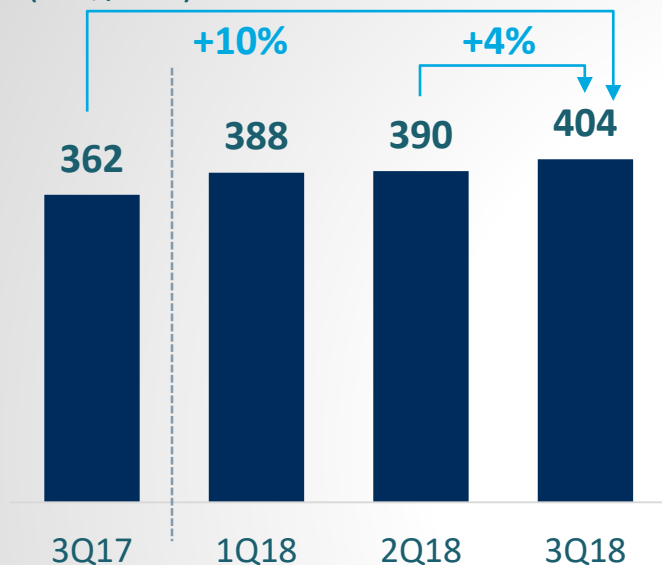


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\*Benzene, toluene and paraxylene

### CHEMICALS SPREADS\* (US\$/ton)



\*Prices of key chemicals (15% ethylene, 10% propylene, 35% BTX, 10% butadiene, 5% cumene and 25% fuels) – naphtha ARA/ Source: IHS.

#### 3Q18 x 2Q18 and 3Q18 x 3Q17

- Higher **propylene** and **butadiene** spreads, due to **more restricted supply** and **strong demand for consumer goods**, offset other products lower spreads

#### 9M18 x 9M17

- Despite the **improvement in ethylene** and **propylene** spreads, the spike in **butadiene** and **benzene** spreads in **early 2017** were not observed in 2018

### EXPANSION OF THE PORTFOLIO OF HYDROCARBON RESINS

- ▶ **Following the market evolution**, new grades of hydrocarbon resins have been developed according to the customers needs all over the world.
- ▶ The new grades were presented at the Expobor 2018 and Feica 2018, to offer more complete solutions that allow applications of higher added value, meeting global requirements.

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### PIB IN MASTERBACH

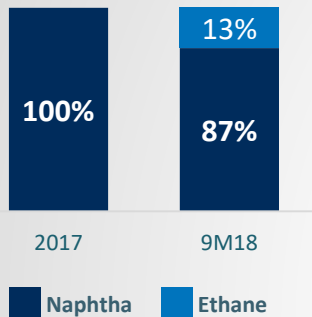
- ▶ Braskem has identified an opportunity in the **replacement of castor oil** by the PIB component in the Masterbach colored plastic compound. Used as a vehicle, it does not interfere in the **color and brings high stability** to the final product
- ▶ PIB is a **highly versatile product**, this new application in masterbach joins to the others applications as lubricants, adhesives and packaging aggregating properties that bring high performance





### FLEXIBILITY OF BAHIA CRACKER

Ethylene production (%)



In 9M18, 13% of ethylene production in Bahia was ethane based

### OIL AND NATURAL GAS PRODUCTION IN BRAZIL\*



Availability of petrochemical feedstock in Brazil could double in 10 years

● Gross production – natural gas (million m³/day)  
 ● Oil production (million barrels/day)

\*Source: Ten Year Energy Expansion Plan 2027 - Ministry of Mines and Energy

# BRAZIL

## Polyolefins and Vinyls

### MAIN MARKETS AND APPLICATIONS – POLYOLEFINS AND VINYLs



#### PRODUCTION CAPACITY (KTON)

PE	3,055
PP	1,850
PVC	710
Caustic soda	569

#### PE+PP+PVC SALES PROFILE – BRAZILIAN MARKET (%)

Food	23%
Industrial	13%
Construction	11%
Retails	9%
Consumer Goods	8%
Hygiene and cleaning	5%
Automotive	5%
Agricultural	5%
Cosmetic/Pharma	5%
Others	17%

#### PE

▶ Food packaging



▶ Industrial



▶ Retail



#### PP

▶ Food packaging



▶ Consumer goods



▶ Hygiene and cleaning



#### PVC

▶ Construction



▶ Consumer goods



#### Soda

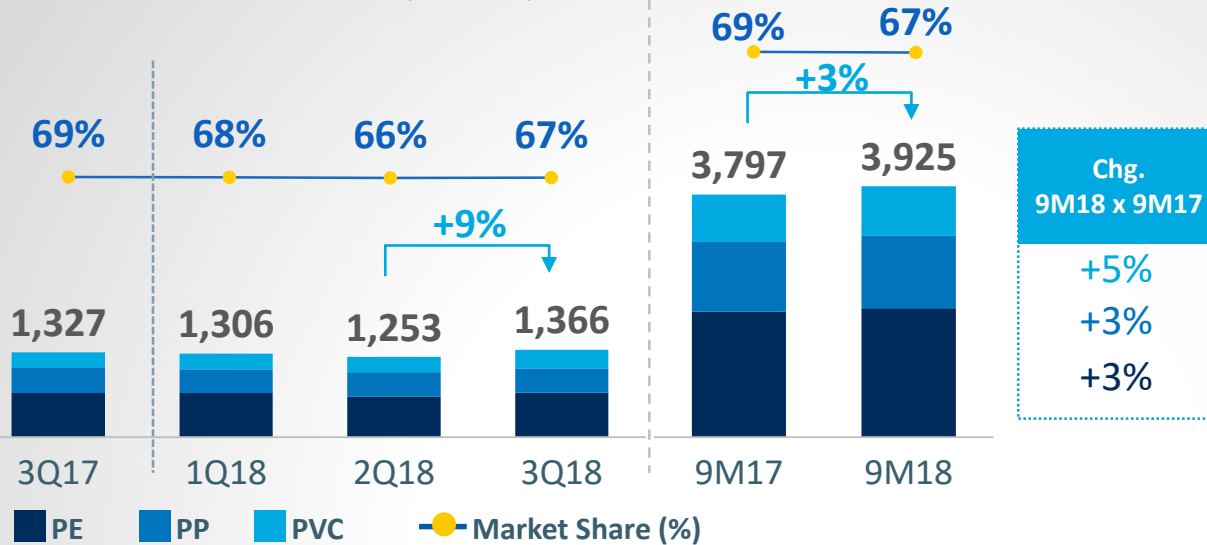
▶ Pulp and paper



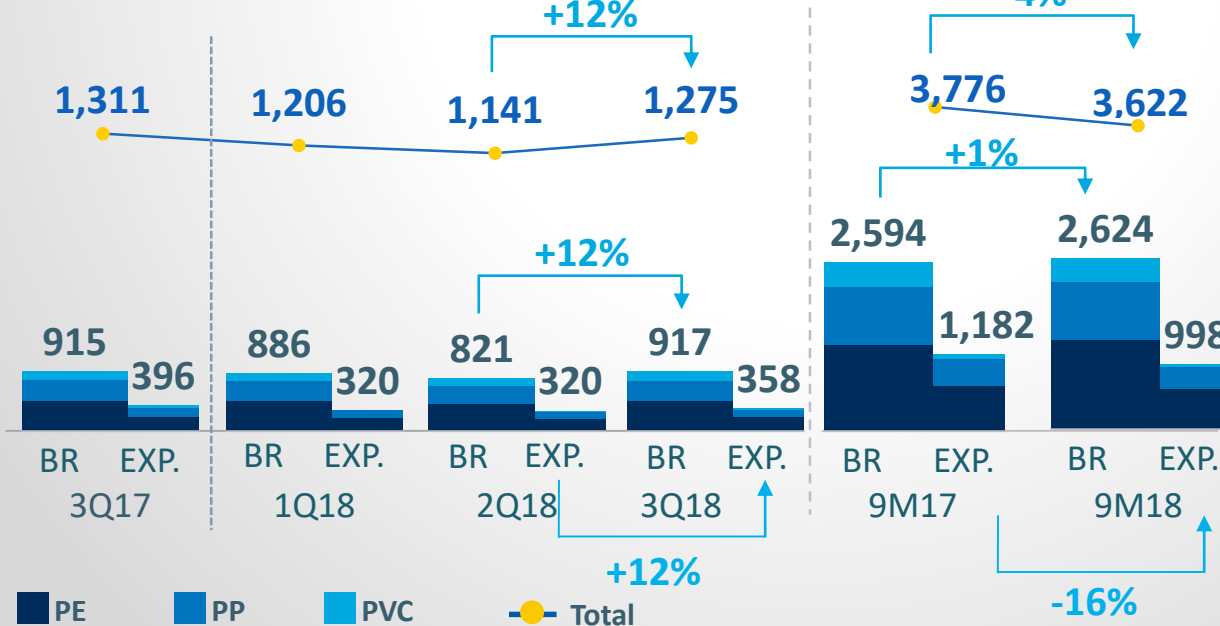
RESINS DEMAND – BRAZILIAN MARKET (KTON)

BRAZIL

Polyolefins and Vinyls



SALES VOLUME (KTON)



PRODUCTION CAPACITY (KTON)

PE	3,055
PP	1,850
PVC	710
Soda	569



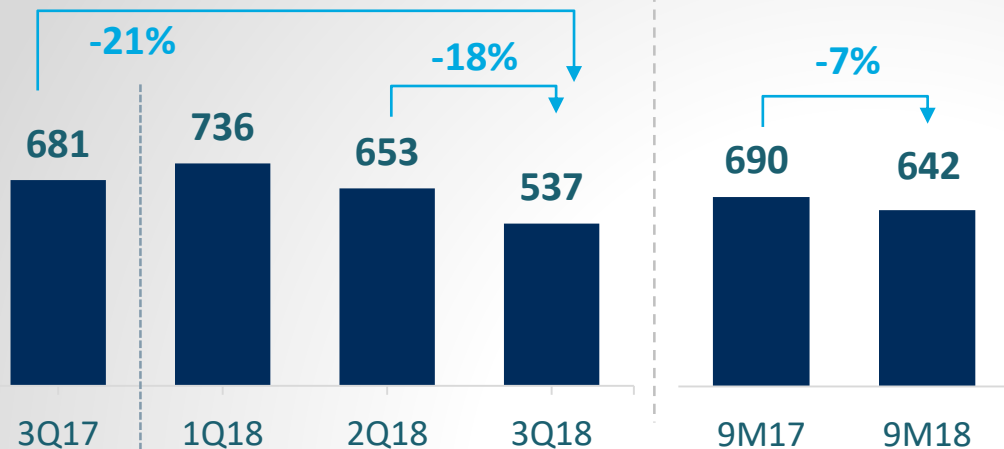
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# BRAZIL

## Polyolefins and Vinyls

POLYOLEFINS SPREADS\* (US\$/ton)



### 3Q18 x 2Q18

- higher supply of PE in the US, with the startup of the new ethane-based capacity, and lower resin demand in Asia due to the trade war between the US and China

### 9M18 x 9M17

- higher supply of PE in the US

VINYLS SPREADS\*\* (US\$/ton)



### 3Q18 x 2Q18

- higher naphtha price and lower caustic soda price due to lower demand, after one of the world's leading alumina producers cut production

### 9M18 x 9M17

- higher caustic soda price in 1H18

\*US PE (62%) and Asia PP (38%) – Naphtha ARA (91%), Ethane (4.5%) and Propane (4.5%) / Source: IHS

\*\*Asia PVC price - Naphtha ARA\*0.48 - [(Brent Oil Price/1.725)\*1.75] + (0.685 x Asia caustic soda price) / Source: IHS

# VALUE CREATION

## Polyolefins and Vinyls



- ▶ High performance resin (EVA family)
- ▶ Productivity increase
- ▶ Weight reduction
- ▶ Versatility in applications

### PARTNERS CLIENTS



*Application of  
Braskem Evance™ in  
shoe soles*

## PVC WINDOWS

- ▶ Lighter profiles
- ▶ Most affordable cost to the customer

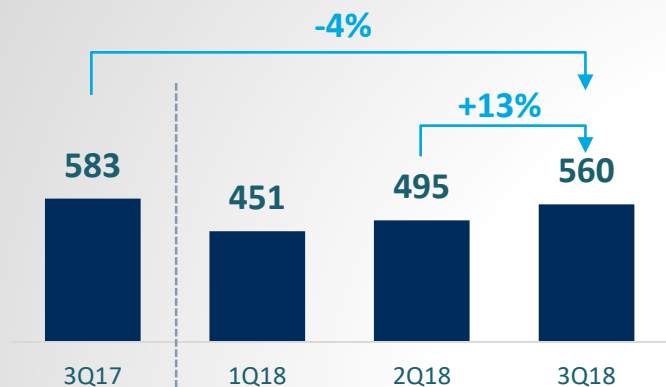


### PARTNERS CLIENTS



# BRAZIL

## EBITDA BRAZIL (US\$ MILION) (CHEMICALS+POLYOLEFINS+VINYL)



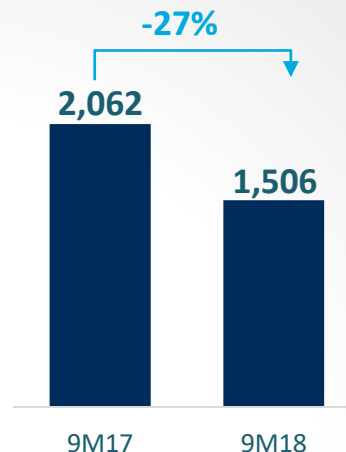
### 3Q18 x 2Q18

- sales recovery after the end of the truck drivers' strike
- higher key chemicals spreads

### 3Q18 x 3Q17

- lower levels of international resins spreads

## BRAZIL EBITDA REPRESENTS 60% OF THE CONSOLIDATED EBITDA



### 9M18 x 9M17

- lower key chemicals and polyolefins spreads
- lower total sales volume due to:
  - the incident involving the chlor-alkali plant in Maceió
  - the scheduled shutdown of the cracker in Triunfo/RS
  - the interruption in power supply to the plants in Brazil's Northeast
  - truck drivers' strike



**BRAZIL EBITDA REPRESENTS 60% OF THE CONSOLIDATED EBITDA**

### INTEGRATION AND SCALE

- The only **fully integrated** petrochemical company in the first and second generation, **including** in the **vinyl** chain
- **29** industrial **plants**

### CONSOLIDATED MARKET POSITION AND EXPORT CAPACITY

- Consolidated **market share** (67% 9M18)
- **Close** and **differentiated** relationship with **Clients**, with broad portfolio of products and **import parity pricing**
- **Pricing** in Mercosur is also by **import parity**
- Brazilian **exports optimized** by industrial and commercial **presence outside Brazil**
- **Export capacity** in times of **lower demand** in **Brazil**

### FEEDSTOCK AND SUPPLIERS DIVERSIFICATION

- **Feedstock diversification:** naphtha (82%); ethane/propane (8%); refinery off-gas (2%); propylene (6%) and ethanol (3%)
- Diversified **naphtha suppliers:** 43% Petrobras and 57% is imported from **more than 20 suppliers**



# UNITED STATES AND EUROPE



# U.S. AND EUROPE

## FEEDSTOCK

U.S. PGP/RGP	57%
U.S. PGP (via PDH)	16%
Europe PGP	27%

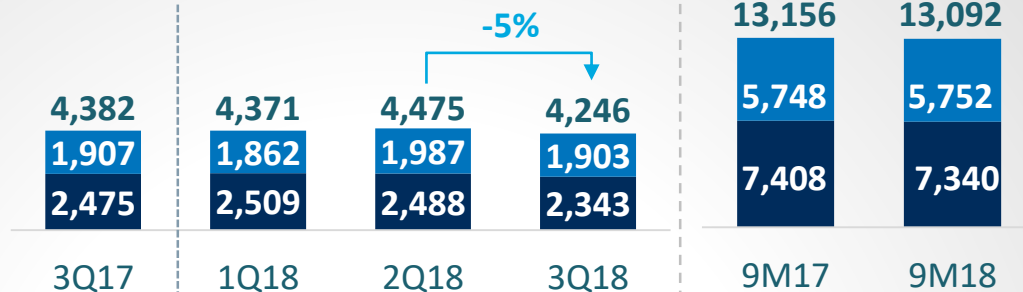


## PRODUCTION CAPACITY\* (KTON)

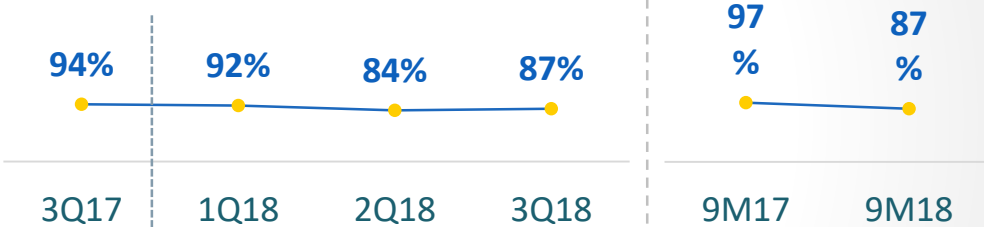
PP U.S.	1,570
PP EUR	625

(\* Braskem owns only the 2nd gen.)

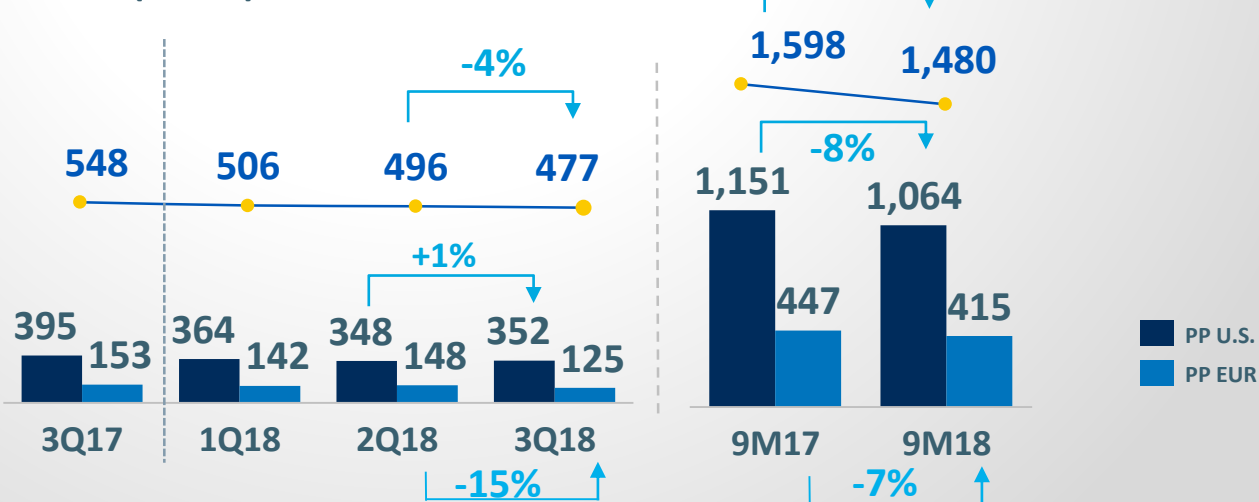
### PP DEMAND U.S. & EU (KTON)



### UTILIZATION RATE (%) – PP



### SALES (KTON)



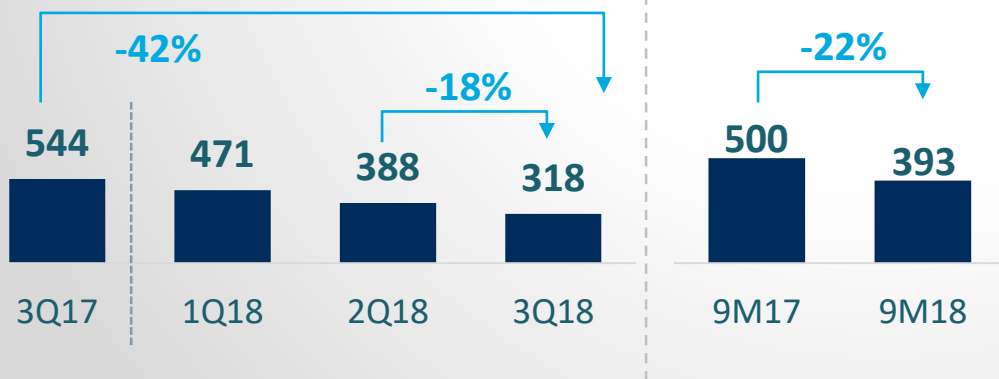
# U.S. AND EUROPE

PP U.S. SPREADS\* (US\$/ton)



**3Q18 x 2Q18 e 9M18 x 9M17**  
 - strong demand for PP and higher propylene supply especially by PDH producers

PP EUROPE SPREADS\*\* (US\$/ton)



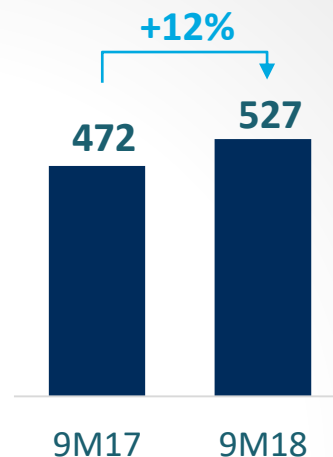
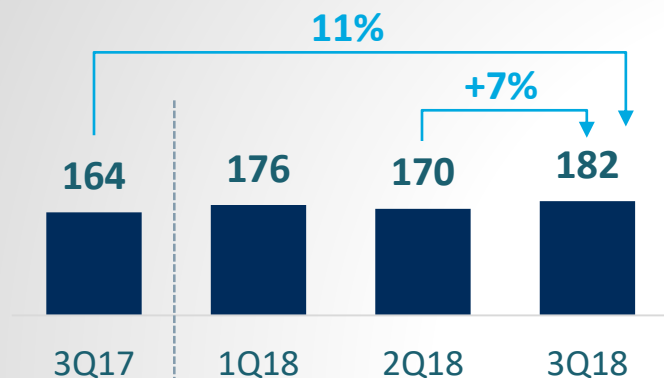
**3Q18 x 2Q18**  
 - lower demand for PP, due to slower economical growth, and propylene shipments restriction due to low river levels

**9M18 x 9M17**  
 - slower economical growth for the region

\*PP U.S. – Propylene U.S./ Source: IHS    \*\* PP EUR – Propylene EUR/ Source: IHS

# U.S. AND EUROPE

EBITDA (US\$ MM)



## 3Q18 x 2Q18

- higher sales volume and higher PP spreads in the U.S. compensated the weaker performance in Europe

## 3Q18 x 3Q17

- higher PP spreads in the U.S.

## 9M18 x 9M17

- higher PP spreads in the U.S.

## NEW PP PLANT IN THE U.S.

### PHYSICAL PROGRESS

**US\$675 million**  
Total Investment

**96.5%**  
Engineering Detailing

**450 KTY**  
Capacity

**86.5%**  
Procurement

**2020**  
Start-Up

**24.3%**  
Construction

**US\$341 MM** already invested



## NEW PRODUCT DEVELOPMENT AND APPLICATIONS

### Prisma 6810 Polypropylene

Launched in the U.S. on May-2018

- **Transparency, stiffness, and impact toughness**
- Applications in **refrigerated deli containers** and **cold blended drink cups**
- Maintains its **ductile characteristics at low temperatures**

Prisma 6810

Standard PP





## U.S. AND EUROPE SUMMARY

**U.S. AND EUROPE EBITDA REPRESENTS 21% OF THE CONSOLIDATED EBITDA**

**LEADER IN PP IN THE U.S. AND INDUSTRIAL PRESENCE IN GERMANY**

- **Nº1 PP Producer** in the **U.S.**
- **PP Units:** 5 already running and **1 in construction in the U.S.**, 2 units in Germany
- **1 UTEC®** plant, **specialty** with **applications** in the oil industry

**INTERNATIONAL COMMERCIAL RELATIONSHIP**

- Commercial **office** in the **Netherlands** strengthens **Braskem's presence in Europe**
- **Close** and **differentiated** relationship with **Clients** in the U.S. and Europe

**DIVERSIFICATION OF SUPPLIERS AND MARKET WITH ATTRACTIVE MARGINS**

- More than **15 propylene suppliers** in the U.S. with **diverse production alternatives** (PDH, refineries and crackers) and more than **5 suppliers in Germany**
- **Market long** in **propylene** and **short** in **PP** in the **U.S.**

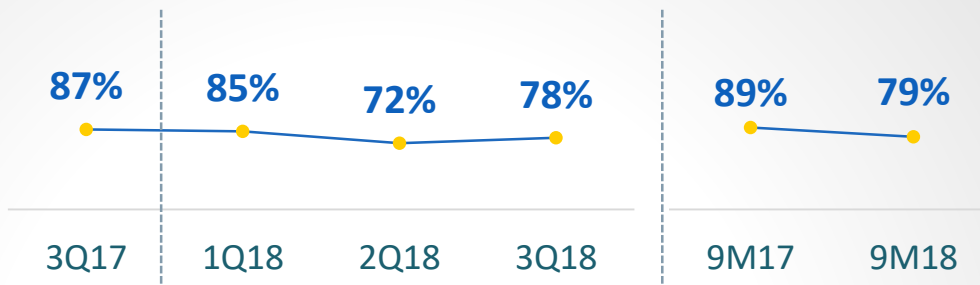
MEXICO



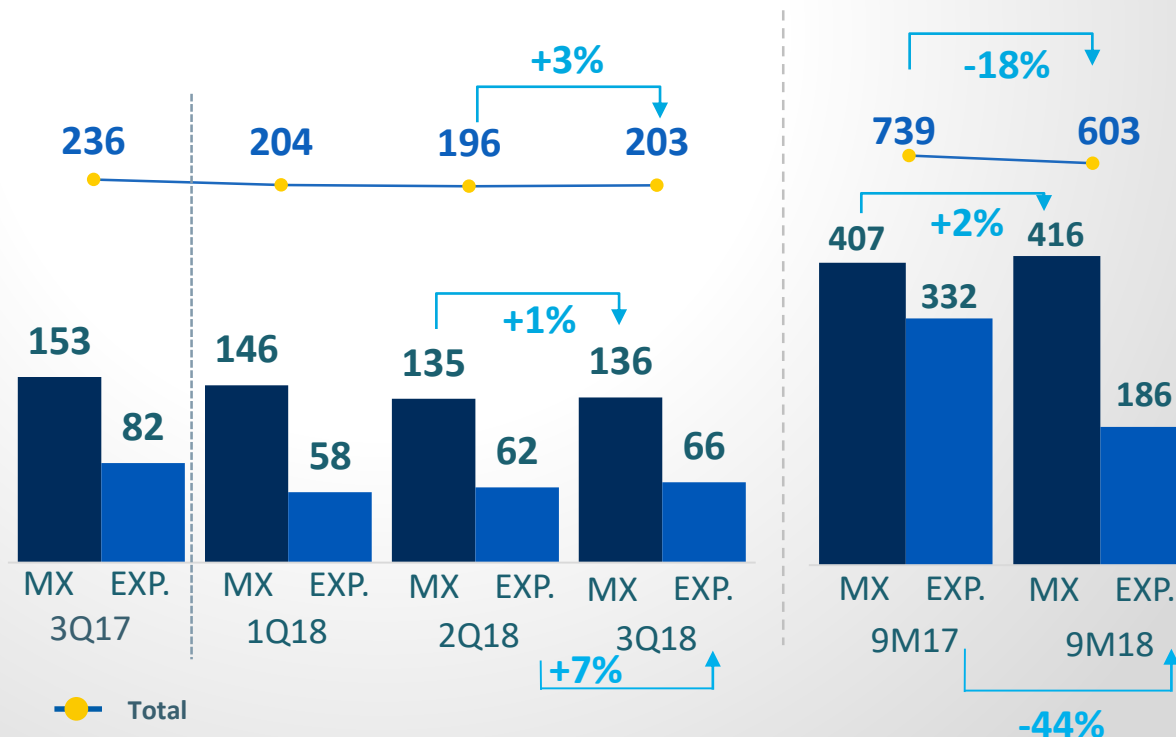
Braskem 

# MEXICO

## UTILIZATION RATE (%) – PE



## PE SALES (KTON)



### FEEDSTOCK

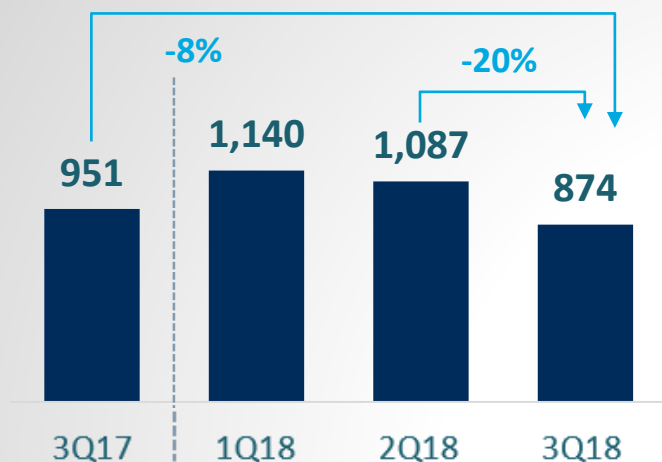
Ethane (PEMEX – 20 years supply agreement)



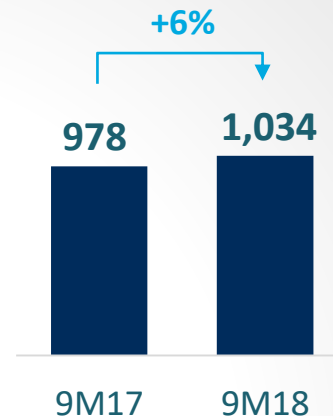
### PRODUCTION CAPACITY (KTON)

PE 1,050

## NORTH AMERICA PE SPREADS\* (US\$/ton)



\*PE U.S. – Ethane U.S./ Source: IHS



### 3Q18 x 2Q18 and 3Q18 x 3Q17

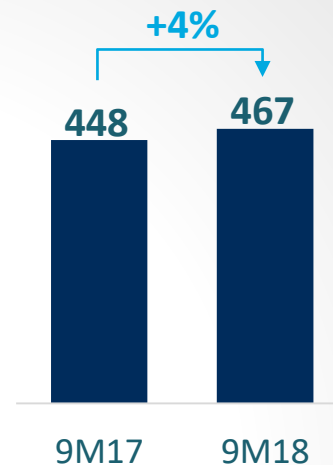
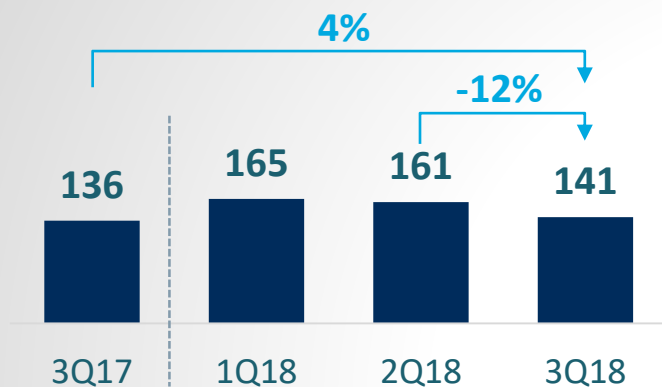
#### Ethane price increase:

- new crackers' start up in the U.S.
- limited fractionators capacity and logistics of ethane transportation in the U.S., where investments in those areas are expected to start up by the end of 2019

### 9M18 x 9M17

- higher PE prices, which followed the rise in naphtha prices during the period

## EBITDA (US\$ MILLION)



### 3Q18 x 2Q18

- lower PE spreads in North America

### 3Q18 x 3Q17

- higher **delivery-or-pay** provision due to lower level of ethane supply, below the established in the agreement

### 9M18 x 9M17

- higher PE spreads in North America

## MEXICO

**MEXICO EBITDA REPRESENTS 19% OF THE CONSOLIDATED EBITDA**

### VALUE CREATION IN MEXICO

- **Largest industrial private investment ever in Mexico** (US\$ 5.2 bi)
- **26 thousand jobs** created during **construcion** and **3 thousand** after start up
- **Substitution of imports** with impact in the in the trade balance of US\$1.5-2 bi/year
- **Preservation of local flora** with transfer of vulnerable species to environmental reserve
- Allocation of area in complex for **environmental preservation**
- **Support** in the **development** of **local communities**: Manufacture of cleaning products and industrial uniforms, fish and poultry production, and environmental education and recycling project

### GAS-BASED INTEGRATED COMPLEX

- **Joint Venture** between **Braskem** (75%) and mexican group **Idesa** (25%)
- **Largest PE producer** in Mexico
- 4 units: 1 cracker and 3 PE plants

### LONG TERM ETHANE SUPPLY AGREEMENT PROJECT FINANCE WITH 17 FINANCIAL INSTITUTIONS

- **20 year ethane supply agreement** with volume to supply **100% of the units'** production capacity
- **Delivery or pay** clauses for **Pemex / take or pay** for **Braskem Idesa**
- **Price defined in auction** with the participation of more than 30 companies
- Financing of US\$ 3.2 billion via project finance limited-recourse with **17 banks**, including **IFC, IDB, EDC, Sace, BNDES, Bancomext and Nafinsa**

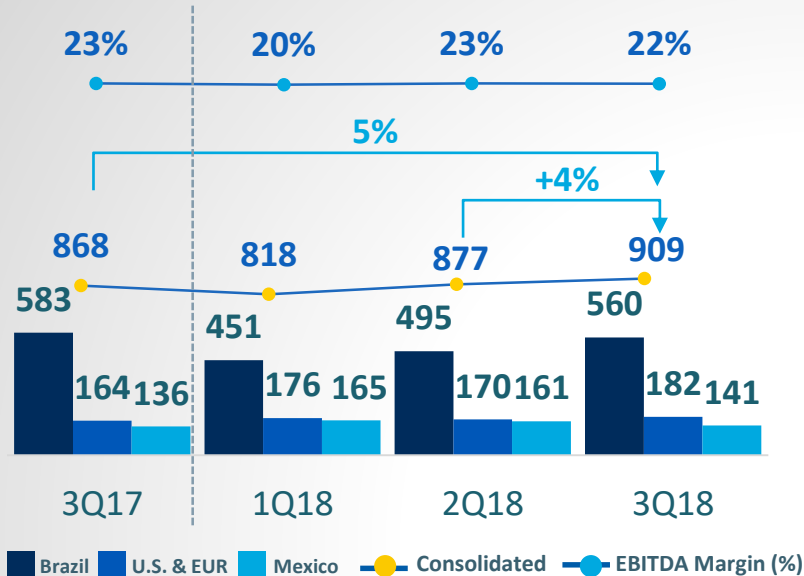




# 3Q18 CONSOLIDATED RESULTS

# EBITDA

US\$ MILLION \*



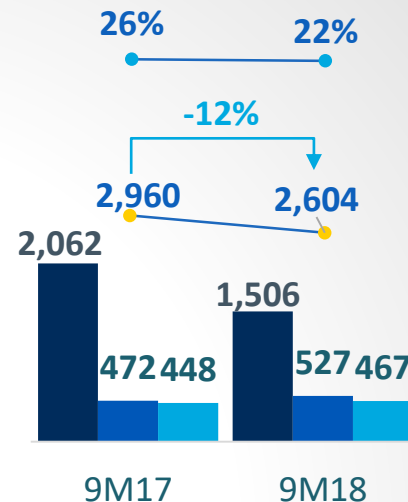
\*The consolidated EBITDA is different of the sum of the regions due to eliminations

## 3Q18 x 2Q18

- **higher sales volume** in Brazil, U.S. and Mexico, offset **lower spreads** in Mexico, Brazil and Europe

## 3Q18 x 3Q17

- **positive impact** of Real's depreciation in costs and expenses linked to this currency



## 9M18 x 9M17

- **lower spreads**, except with PP in the U.S.
- **lower availability** of products to sell:
  - o **trucker's strike** in Brazil
  - o **scheduled and unscheduled maintenance turnarounds** in all regions

# INVESTMENTS

R\$ MILLION



## Operational Investments (9M18)

- main expenditure: **planned turnaround** in the **Triunfo/RS central**

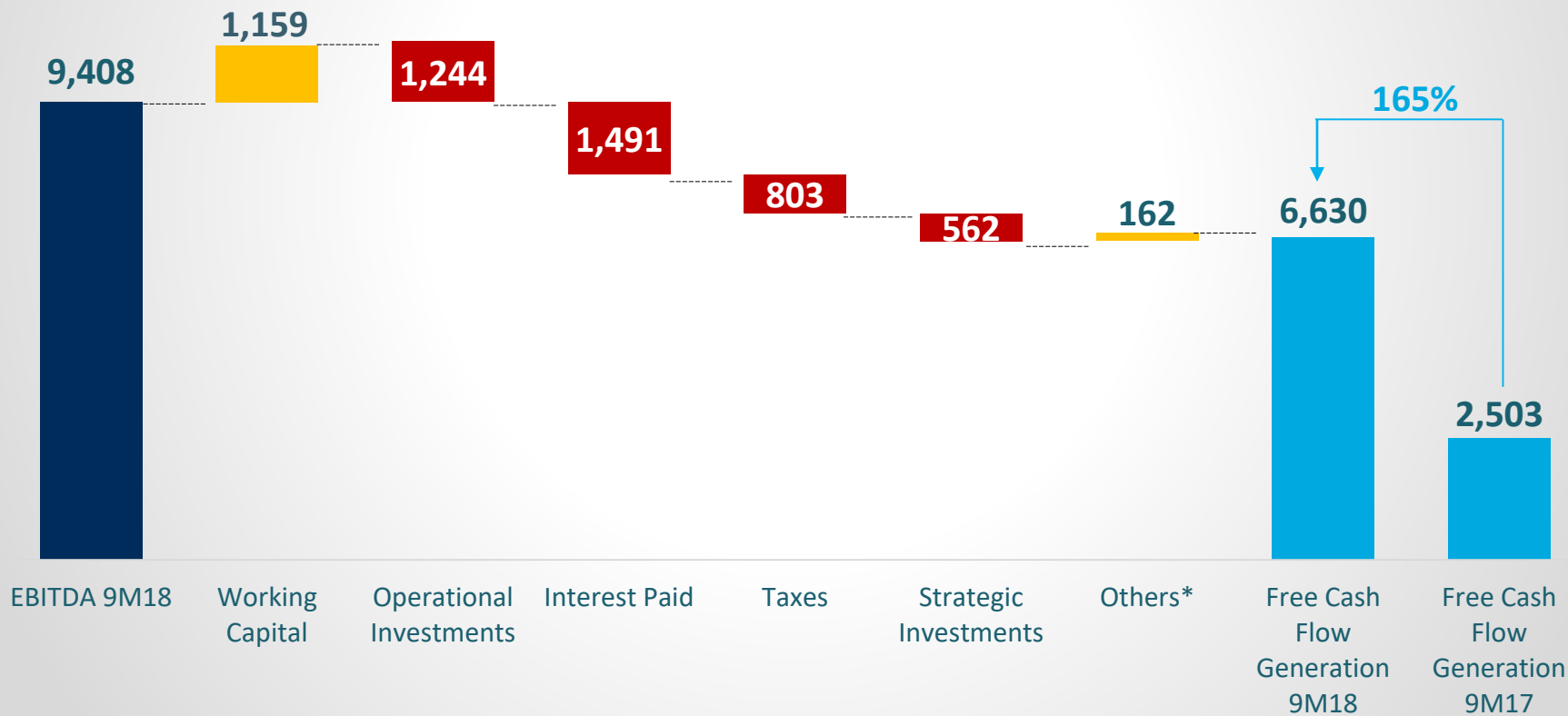
## Strategic Projects (9M18)

- 95% of the disbursement was for the **construction of the new PP plant in the U.S.**

# FREE CASH FLOW GENERATION

YTD until Sep/18 (R\$ million)

*Record-High Free Cash Flow Generation*

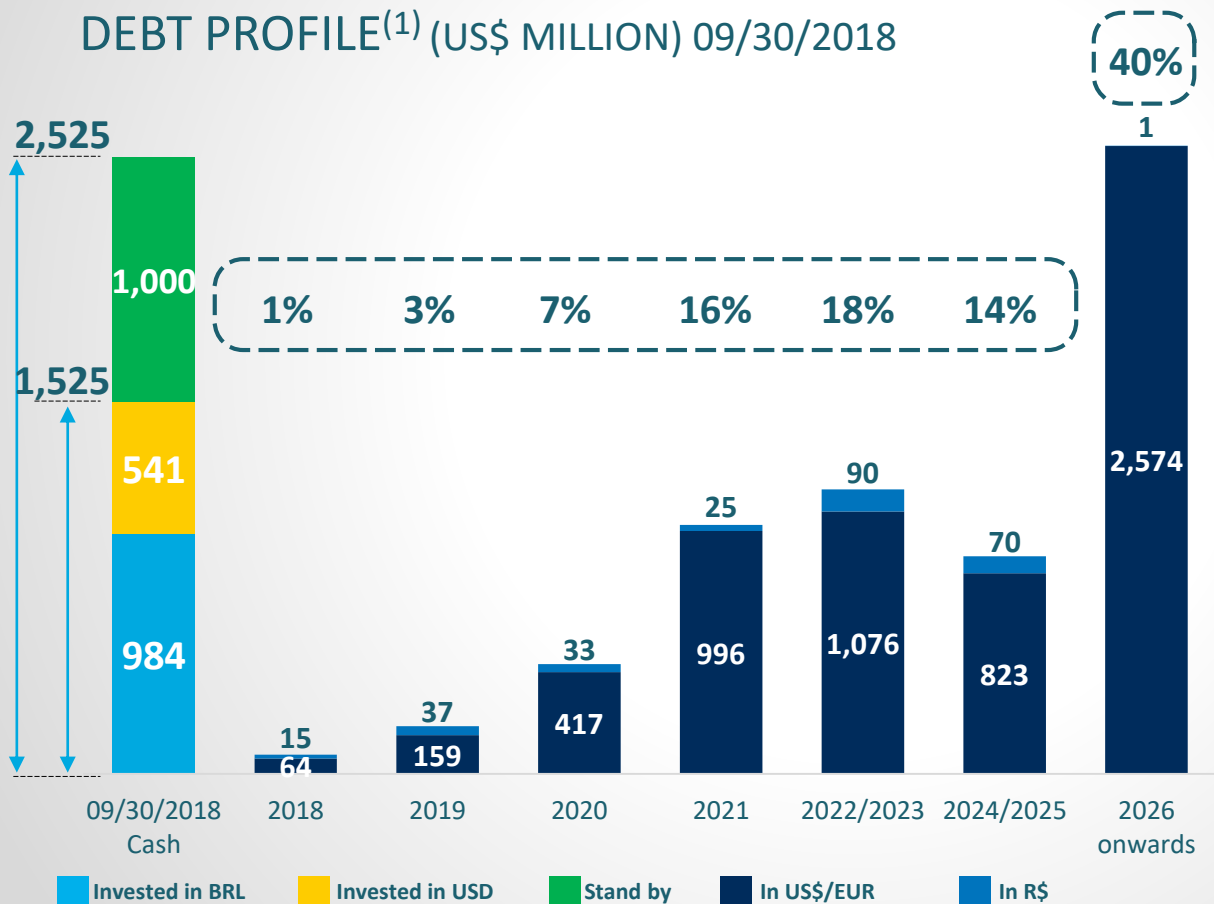


\*Includes: (i) Premium in the dollar put option; (ii) Funds received in the investments' capital reduction; (iii) Financial assets held to maturity; and (iv) Funds received in the sale of permanent assets and investments

# AMORTIZATION SCHEDULE

*Comfortable amortization schedule with low pressure in the next 3 years*

DEBT PROFILE<sup>(1)</sup> (US\$ MILLION) 09/30/2018



Partial redemption of US\$ 200 million of the perpetual bond in sep/18 as a strategy to reduce the debt interest expenses

Average Debt Term  
15 years

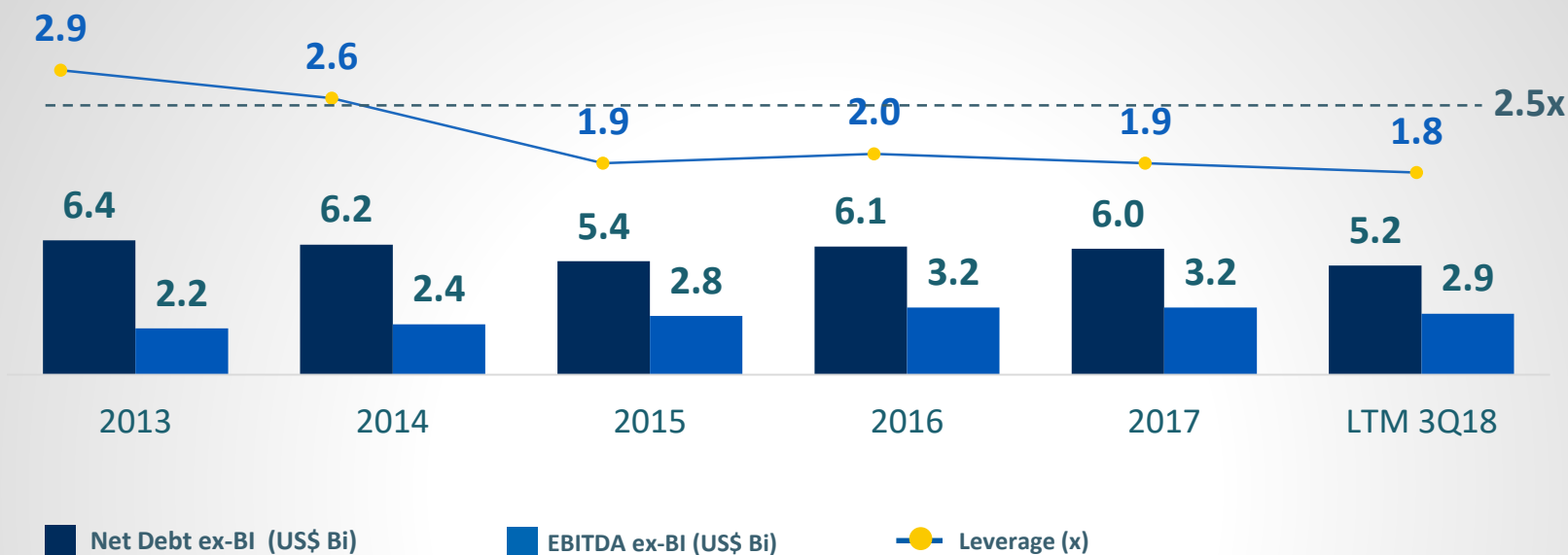
Debt Coverage  
30 months

Average Weighted  
Cost of Debt  
5.63% (US\$)

(1) Does not consider discounts from transaction costs and Leniency Agreement

# DEBT LEVERAGE AND CREDIT RISK

## Net Debt/EBITDA <sup>(1)(2)</sup>



## CREDIT RISK

AGENCY	RATING	OUTLOOK	DATE
Fitch	BBB-	Stable	11/06/2018
S&P	BBB-	Stable	03/14/2018
Moody's	Ba1	Stable	04/10/2018

FitchRatings



STANDARD & POOR'S



(1) Does not include Braskem Idesa's net debt and EBITDA

(2) Includes Leniency Agreement





# GOVERNANCE AND COMPLIANCE

# GOVERNANCE AND COMPLIANCE

**161 projects/initiatives** were planned in Braskem's new Compliance program, of which 149 actions have already been implemented in the recent years (93% completed).

	<b>BEFORE</b>		<b>AFTER</b>
<b>INDEPENDENT MEMBERS</b>	2	→	8 (including Chairman)
<b>COMPLIANCE COMMITTEE</b>	No	→	Creation of a committee foreseen in the Bylaws with at least 3 independent members
<b>CHIEF COMPLIANCE OFFICER</b>	No	→	Direct report to the Compliance Committee, with management independence
<b>COMPLIANCE DEPARTMENT</b>	Report to the Legal Department	→	Report to the BD via Compliance Committee
<b>COMPLIANCE TEAM MEMBERS</b>	8 (Brazil only)	→	35 (Global, <i>Compliance Officers</i> for South America, Mexico, North America, and Europe)
<b>ETHICS LINE CHANNEL</b>	Internal management	→	Outsourced management
<b>COMPLIANCE TARGETS</b>	No	→	Targets applied to all Company's leaders
<b>INTERNAL AUDIT</b>	No	→	Internal Audit Team with administrative reporting to the CCO, and functional, to the Compliance Committee

**BEFORE**

**AFTER**

**DIVIDEND POLICY**

No



- Definition of the rules for dividend distribution above the mandatory

**COMPLIANCE POLICIES AND PROCEDURES**

Code of Conduct



- Updated Code of Conduct
- Global Compliance System Policy
- Global Anti-Corruption Policy
- Third Party Code of Conduct
- Conflict of Interest Guideline
- Donation and Sponsorship Guideline
- Disciplinary Measures Guideline
- Relationships with Public Agents Guideline

**COMMUNICATION TRAINING**

E-learning Code of Conduct



- Code of Conduct and Anti-Corruption Policy Trainings
- Face-to-face training for all areas with above average exposure to compliance risks
- Global Dissemination of Communication (Videos, Banners, Announcements, Badges, Global Survey)

**THIRD PARTY COMPLIANCE**

Simplified evaluation



- Third party risk and integrity assessment
- Incorporation of anti-corruption clauses in contracts with third parties

# CIRCULAR ECONOMY



IN THE CIRCULAR ECONOMY,  
NOTHING IS CREATED, NOTHING  
IS WASTED. EVERYTHING  
TRANSFORMS.

### BELIEF

Plastic and chemistry  
make life better

### PURPOSE

Improve people's lives by  
creating sustainable  
chemistry and plastic  
solutions

The transition to a **Circular Economy**, in which everything can be continuously used and reused in a new cycle, begins with the reeducation of the productive sector and the way consumption is made.

## GLOBAL INITIATIVES



Partnerships with clients to develop **products** which can **favor recycling and reuse** of plastic packaging

1

**Assessments** over plastics' **life cycle** and **environmental and climate impacts**

5



Investing in **new renewable origin resins**

2

Supporting measurement and communication of **recycling and recovery indicators** for plastic packaging materials

6



Supporting and developing **new technologies and types of recycling**

3



Partnerships aimed to understand, prevent and **solve the debris problem in the oceans**

7



**Recycling programs and responsible consumerism**

4

**Supporting Science-based policies** to understand the origins and prevent debris in the oceans, **especially plastic**

8



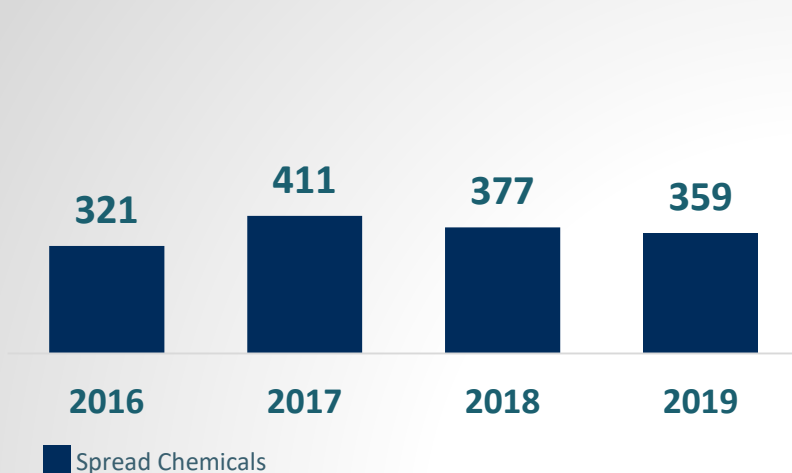
# SCENARIO





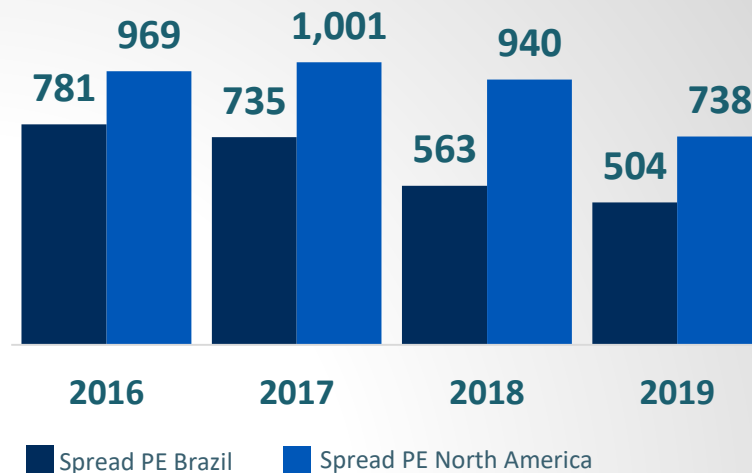
# PETROCHEMICAL SCENARIO\* - SHORT TERM

## CHEMICALS (US\$/ton)



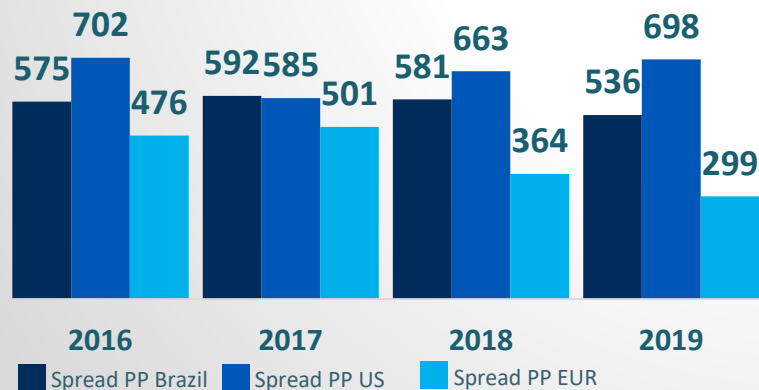
\*\*Main chemical prices (15% ethylene, 10% propylene, 35% BTX, 10% butadiene, 5% cumene e 25% fuels) – Naphta ARA

## PE (US\$/ton)



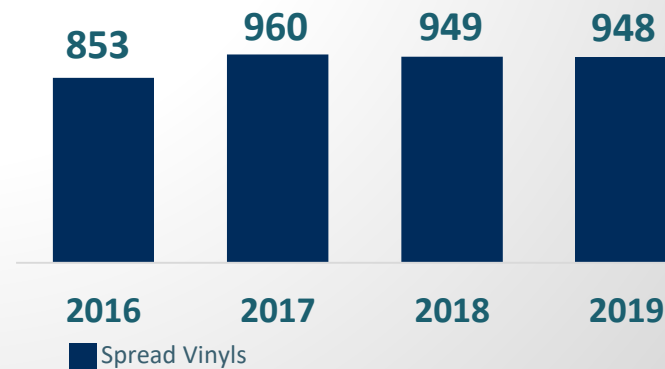
Brazil: PE US – Naphta ARA (91%), Ethane (4,5%) e Propane (4,5%)  
North America: PE US – Ethane US

## PP (US\$/ton)



Brazil: PP Asia – Naphta ARA (91%), Ethane (4,5%) e Propane (4,5%)  
US: PP US – Propene US  
EUR: PP EUR – Propene EUR

## VINYLS (US\$/ton)



Asia PVC Price - (Naphta ARA\*0.48) - [ (Brent Price/1,725)\*1,725] + (0,685 x Caustic Soda Price)

\*Source: IHS

## CHEMICALS

- Short-term: **volatility** in **feedstock prices** and **chemical prices** due to **trade war** and **geopolitical issues**
- Intensive cycle of **schedule turnaround** in **Europe** during **1H19** tends to **reduce supply of chemicals** in this period
- Brazilian market: **strong demand for chemicals** expected in almost all segments

## PE

- New **US PE capacities** already **operational** in 2017-18
- **No significant supply increase** in 2019
- Short term: **demand** tend to **keep strong growth**
- **Spreads** are expected to **recover gradually**

## PP

- **Drop in PP demand in China** due to the **trade war** between US and the Asian country
- **Recovery** should happen in **2019** with **trade rebalancing**
- **Demand** in the **US** is expected to **growth** with **stable supply**

## VINYLS

- **Short-term: volatility** in **prices** and **drop** in international **spreads** due to **trade war**
- **Soda prices** also impacted by **temporary reduction of the relevant consumer** in the **aluminum sector**
- **Mid/long-term: spreads** are expected to **recover** due to **strong caustic soda demand** (pulp and paper) and **PVC in Asia**, and also, **shutdown** of **obsolete plants** given **environmental restrictions in China**

# PRIORITIES





## GOALS

1

### PRODUCTIVITY AND COMPETITIVENESS

Pursue improvements in **productivity** and **competitiveness** of current operations, focused on **operational efficiency** and **cost leadership**

**Braskem as a first quartile operator**

2

### FEEDSTOCK DIVERSIFICATION

**Diversify feedstock profile**, increasing exposure to gas and maintaining the **flexibility of the assets**

**Reach balance between liquid base and gas base, creating flexibility of +/- 20%**

3

### GEOGRAPHIC DIVERSIFICATION

**Expand the global footprint** outside Brazil, with **gains in scale in PE and PP**, reinforcing our **leadership in the Americas**

**Increase global capacity by ~25%, with operations outside Brazil representing more than 50% of EBITDA**

4

### REPUTATION AND GOVERNANCE

**Strengthen Braskem's image and reputation**, among team members, society and investors, through advancements in compliance, sustainability, innovation and people management

**Recognition of Braskem as a global, innovative and people-centered company**



# Braskem



**MEETING WITH  
INVESTORS**

SÃO PAULO, NOVEMBER 13, 2018

*BRASKEM S.A.*



**20** Anos

*Selo Assiduidade*  
**APIMEC-SP**

*Platina*



2018