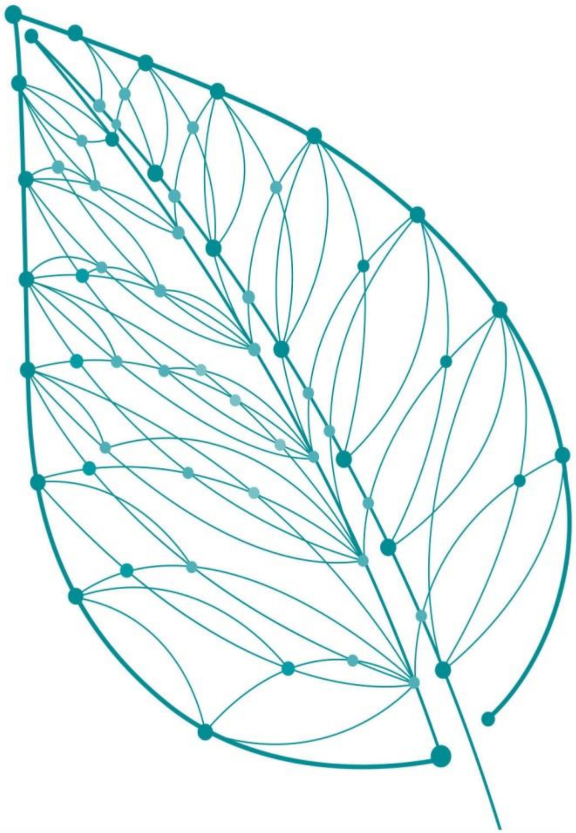

Global Trends and Their Impact on the Petrochemical Industry

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Moscow state university, February 2018

Trends shaping our changing world

Demographics

Demographics (population growth)

- In 1950, there were 800 million children under 15, and in 2025 there will be 2.1 billion.
- World life expectancy will increase by 8 years by 2050.

Urbanization (city growth)

- By 2030, 2/3 of the world's population will live in cities (accounting for 80% of global GDP). Today, 1/5 of the population lives in 600 cities (accounting for 60% of global GDP).

Migration

- 50% of transborder migration in the last 20 years has been from non-Arab countries in Asia.

Trade and consumption

Growth in global trade and transport

- Global trade has increased 4 times over the past 25 years

Consumption models (growing inequality)

- The gap in per capita GDP between developed and developing countries was $40,000/person.
- ✓ Luxembourg – $104,500/person
- ✓ Qatar – $66,300/person
- ✓ South Sudan has the lowest per capita GDP – $245/person.

Resources/the environment

Energy (energy efficiency)

- The share of alternative energy sources will increase*

Water (scarcity)

- 5 billion people (54% of the population) will not have access to clean drinking water in 2050

Land (scarcity)

- Only 3% of the land surface is available for agriculture

Food (scarcity)

- 25% of food is lost at various stages of production, transportation and storage

Climate (global warming/environmental degradation)

- Melting of Antarctica's ice will raise sea level by 10 m

Technology

4th Industrial Revolution

- Blurring the lines between the physical, digital and biological spheres

Digitization in the petrochemical industry

- 3D factory simulation and visualization
- Engineering and diagrams
- Information management
- Material control and project management

*Note: *for moderately high oil prices*

The cities of the future will be “smart”

Elements of a smart city

- Technology
- Sustainability
- Management
- Mobility
- People

The key link in a smart city is the operations center, which collects information about lower-level systems and performs 2 main functions:

- provides information to the whole population
- provides feedback interfaces

- **Energy-efficient heating in buildings (the required energy comes from within the building without using external sources)**

- technology for taking outside air, purifying it and then heating or cooling it, depending on the preset parameters.

- **Air conditioning system:**

- a heat recovery unit is installed in each apartment for setting preferred air temperature parameters.
- “wet” facade technology keeps heat in the building instead of sending it outside.

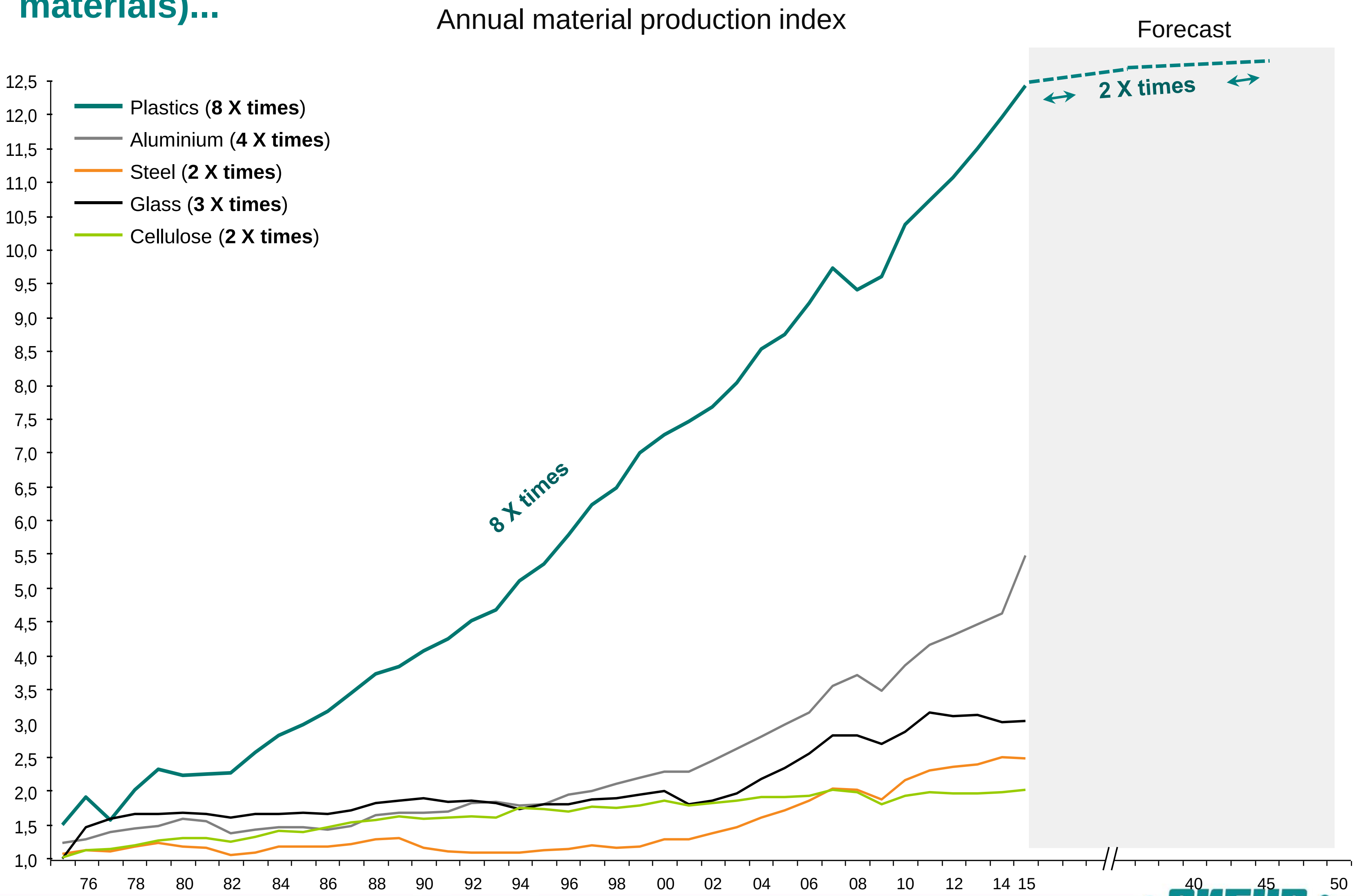
- **Reduced CO_2 emissions:**

- a smart parking system reduces greenhouse gas emissions (since cars looking for parking space create up to 1/3 of urban traffic).

- **Digital emergency alert system:**

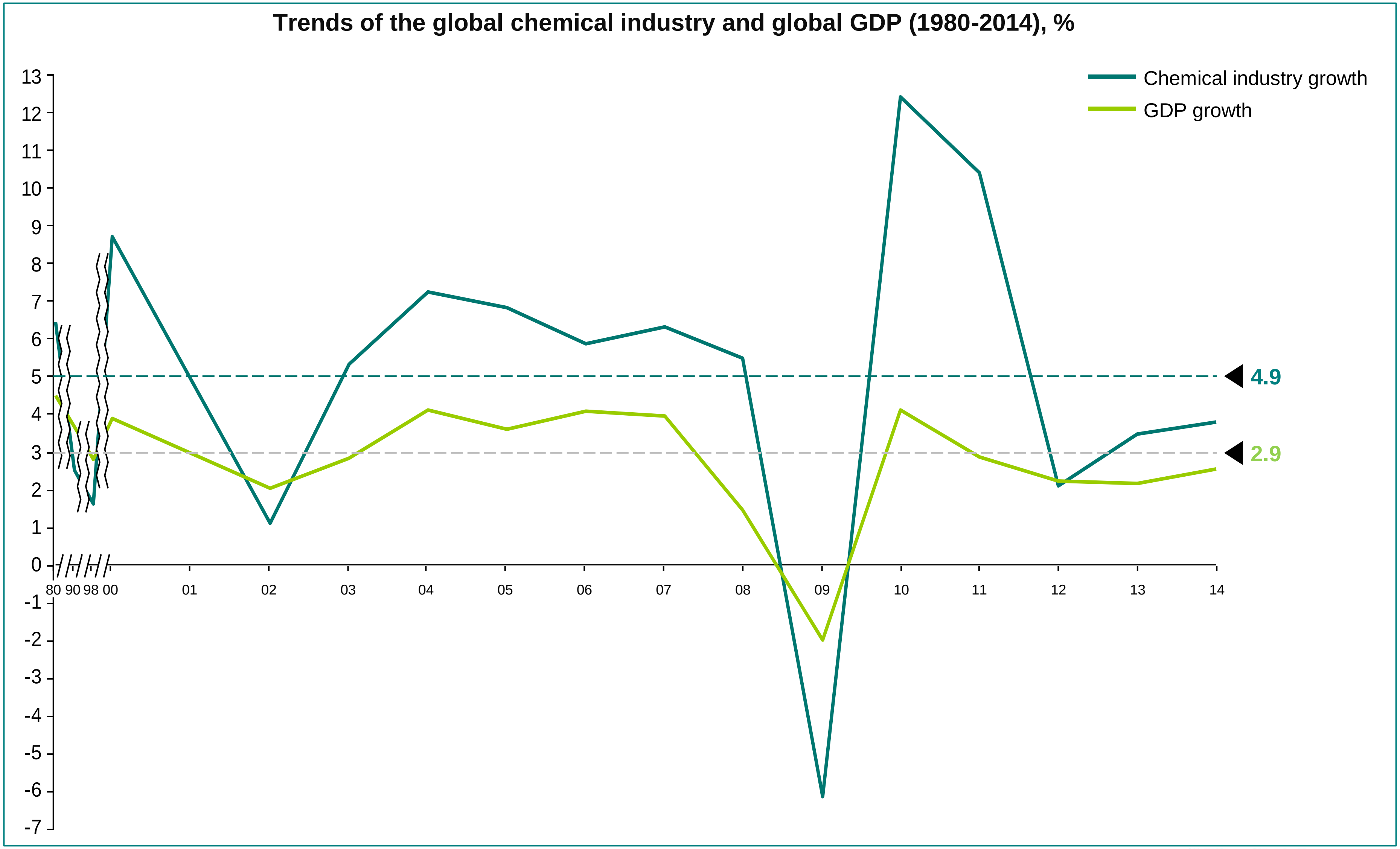
- sensors warn public utilities of malfunctions in water or gas lines as soon as they happen, reducing leaks.
- a “smart city” traffic management system will not only create a “green wave” for ambulances, but will also transmit all information about the patient to the hospital even before arrival, saving time and lives.

In the last 40 years, there has been a polymer revolution (plastic production has increased 8 times, or 2-4 times more than the growth of conventional materials)...



Sources: The New Plastics Economy: Rethinking the future of plastics report; Source: IHS;*OECD Environmental Outlook for the Chemicals Industry (1970, 1980, 1990), GCO Global Chemical Outlook 2012, Statista 2002-2014*

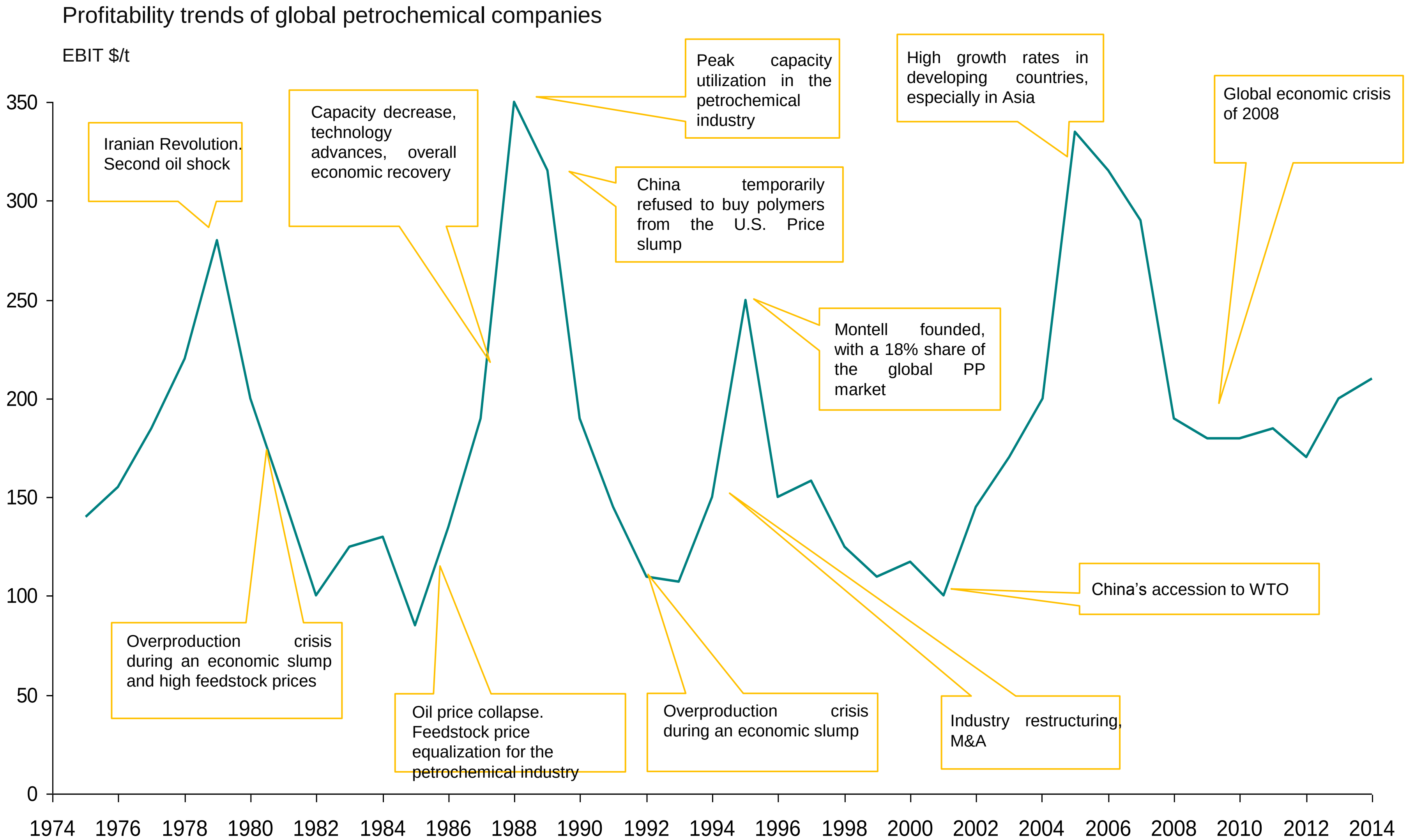
... which has enabled the chemical industry to grow faster than the global GDP...



Sources: The New Plastics Economy: Rethinking the future of plastics report; Source: IHS;*OECD Environmental Outlook for the Chemicals Industry (1970, 1980, 1990), GCO Global Chemical Outlook 2012, Statista 2002-2014*

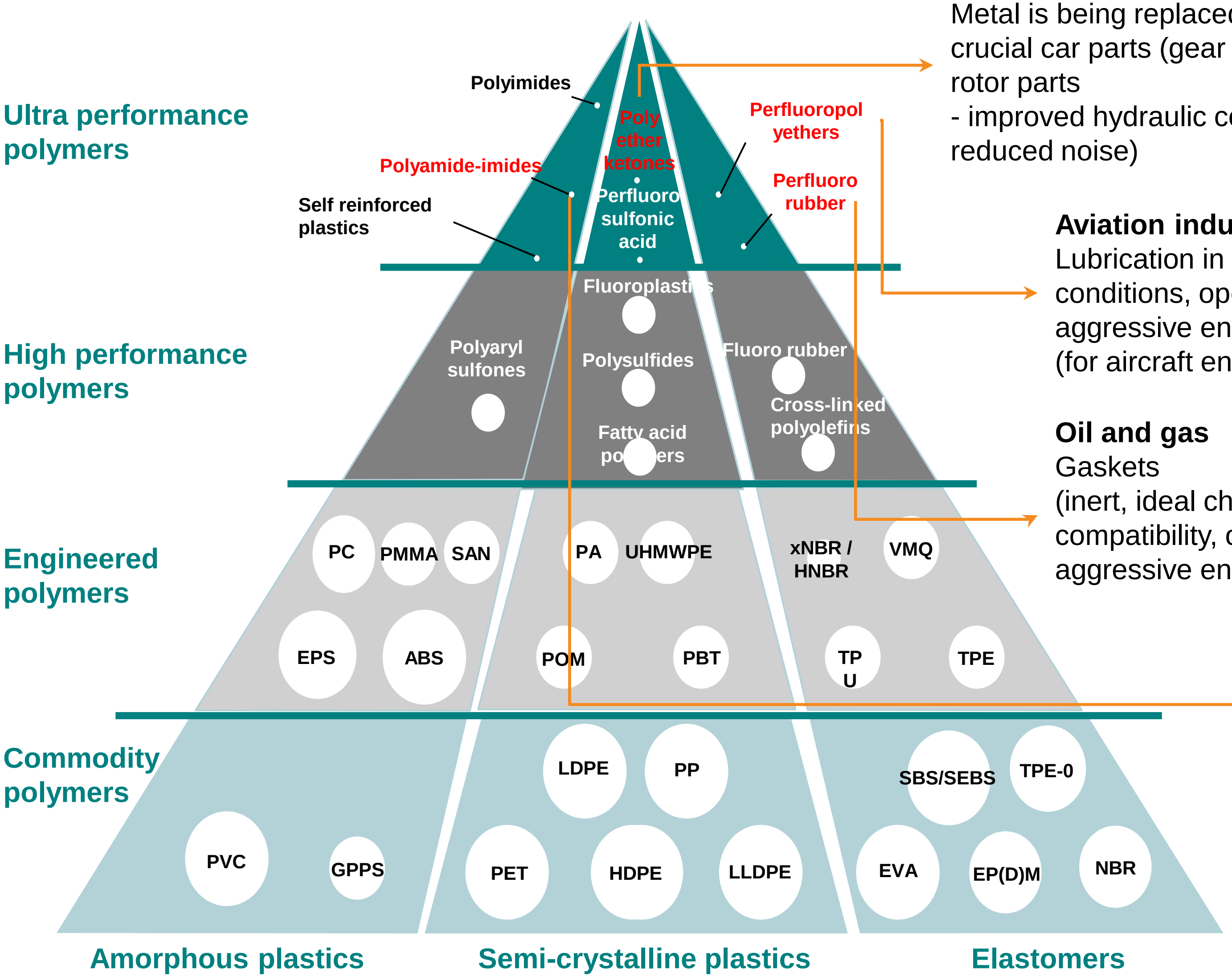
... despite its high cyclicity

The full cycle in the chemical industry lasts 7-10 years on average

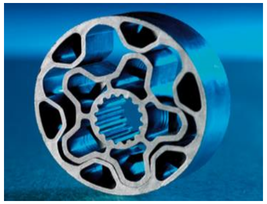


Sources: The New Plastics Economy: Rethinking the future of plastics report; Source: IHS;*OECD Environmental Outlook for the Chemicals Industry (1970, 1980, 1990), GCO Global Chemical Outlook 2012, Statista 2002-2014*

Demand for new materials and technologies is driving growth of petrochemical processing, especially the polymer industry



Auto industry
Metal is being replaced in crucial car parts (gear pump rotor parts
- improved hydraulic control, reduced noise)



Aviation industry
Lubrication in extreme conditions, operation in aggressive environment (for aircraft engines)

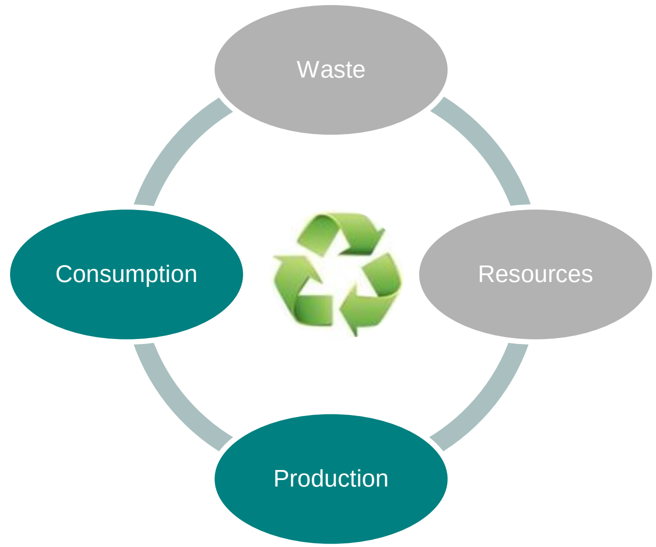
Oil and gas
Gaskets
(inert, ideal chemical compatibility, operation in aggressive environment)

Medicine
Microforming for complex systems used in cardiovascular surgery

A circular economy is designed to eliminate resource limitations

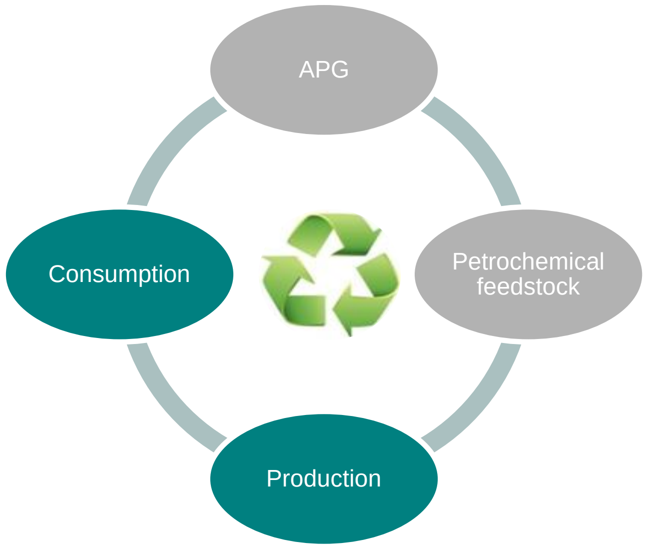
Prerequisites for a circular economy

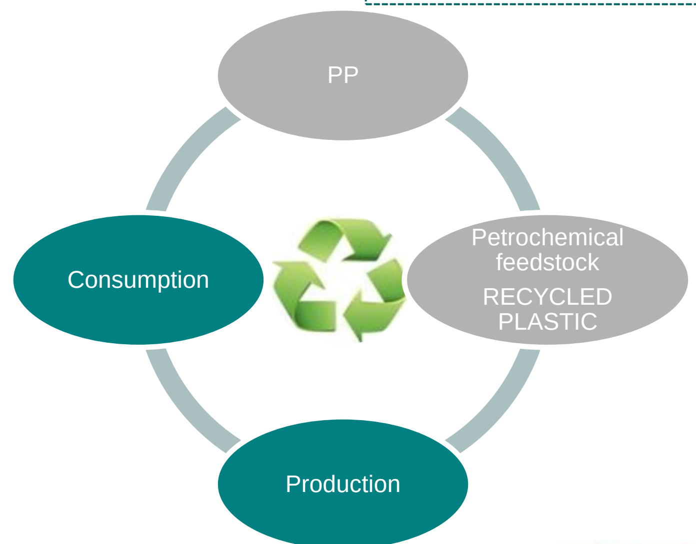
- ✓ Demographic surge
- ✓ Increased demand
- ✓ Resource limitations
- ✓ Environmental degradation
- ✓ A new type of consumer
- ✓ Technology advances
- ✓ Government regulation



Potential benefits of a circular economy

- ✓ Primary resource savings of 1 billion $/ year
- ✓ Income of $ 500 million within 5 years
- ✓ Creation of 100,000 jobs within 5 years
- ✓ Waste disposal reduced by 100 million tons within 5 years - Reduced landfill volume
- ✓ Industrial CO_2 emissions in specific sectors reduced by 45-65%





СИБУР

Low oil prices as well as poorly structured and managed “waste chains” are still the main obstacles to increasing the percentage of plastics recycling

Finance

- Low oil prices
- High sensitivity of processing margin to price volatility for primary plastics due to the large percentage of fixed costs in the production cost
- Cost-effective processing is due to economy of scale; processing is uneconomical in low population areas where there are not enough end users of recycled plastics

Waste collection

- High municipal waste collection costs
- High cost of transporting waste
- Waste collection infrastructure is poorly built and slow to respond to changes in demand structure

Technology

- Increased use of composites makes recycling plastics more complicated

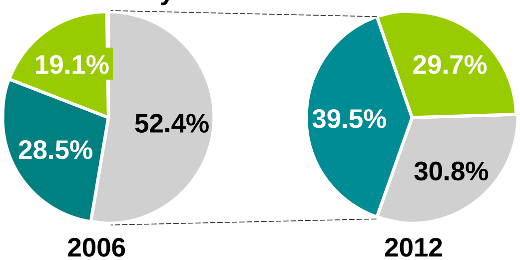
Marketing/Demand

- A small number of consumers prefer to buy products in recycled plastic packaging
- The use of recycled plastic to make bottles will decrease without legislative support
- Offering a broad range of primary plastics for various purposes reduces consumption of recycled plastic in areas where mandatory recycling is not legislated

Sources: IHS Chemical – Plastics Recycling, European Commission

Polymer waste recycling is part of the general waste management system and cannot be developed separately; Germany is the EU leader

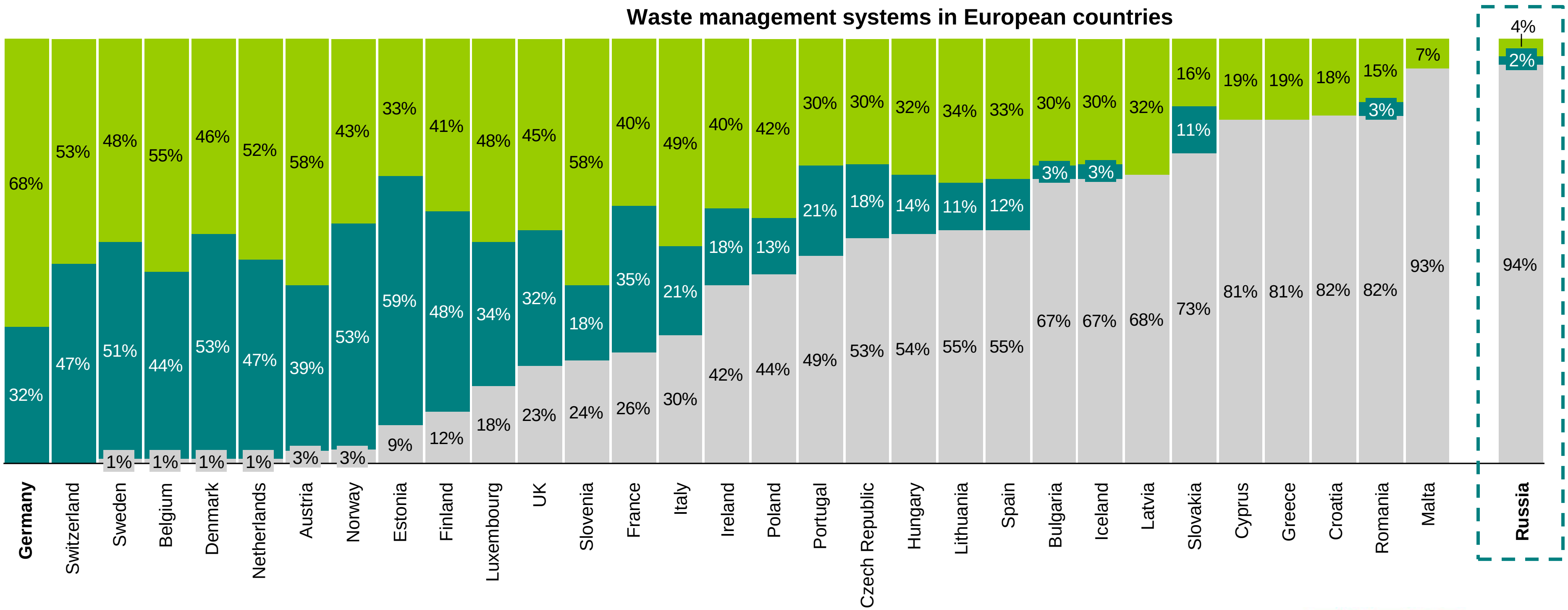
The polymer waste management system in the EU



Recycling and composting | Waste-to-energy | Landfill

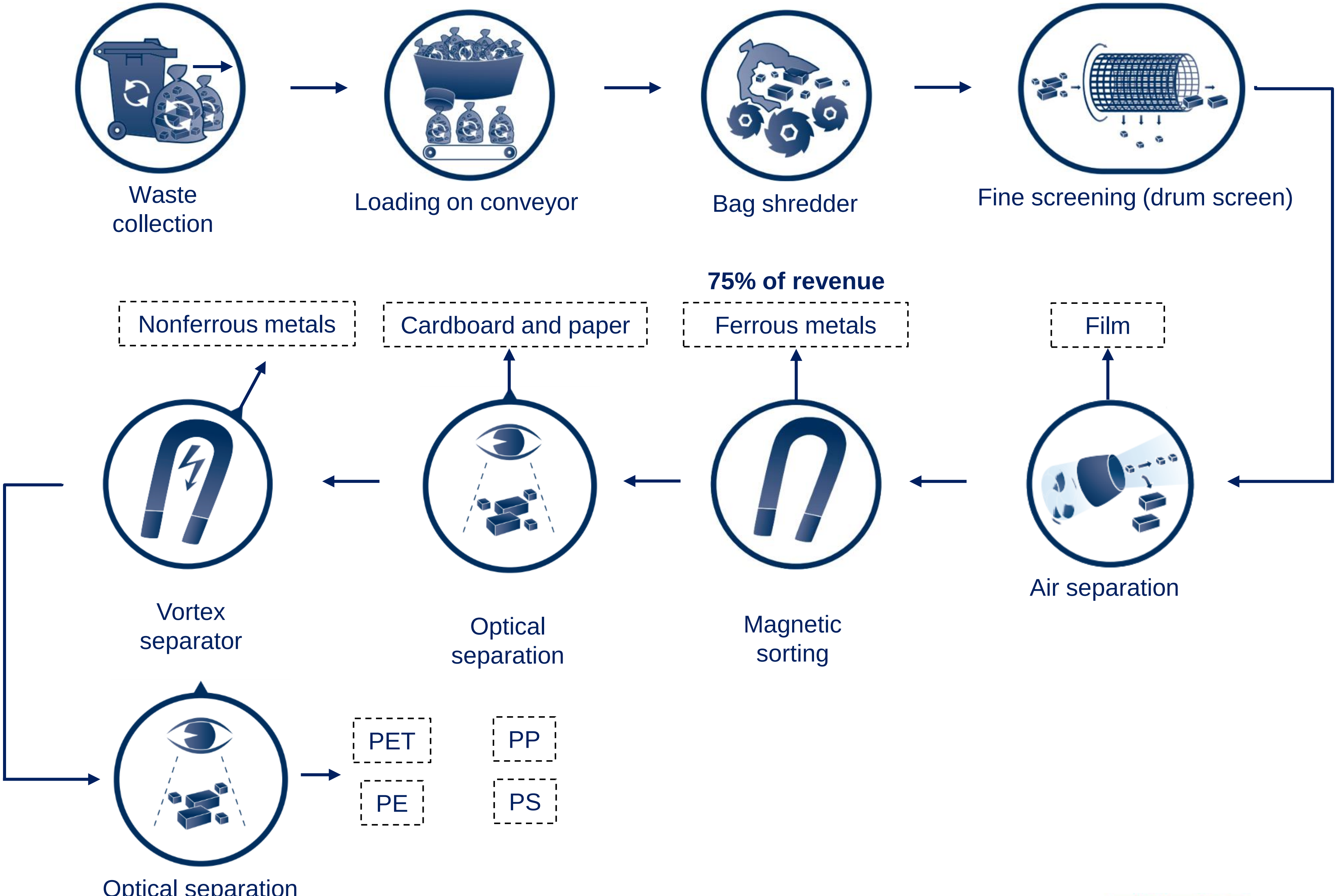
In Europe, ~30% of polymers are recycled and ~40% are incinerated.

Nearly half of the polymer waste collected for recycling is exported from the EU. Total net exports from the EU are 2.3 Mt, including 1.6 Mt of PE and PETE



Sources: UN Comtrade Database, Strategy on Plastics in a Circular Economy

Waste sorting flowchart according to ALBA Group (Germany)



New trends – Using recycled plastic (construction)

- Using plastic recycled from recovered ocean waste for road construction
- Unlike traditional paving, it is more resistant to abrasion and temperature drops
- Placing lightweight, durable plastic structures on leveled sand
- A hollow plastic plate allows the use of various cables

- Artificial islands built of trash that has undergone heat and mechanical treatment and compressed into briquettes
- Yumenoshima trash island in Tokyo Bay has a stadium, a park, greenhouses and a museum
- Ogishima trash island was created especially for building a metallurgical plant on it
- Kansai International Airport is located on an artificial island in Osaka Bay

Source: http://bigpicture.ru/?p=696783. https://rodovid.me/Asya/ostrova-iz-musora-v-yaponii.html

Environmental strategic positioning of chemical companies

Global chemical and FMCG companies are employing the following strategies to tackle environmental challenges:

1. Demonstrating their commitment to the concept of Sustainability and environmental protection
2. Focusing on climate protection
3. Showing their commitment to the concept of a Circular Economy
4. Positioning the company's operations as part of the solution to Global Challenges

These strategies are based on the relevance of environmental risks for the chemical industry today. Climate protection is still a key topic, but the increasing urgency of environmental pollution by waste makes the strategy of commitment to a Circular Economy even more important

Source: INEOS website

Case 1 – focus on the advantages of plastic from the perspective of climate protection – INEOS, BASF and Total

2

Positioning products from the perspective of climate protection will help transform the image of traditionally “dirty” products (e.g., plastic).

INEOS is showing its dedication to solving climate problems by developing and manufacturing carbon fiber: using carbon fiber in aircraft construction increased energy efficiency of the aircraft by 30%.

BASF is focused on using polymers in vehicle manufacturing, which reduces their weight (and thus fuel consumption and CO2 emissions), and the company’s insulation products also help save energy.

Total is using its Ecosolutions program, in which products are marked with a special label, to promote reduced resource, energy and water consumption and minimize environmental impact

Source: INEOS, Total and BASF websites

Case 2 – combating climate change using the example of SOLVAY and BASF

2

Solvay has set a "greenhouse gas reduction goal" (the ratio between CO_2 emissions and EBITDA) of 40% and is focusing on means of achieving the goal:

- Optimizing manufacturing
- Developing green technologies
- Increasing the percentage of renewable energy sources in power consumption

On January 1, 2016, the company set an intrinsic value of EUR 25/ton on CO_2, which is taken into account when making investment decisions.

In 2016, energy-efficient technologies and products from **BASF** allowed its customers to reduce greenhouse gas emissions by 540 million tons of CO_2 equivalent.

In this way, the company is shifting the focus from its own CO_2 emissions and emissions from power consumption to emissions related to using the company's products. This will show more significant results.

Source: Solvay and BASF websites

Case 3 – commitment to a circular economy – FMCG companies

3

The strategy for supporting a circular economy is especially evident in the sustainability goals of FMCG companies:

Coca Cola:

- Achieving recycling and reprocessing figures of 75% for the company's packaging on developed markets by 2020

PepsiCo:

- Achieving recycling or reprocessing figures of 100% for its packaging by 2025
- Achieving 0% disposal of consumption waste from the company's operations by 2025

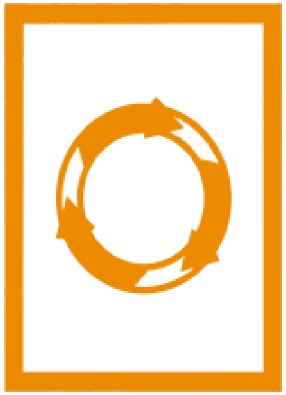
Unilever:

- Cutting waste from the company's products in half by 2020
- By 2025, all plastic packaging will be suitable for reprocessing and reuse or will be fully biodegradable

Source: Coca Cola, PepsiCo, Unilever websites

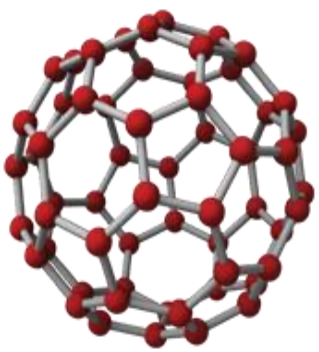
Case 4 – commitment to a circular economy – international chemical companies

3



Dow Chemical is showing its commitment to solving waste problems through R&D. Its sustainable development strategy includes the goal of presenting 6 large-scale waste recycling and reprocessing projects together with the government and other industries by 2025.

INEOS is focused on developing lighter plastics with the strength and durability of conventional plastics. It is easier to recycle these plastics than regular ones, which helps reduce the amount of waste.



DuPont is focused on manufacturing biodegradable plastics (bioplastics). The company says it has one of the largest biopolymer product lines on the market and emphasizes the sustainability of bioplastics compared to conventional oil- and gas- based products.

Source: INEOS, Dow Chemical and DuPont websites

The Fourth Industrial Revolution blurs the lines between the physical, digital and biological spheres

From Industrial Revolution 1.0 to Industrial Revolution 4.0

Level of complexity

FIRST
Industrial Revolution

Water and steam power used to mechanize production

First machine tool 1784

SECOND
Industrial Revolution

Division of labor and continuous-process manufacturing powered by electricity

First assembly line 1870

THIRD
Industrial Revolution

Electronic and IT systems used to automate production

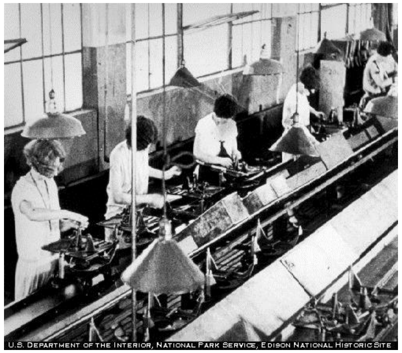
Programmable logic controller and Internet 1969

FOURTH
Industrial Revolution

Cyber-physical systems and biomechanics

?

1800 1900 2000 Today



The chemical industry has always played a leading role in innovative transformations, and is a key component in implementing the "Industry 4.0" concept today

	Elements of the 4th Industrial Revolution	*Growth rate*	*Chemicals used*
MOBILITY	**Electric cars**	Electric car sales by **2020 – 4.9 million units**	Plastics, composites, battery components
	Umanned aerial vehicles (UAV)	UAV market: **2015 – $10.1 billion** **2020 – $14.9 billion**	Plastics, composites, battery components
MOBILE AND SMART DEVICES	**Smartphones and tablets**	Number of mobile devices in use: **2015 – 8.6 billion** **2020 – 12.1 billion**	Board and panel components, transparent wires, protective films, photoresists
	Flex screens	AMOLED screen market: **2015 – $2 billion** **2020 – $18 billion**	Board and panel components, transparent wires, protective films, photoresists
CAPACITY AND COMPUTING	**High speed Internet**	High speed Internet: **2015 г. – 24.7 Mbit/s** **2020 г. – 47.7 Mbit/s**	Chlorosilane for ultrapure glass
	More efficient microcircuits	AMOLED screen market: **2015 – $2 billion** **2020 – $18 billion**	Dielectrics, photoresists, colloidal silicon dioxide, etc.

Source: Digital Transformation Initiative: Chemistry and Advanced Materials Industry, WEF & Accenture

3D printers can be used to print the body and small parts; standard internals are used for cars in most cases

Urbee 2
(3D printing – 80%)

- Manufacturer: **KOR Ecologic**
- Year of manufacture: **2013**
- Weight: **544 kg**
- Speed/Engine: 112 km/h. An internal combustion engine running on gasoline and ethanol; the battery can be charged overnight
- Technology: (Fused Deposition Modeling, FDM). A 3D object is formed by fused deposition for 2500 hours. The model is based on a metal frame and 50 plastic parts
- Function prototype

Strati
(3D printing – 85%)

- Manufacturer: **Local Motors**
- Year of manufacture: **2014**
- Weight: **961 kg**
- Speed/Engine: up to 65 km/h. Battery charge will last for 190-240 km
- Technology: (Fused Deposition Modeling, FDM). The car is made of carbon fiber (15%) reinforced thermoplastic
- Functional concept

Blade
(3D printing – about 25%)

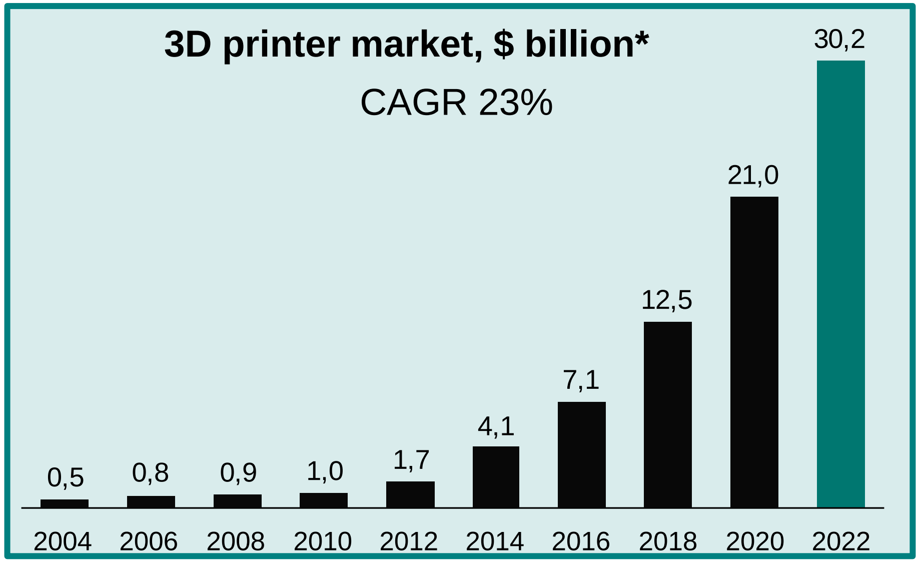
- Manufacturer: **Divergent3D**
- Year of manufacture: **2015**
- Weight: **635 kg**
- Speed/Engine: 700 HP dual-fuel 4-cylinder turbo engine accelerating to a “hundred” in 2.2 seconds.
- Technology: Direct Metal Laser Sintering (DMLS)*. Printed: carbon fiber components connected with aluminum joints to make a strong, light vehicle frame. Made by traditional methods: composite panels, wheels and wheel covers, brake pads and other parts.
- Functional concept

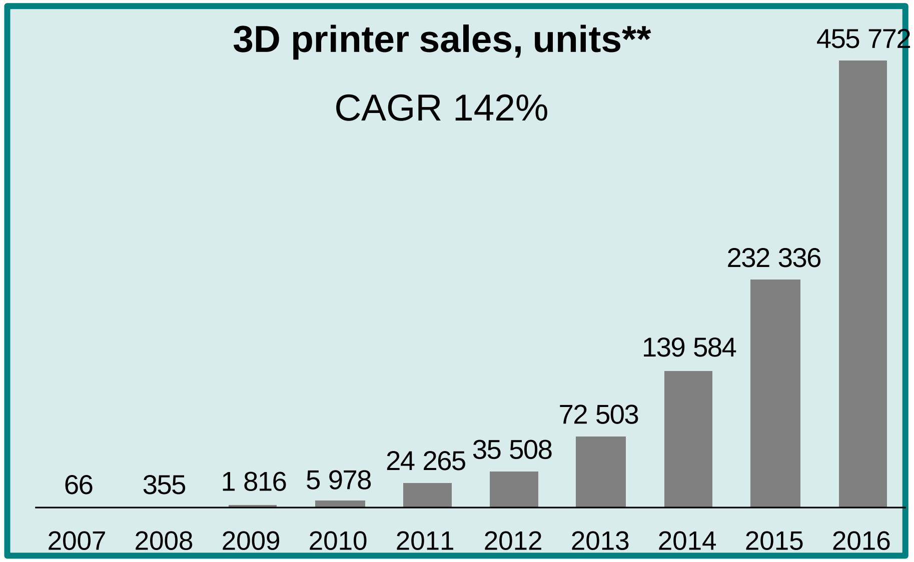
StreetScooter C16
(3D printing – 75%)

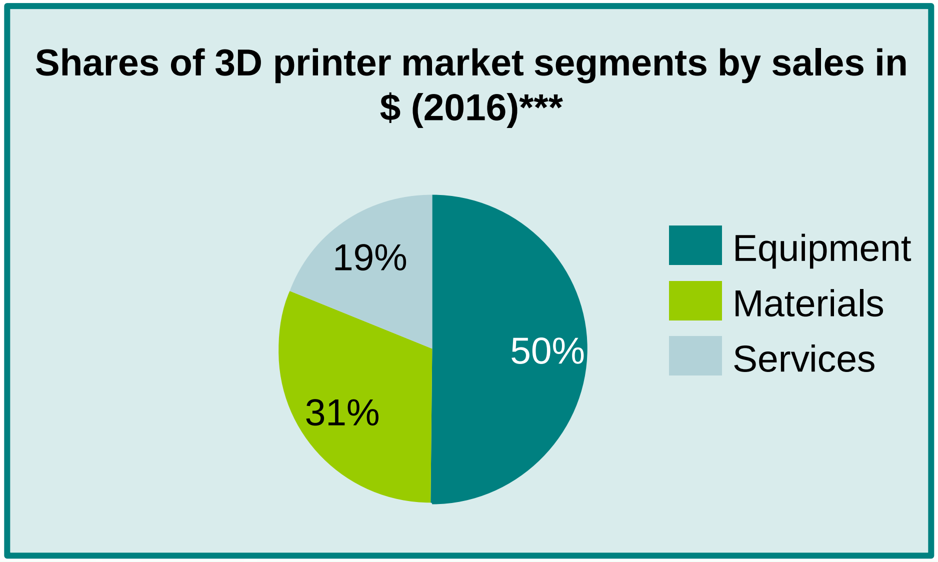
- Manufacturer: **Aachen University**
- Year of manufacture: **2015**
- The two-seater car weighs 450 kg without the batteries
- Speed/Engine: up to 100 km/hour. A fully charged battery will last for 100 km. Technology: (PolyJet). The front and rear of the body, bumpers, doors, wheel arches, side skirts and other standard parts; nearly the whole interior and undercarriage and transmission parts were printed.
- Function prototype

Note: aluminum powder melted by a laser is used to create the required form layer by layer.

Outlook for the global 3D printer market
The market is growing rapidly; CAGR for 2004-2022 is 23%*







Wohlers Report 2016, 3D Printing Market…Global forecast to 2022

** *Wohlers Report 2015, Gartner*

*** *IDC Special Study (forecast)*

Strategies of petrochemical players are based on their value chain capabilities and advantages

FEEDSTOCK → PRODUCTION → SALES

Strategy No. 1: Access to low-cost feedstock

Why is this important?

The feedstock cost component could reach 80% of the production cost (e.g., for PE).

So low-cost feedstock is a key factor of competitiveness.

Strategy No. 2: Access to main markets

Why is this important?

Basic chemicals are always produced in bulk. E.g., present-day PE unit output is typically 1-1.5 million t. Compare this with PE consumption of 1.9 million tons in Russia in 2014.

Strategy No. 3: Access to technology

Why is this important?

Prices for higher value added products are always higher than those for base chemicals.

Example of a value added product*:

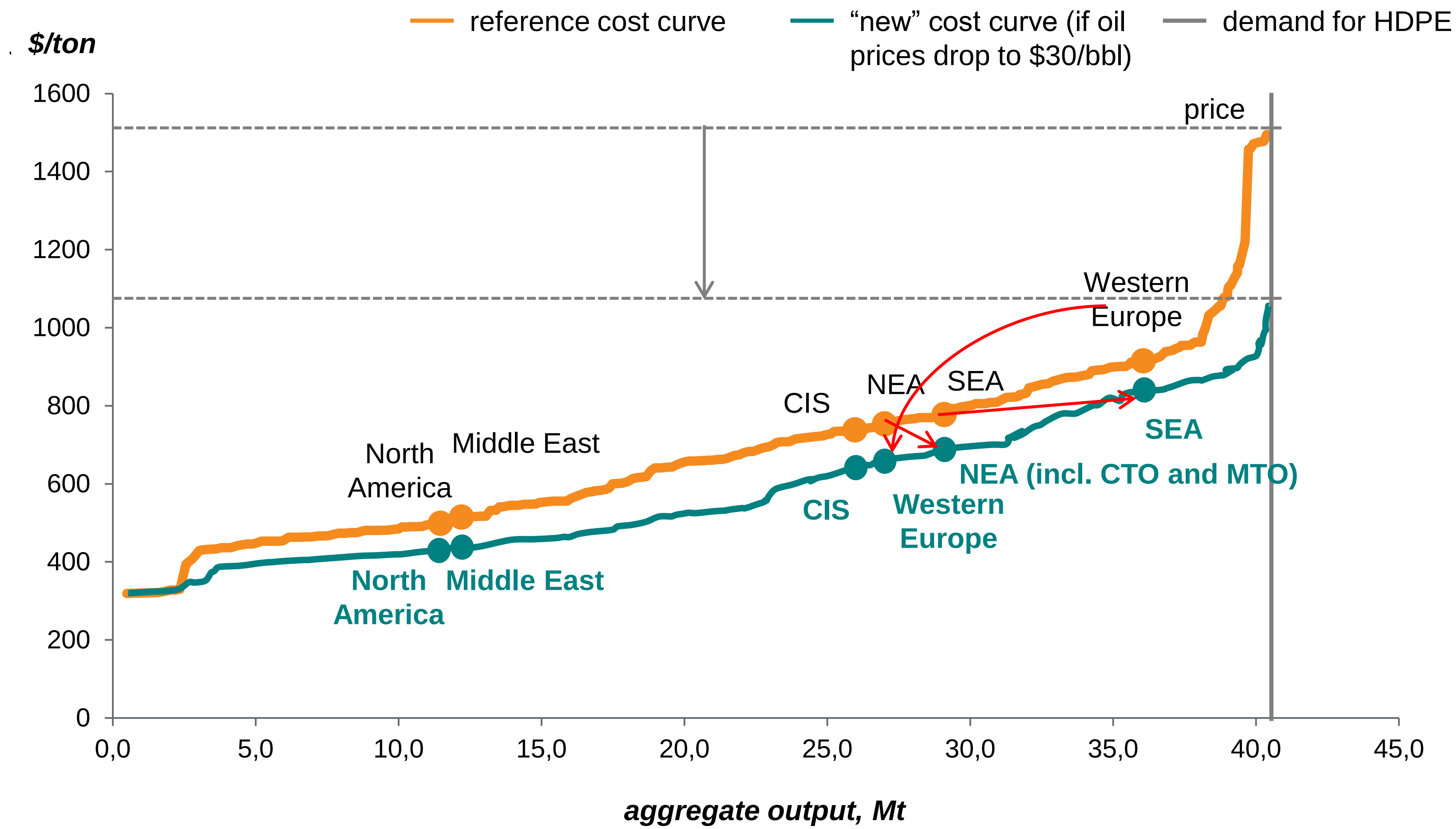
100% → 146% → 285%

Phenol per t of PC
Consumption 0.8 t
Costs $1,300 → Bisphenol A per t of PC
Consumption 0.91 t
Costs $1,900 → Polycarbonate, 1 t
Price $3,600/t

**estimate, sources – Platts, ICIS LOR*

When oil prices drop, the global cost curve for PE manufacturers flattens, PE market volatility increases, and feedstock advantage gradually weakens

Global cost curve for HDPE manufacturers at an oil price of $60/bbl



Recent trends in the chemical industry

Ethane is becoming a global feedstock

23.06.2016 – the tanker Ineos Intrepid delivered 27,000 m^3 of ethane to the Ineos petrochemical plant in Rafnes, Norway. Exporters – the American drilling companies Range Resources and Consol Energy produce crude material at the large Marcellus shale gas field in western Pennsylvania.

Quasi-market mechanism for process management

An auction simulation has been created where different plants can generate a reasonable resource price for one another without outside intervention. A software solution handles big data. A coordinator confirms the final price and gives a “command” to manufacture the required amount of products.

Global warming and the chemical industry

- The Paris Agreement proposes to keep the global temperature rise within 1.5–2°C.
- Transition towards a green economy
- The most promising trends are wind farms and energy-efficient buildings.

South Asia – new emerging markets for the petrochemical industry

Iran and India – prospect, threat, potential?

BASF – Quriosity supercomputer

Quriosity will enable BASF to effectively study complex issues and shorten new product launch times.

A new method for making plastic from CO2 and biowaste

Developed by a team of Stanford University chemists headed by Matthew Kanan

Source: AC Analytics

Main strategic response of petrochemical peer groups is increased segment consolidation and development of new wave of large-capacity projects in the U.S.

	Focus on current investments (including M&A, IP)			Divestment regions / cost reduction	Key trends
	Region and product conversion		R&D		
Diversified global p/c companies	USA Asia Europe	• Mainly basic petrochemicals • Dow DuPont deal • Specialty chemicals, rubbers • Focus on innovative products	• Further development of R&D centers • Digital Technologies adoption	• Europe – cost and asset portfolio optimization	• **Asset portfolio optimization (for Europe)** • **Raw material weight saving** • **JVC with national champions to gain access to emerging markets and feedstock in exchange for technology** • **Moving toward user industries (auto industry, batteries)**
National champions of Emerging Markets	Mainly "home regions" and the U.S.	• Mainly base polymers and aromatics	• Active expansion of the grade range	-	• **Expanding capacity based on feedstock advantages** • **Drive to develop technologies / adding more value added products**
Large specialty and niche manufacturers	Europe, USA, Middle East	• Niche products and specialty chemicals, synthetic rubbers • Reducing the monomer shortage	• Opening innovation centers • Searching for new consumer segments	-	• **Focus on the largest markets in Europe, the U.S. and Asia (China)**
Russian and other feedstock rich companies	Russia, CIS Middle East	• Basic p/c (PE, PP, PS, synth. rubbers, organic chemicals) • Setting up JVC with national champions	• New base polymer grades	• Upgrading production facilities, reducing operating costs	• **Revamping/building competitive world scale capacities** • **Monetizing available raw materials potential** • **Projects in basic bulk petrochemicals**

Sources: corporate reports, industry media

Chemical industry is undergoing major changes thanks to the digital revolution that is mainly about moving towards Digital Enterprise

Digital technologies with the greatest impact on the chemical industry

Technology	Description
Robots and automation	Different robots can work autonomously or together with people
Sensors	Recording physical parameters (equipment, the environment, etc.) and transmitting radio signals
Big data analytics	Generating relevant forecasts based on any data (even unstructured)
Artificial intelligence	Smart machines help people perform tasks and make decisions
3D printing	Combination of software, equipment and materials – optimum conditions for 3D printing
Industrial Internet of Things	Connecting sensors, equipment and electronic devices in a single network
Mobility and equipment	Due to a combination of networks, mobile devices and software, connection is available from anywhere at any time
IT – application interaction	Combining universal IT solutions and special business process control and analysis systems
Cloud	A server-based network stores and processes virtual information from anywhere in the world
Platforms, applications	Broad range of software and services

Source: Digital Transformation Initiative: Chemistry and Advanced Materials Industry, WEF & Accenture

SIBUR today...

SIBUR's competitive advantages

COMPETITIVE ACCESS TO STRANDED FEEDSTOCK

- Strategic location in Western Siberia – home to the majority of hydrocarbon feedstock reserves in Russia
- Extensive infrastructure creating high barriers to entry
- ~90% of feedstock supplies are guaranteed under multi-year contracts

LEADERSHIP IN ATTRACTIVE DOMESTIC MARKET

- Domestic consumption of petrochemicals lagging behind developed economies
- The largest player in the domestic petrochemical industry

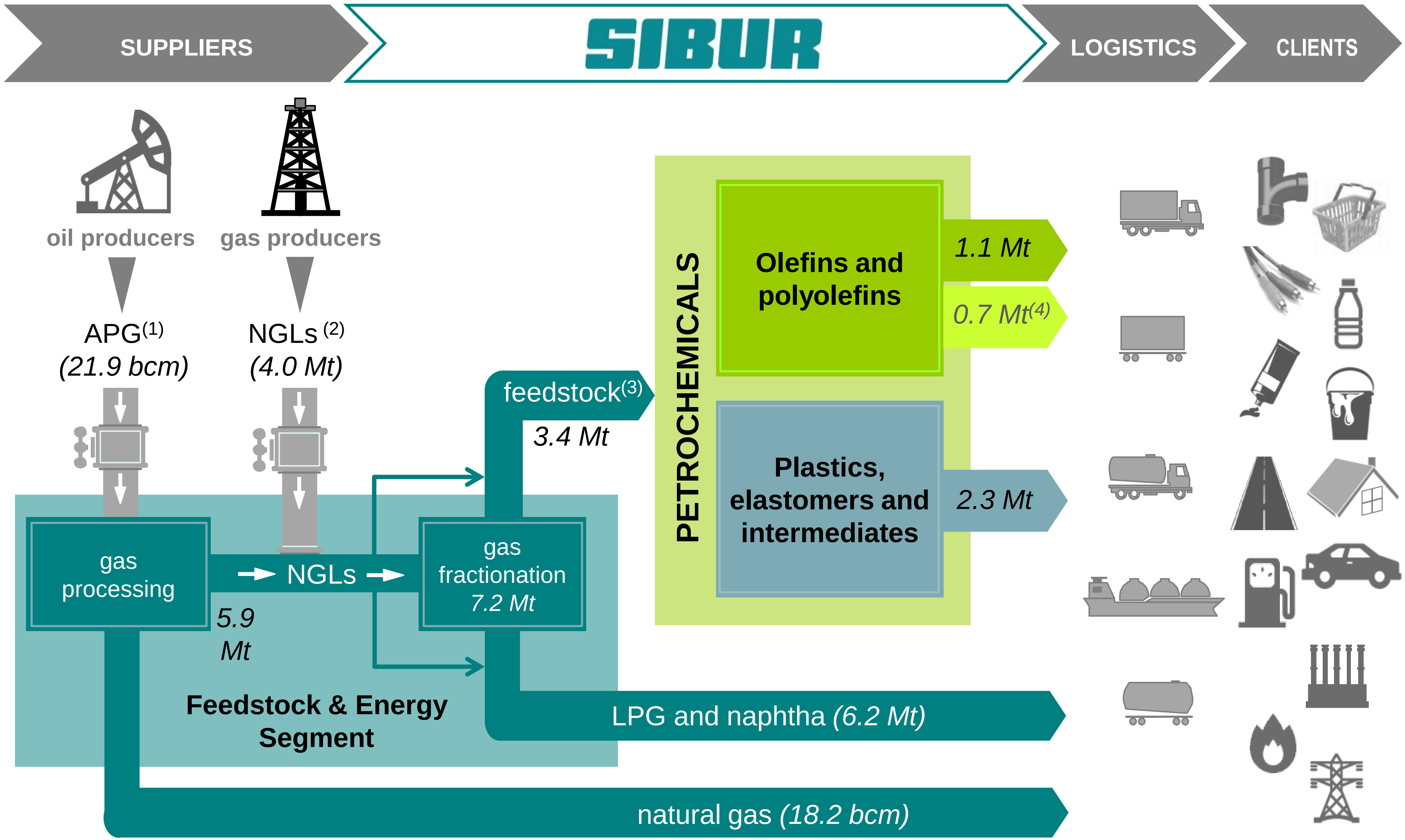
ROBUST PROFITABILITY THROUGH THE CYCLES

- Portfolio diversification across geographies and demand drivers
- Cost base in oil-linked Russian currency and revenues mainly in hard currencies serve as a natural hedge against energy cycles
- Complementary energy and petrochemical businesses resist oil shocks
- A leading EBITDA margin in petrochemical universe

UNIQUE GROWTH STRATEGY

- Polyolefin production in Western Siberia – efficient monetization of ample feedstock stranded in the region
- ZapSib – large-scale polyolefin capacity in Western Siberia to capture best-in-class margins
- Proven track record in execution of investment projects in Russia

... a unique vertically integrated gas processing and petrochemical company



(1) Associated petroleum gas (APG) is a by-product of oil production.
(2) Natural gas liquids (NGLs) include raw NGL, LPG (liquefied petroleum gas) and naphtha. Raw NGL is a by-product of gas production.
(3) Includes LPG, naphtha and raw NGL. Composition may vary from year to year depending on market conditions and other limitations.
(4) JV sales include PVC, caustic soda (RusVinyl) and PP (Poliom).

SIBUR is a company that has progressed from a set of isolated assets to becoming a leader of the Russian petrochemical market

Setting foundation for growth

2003 – 2005

- Debt settlement
- Setting up a new managerial team

1st investment cycle

2006 – 2009

- Preparing a long-term development strategy
- Adopting project management best practices
- Setting up a JVC with Solvay
- Investment in feedstock midstream and logistics

2nd investment cycle

2010 – 2014

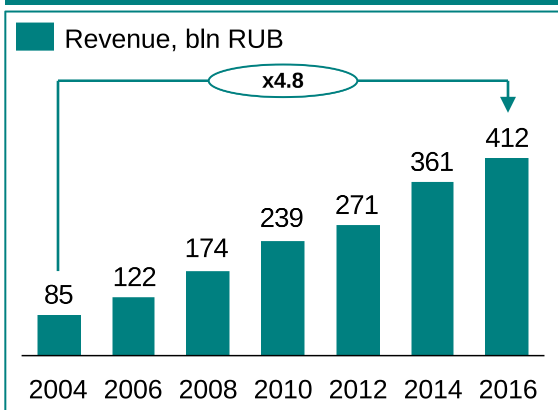
- Selling shares to a group of private investors
- Implementing 30 large investment projects
- Asset optimization, selling non-core assets
- Setting up a JVC with Reliance; a JVC with NPP Neftekhimia*; a JVC with Poliom LLC**
- Start up of Tobolsk-Polymer PP500 plant

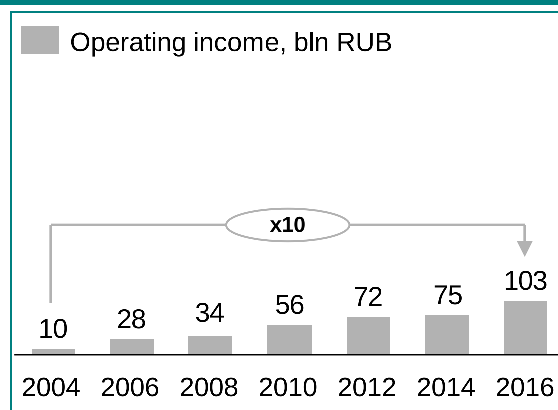
3rd investment cycle

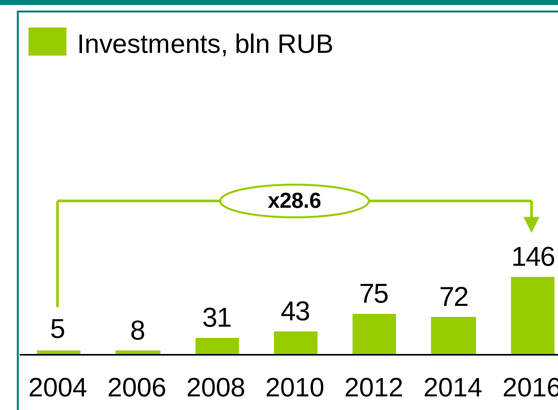
2015-2017

- Launch of the Zapsibneftekhim project
- Sinopec Corp. becomes a minority shareholder (10%)
- China's Silk Road Fund purchased 10% of SIBUR's shares

SIBUR's average revenue growth rate in 2004-2016 was 16%
The average annual growth rate of Russian GDP in the same period was 2%







Note: until 2010 inclusive, financial indicators take SMU and SRS into account

** As of October 2010. – JVC between PJSC SIBUR Holding (50%) and JSC Gazpromneft-Moscow Refinery (50%)*

*** As of May 2014 – JVC between PJSC SIBUR Holding (25%), OJSC Gazpromneft (25%) and CJSC Titan Group (50%)*

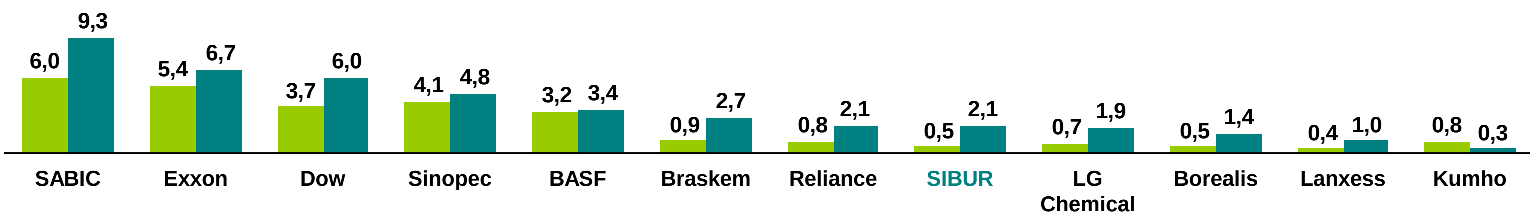
SIBUR has one of the highest EBITDA margins in the industry and is in the top ten by EBITDA and investments compared to global companies

2004
2016

Financial performance of companies / petrochemical segments comparable to SIBUR in 2004/2016

EDITDA[1]

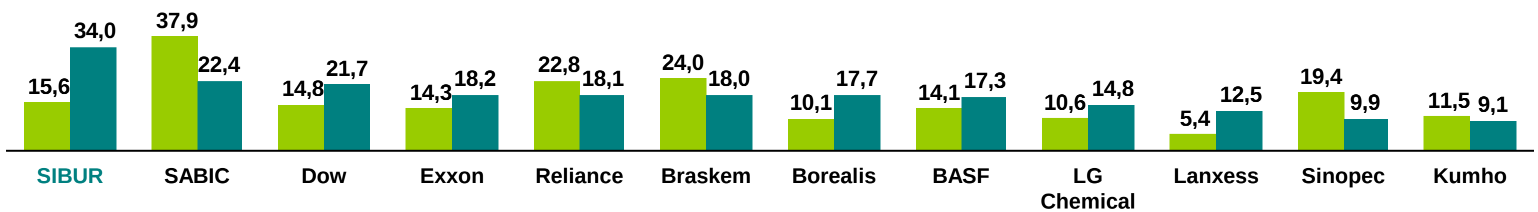
bln $



- **Highest EBITDA among world leaders: SABIC, Exxon Mobil, Dow**
- **SIBUR** is in the **middle**

Profitability

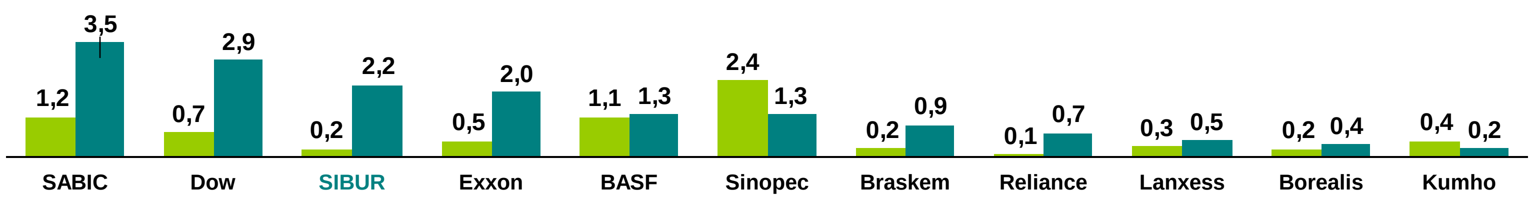
EBITDA Margin, %



- **Average profitability** of these petrochemical companies was **18%** in 2016
- **SIBUR is in the top three**

Investments[2]

bln $



In 2016, **SABIC, Dow and SIBUR made investments of more than $2 billion**

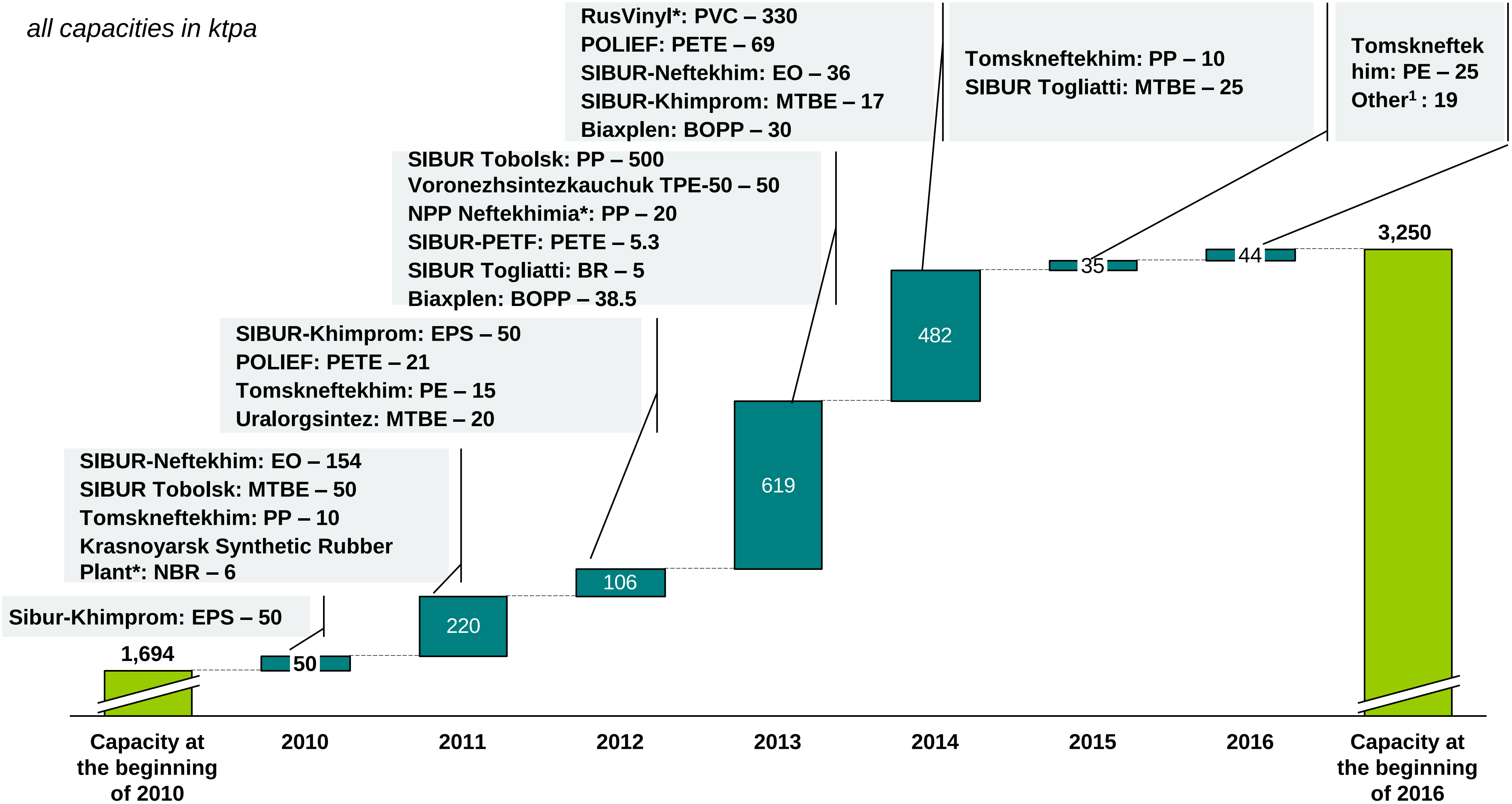
Source: Capital IQ

SIBUR

[1] LG Chemical – operating profit before tax, SABIC – gross profit before tax. BASF (chemicals+plastics); Sinopec (chemicals); Exxon Mobil (chemical); LG Chem (basic materials and chemicals); Reliance (petrochemicals); SABIC (chemicals); Dow (Performance Materials & Chemicals; Performance Plastics; Basic Plastics; Basic Chemicals). [2] SABIC includes all investments.

In the last 6 years alone SIBUR has additionally launched into the market nearly 1.6Mt of petrochemical products

all capacities in ktpa



*Note: * RusVinyl is a JVC of SIBUR (50%) and Solvay (50%); NPP Neftekhimia – JVC of SIBUR (50%) and Gazpromneft (50%); Krasnoyarsk Synthetic Rubber Plant – JVC of SIBUR (75% -1) and SINOPEC (25%+1)*

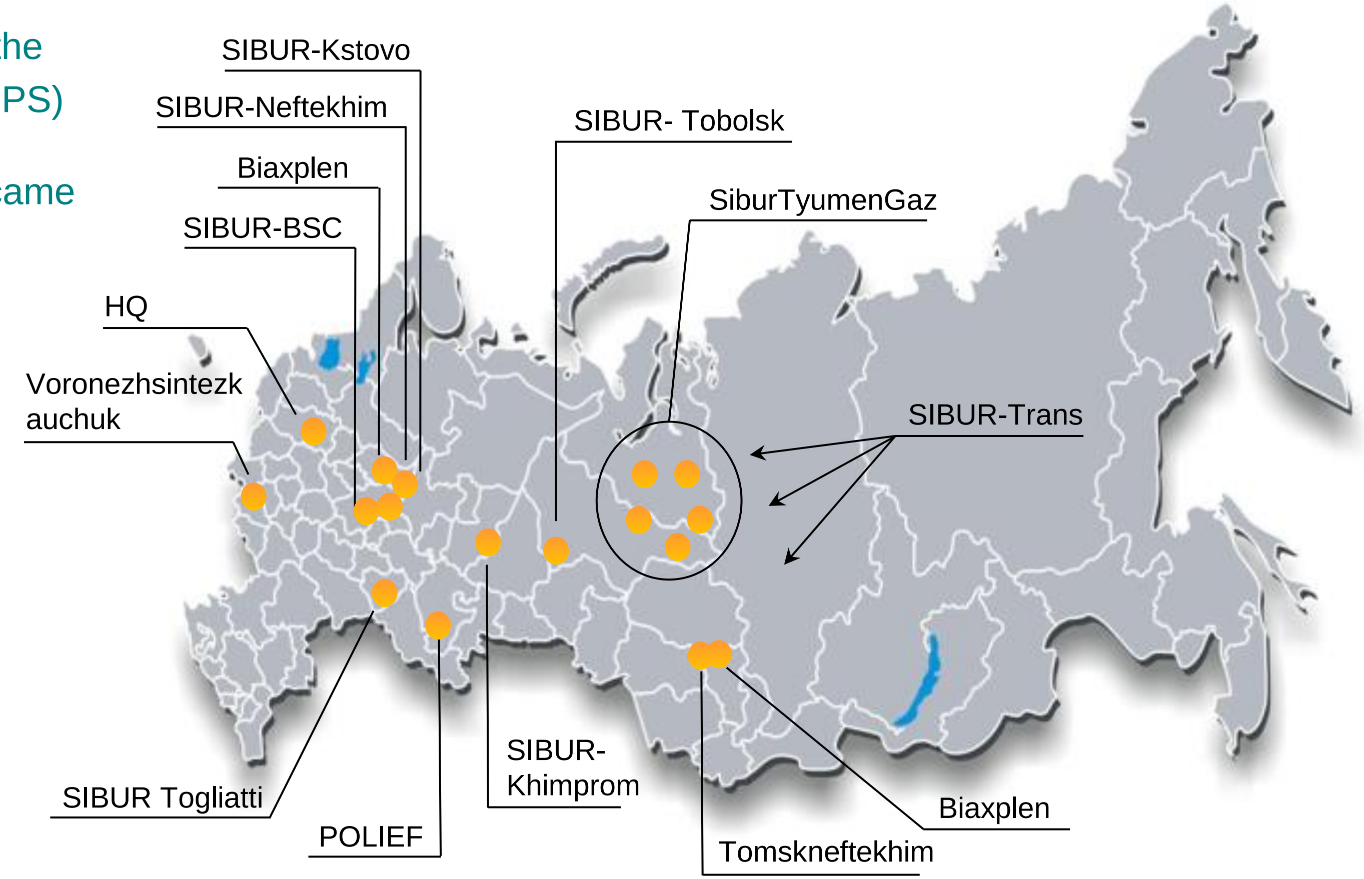
Sources: BPBU, PEOSBU, Investor Relations

17.04.2017 SIBUR closed a deal to buy 100% of the shares of JSC Uralorgsintez from EKTOS

[1]Other 2016: BR, PETE

Sibur Production System is the basis of innovations aimed at building a common management and manufacturing culture across the company

- **26** sites are covered by the Sibur Production System (SPS)
- **2,000** employees became trainers
- **5,000** managers have been MPS ("CPP") trained
- **10%** of EBITDA is contributed by cost benefits generated from SPS activities
- **1,000** employees involved in SPS project teams
- **300** 6-Sigma projects have been executed



- **218,000** brain-box ideas submitted, of which **131,000** implmented

SIBUR is focused on three main areas of innovative development

Management innovations – company introduces new methods for more effective management and business development

Adaptive innovations – company adopts advanced third party technologies and processes (chemical and digital, capital projects)

In-house innovations – company implements technologies developed in-house (application and fundamental R&D)

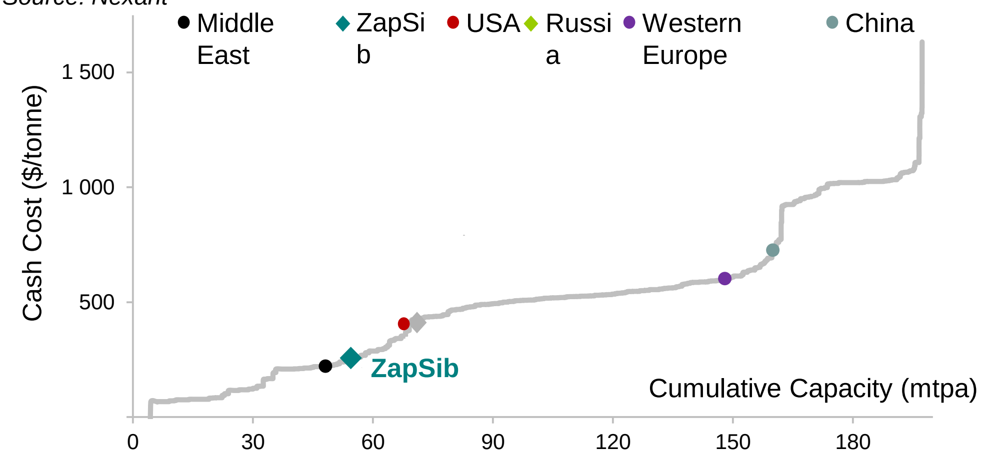
ZAPSIB 2 PROJECT IS SET TO TRIPLE SIBUR'S POLYOLEFIN BUSINESS

Project Description

- Design capacity:
  - Ethylene cracker: 1,500 ktpa of ethylene and 525 ktpa of propylene
  - Polyethylene (PE):1,500 ktpa
  - Polypropylene (PP): 500 ktpa
- Location: close proximity to the existing SIBUR production site in Tobolsk
- Mechanical completion: Q2 2019
- Leading global players involved:
  - Licensors: Linde, INEOS, LyondelBasel
  - EP contactors: Linde, Technip, ThyssenKrupp

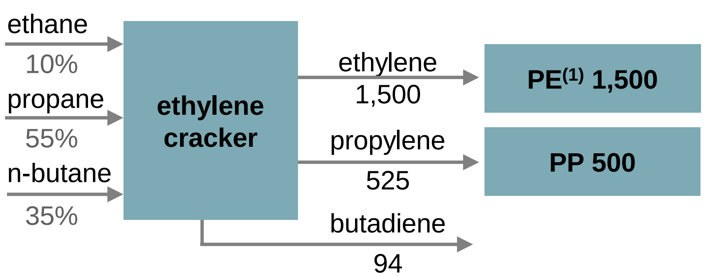
Strong Position on the Ethylene Cost Curve (2021, oil @ 50 $/bbl)

Source: Nexant



Production Scheme

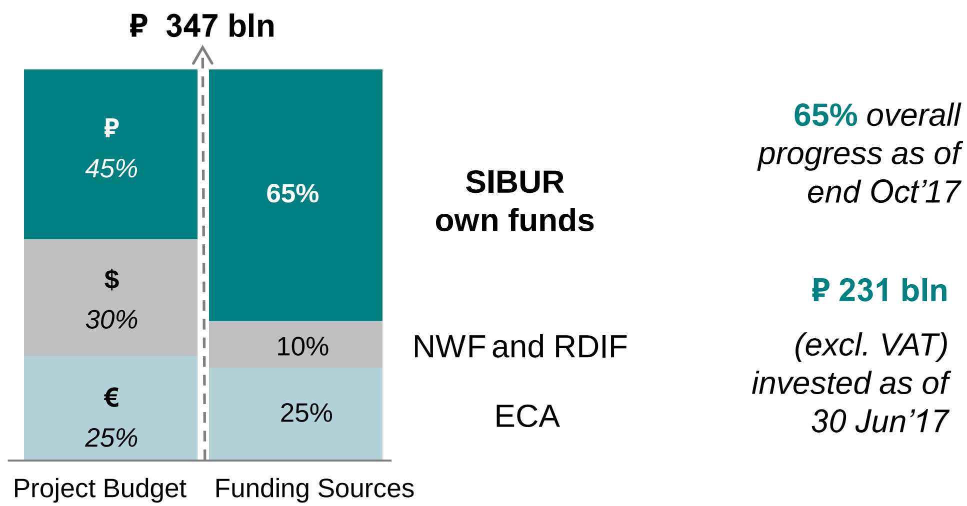
ktpa



✓ Strong position on global ethylene cost curve: competitively priced stranded feedstock

✓ Reducing company's exposure to energy price volatility

Project CapEx for 2017-2020 and Current Status



Project status as of Oct 2017: https://www.youtube.com/watch?v=dAPuBgVtwjM

THANK YOU FOR ATTENTION

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