

A vertical decorative bar is located on the left side of the slide. It is composed of three segments: a grey top segment, a yellow middle segment, and a blue bottom segment.

## **RUSSIAN PETROCHEMICAL INDUSTRY - GROWTH POTENTIAL OF GLOBAL COMPETITIVNESS**

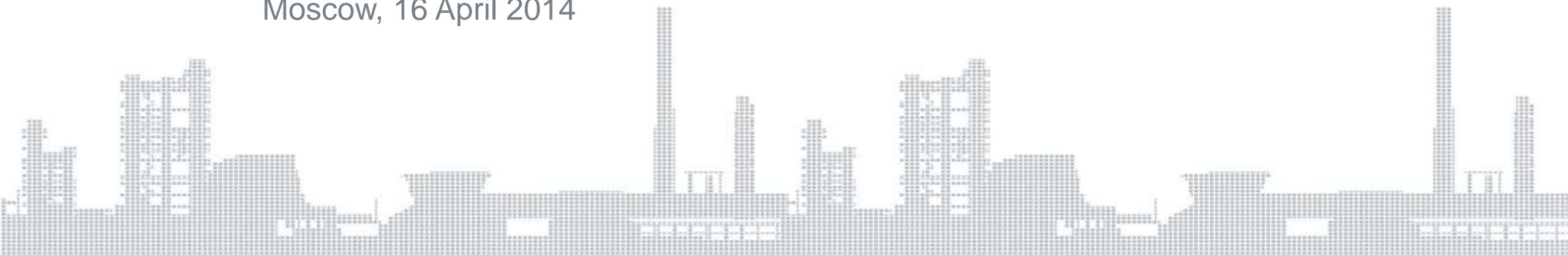
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Deputy Director, Government Relations

SIBUR LLC

Conference «CIS PETCHEM 2014»

Moscow, 16 April 2014



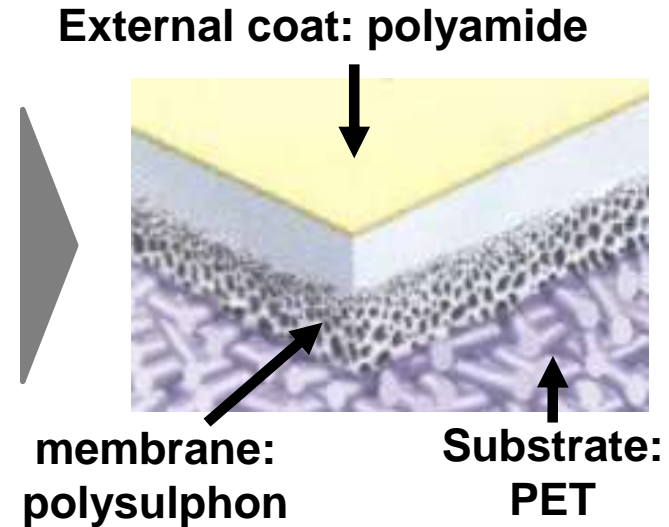


- **Petrochemicals - a bit of interesting (*and not always obvious*) facts**
- **Petrochemicals RF - huge growth potential (*but realize it will not be easy*)**
- **Petrochemicals - creating a competitive value (*and what prevents it*)**

# WITH NO PETROCHEMISTRY IN THE WORLD, DUBAI AND ALICANTE WON'T HAVE ANY FRESH WATER



The most popular treatment method is reverse osmosis, where membranes have petrochemical products



Among other things, it's used for water desalting

**Location:** Alicante, Spain

**Daily freshwater production volume:** 50,000 m<sup>3</sup>

**Water source:** Mediterranean sea



**Location:** Dubai, UAE

**Daily freshwater production volume:** 822,000 m<sup>3</sup>

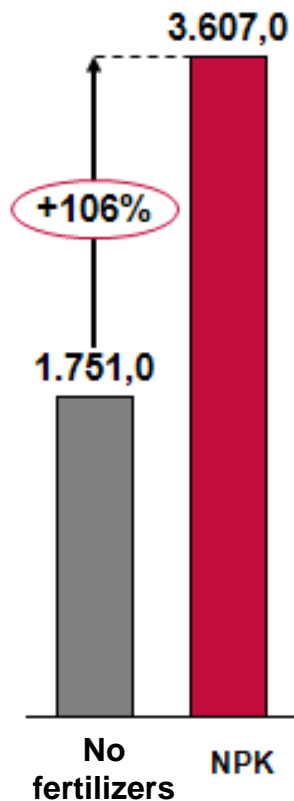
**Water source:** Persian Gulf

# WITH NO PETROCHEMISTRY ONE COULD NOT POSSIBLY FEED PEOPLE OF THE WORLD...

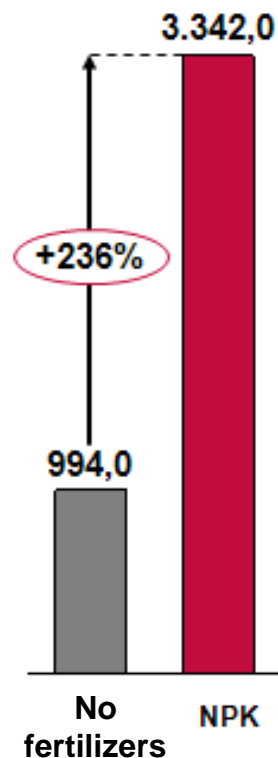


## PRODUCTION

RICE, kg/ha



WHEAT, kg/ha



## STORAGE



Up to **5 days**  
in a vacuum  
pack



Up to **6 months**  
in aseptic pack\*



Up to **25 days**  
in a vacuum  
pack

# ...OR CLOTHE THEM. MOST PIECES OF CLOTHING CONTAIN SYNTHETICS.



Fluoropolymers,  
polyamide,  
polyester, PVC,  
polyurethane

Polyamide,  
polyester,  
polyethylene,  
polypropylene

Fluoropolymer,  
PVC



Acryl

Polyamide,  
polyester

Polyamide,  
polypropylene,  
polyester

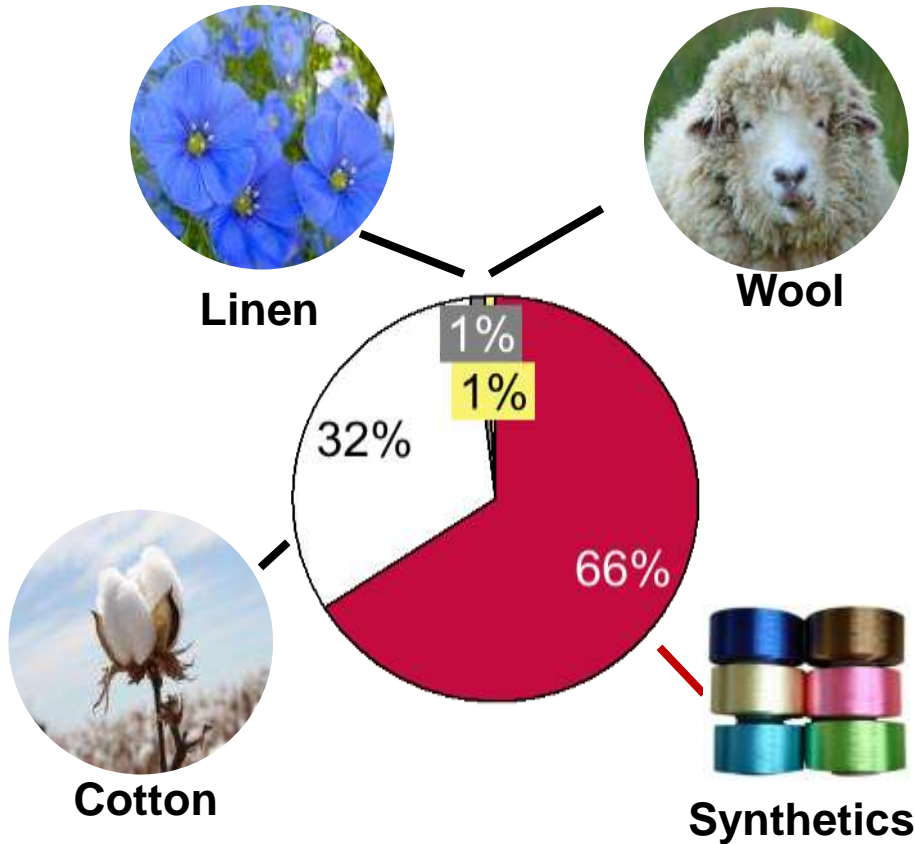
Polyamide,  
polyester

# CAN HUMAN BEINGS LIVE WITHOUT SYNTHETIC CLOTHES?



**Answer: yes, but it'll be too resource-intensive**

In total in 2011 84.3 mn t of textile fibres were produced



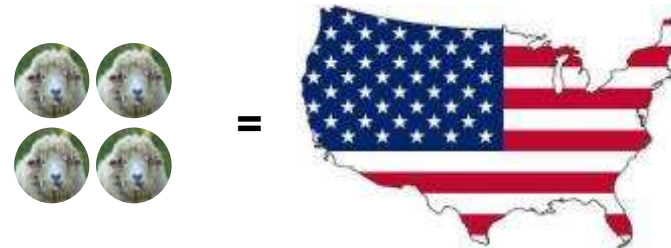
1 t of PET = 1.2 ha of cotton fields  
**W/o PET you'll need 46 mn ha in total**



1 t of polyamide = 1.5 ha of linen fields  
**W/o polyamide you'll need 6 mn ha in total**



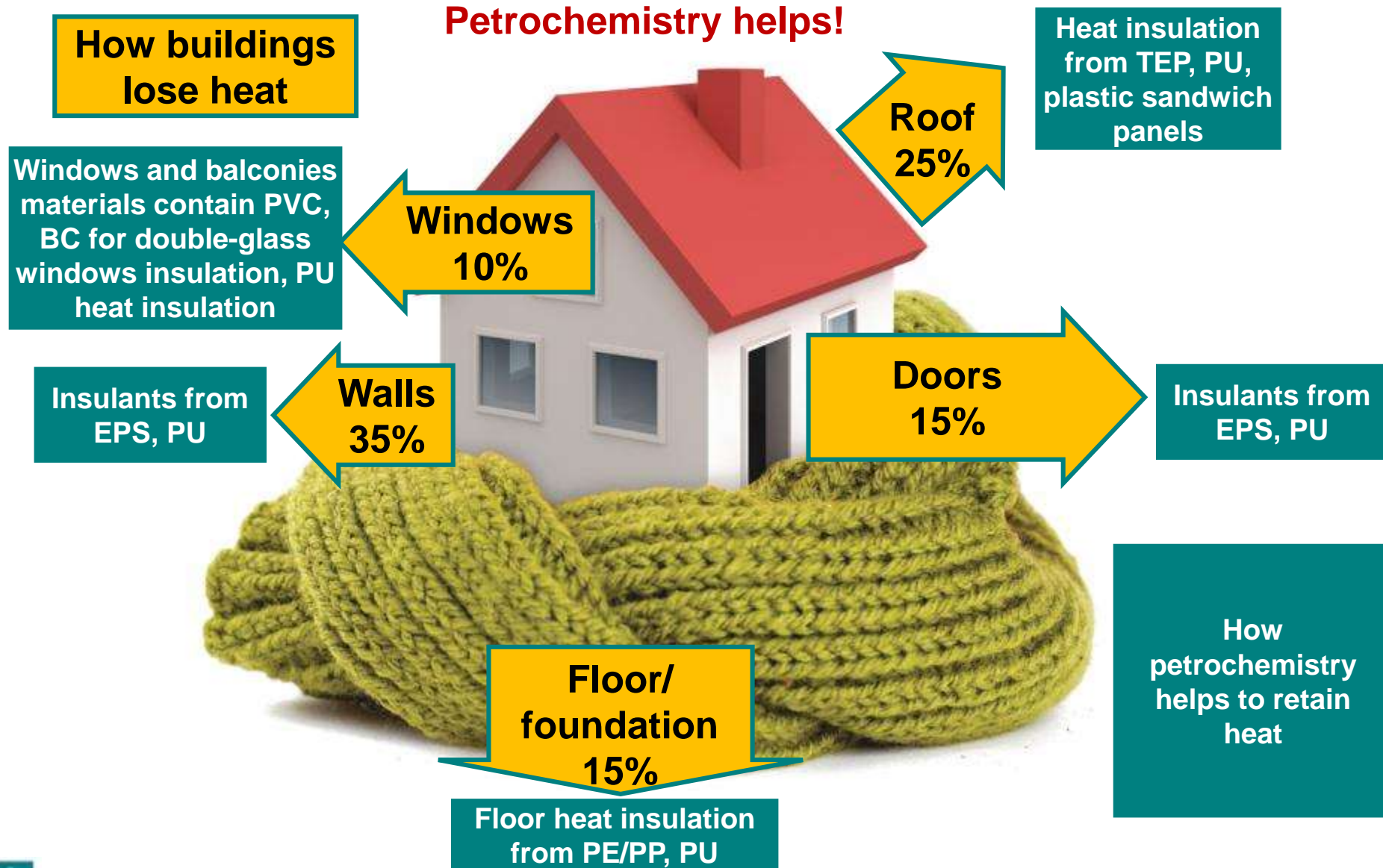
1 t of acryl = 167 sheep  
**W/o acryl you'll need more sheep than there are in the US now**



# WHAT DOES MODERN HOUSE LOOK LIKE ? MINIMALISTIC AN "GREEN" ...



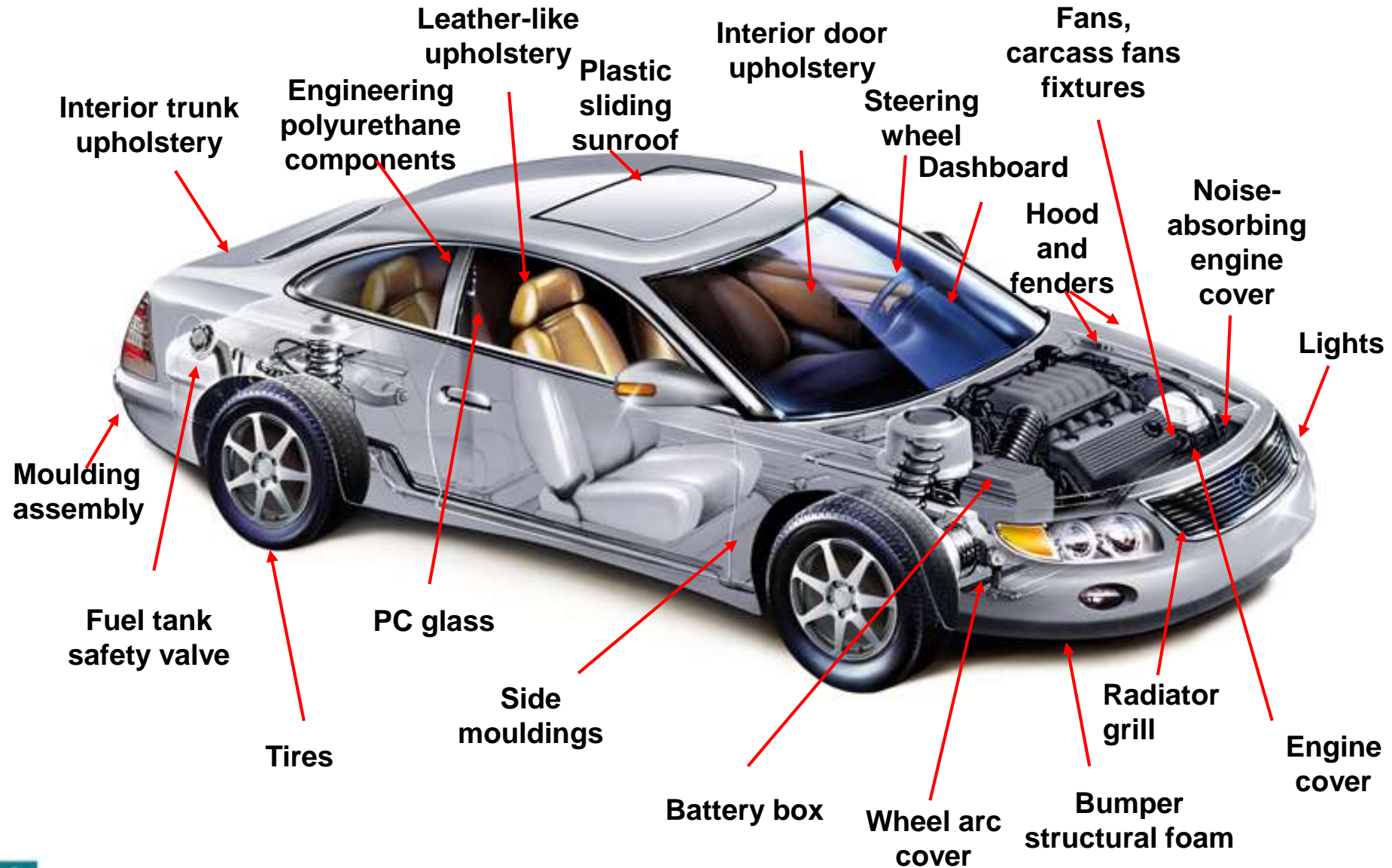
# IT'S WARM IN A MODERN HOUSE....





# LET'S TALK ABOUT CARS...

Polymer components constitute up to 200 kg of a modern car



Source: 3M



- **Petrochemicals - a bit of interesting** (*and not always obvious*) **facts**



- **Petrochemicals RF - huge growth potential** (*but realize it will not be easy*)

- **Petrochemicals - creating a competitive value** (*and what prevents it*)

# PETROCHEMISTRY GIVES US MATERIALS WITH UNIQUE PROPERTIES, THAT INDUCE FURTHER DEVELOPMENT OF OTHER INDUSTRIES AND IMPROVE THE QUALITY OF LIFE, WHICH MAKES IT “DAMNED TO SUCCESS”



## Main advantages of petrochemicals...



Lighter than other materials



Durable and rust-resistant



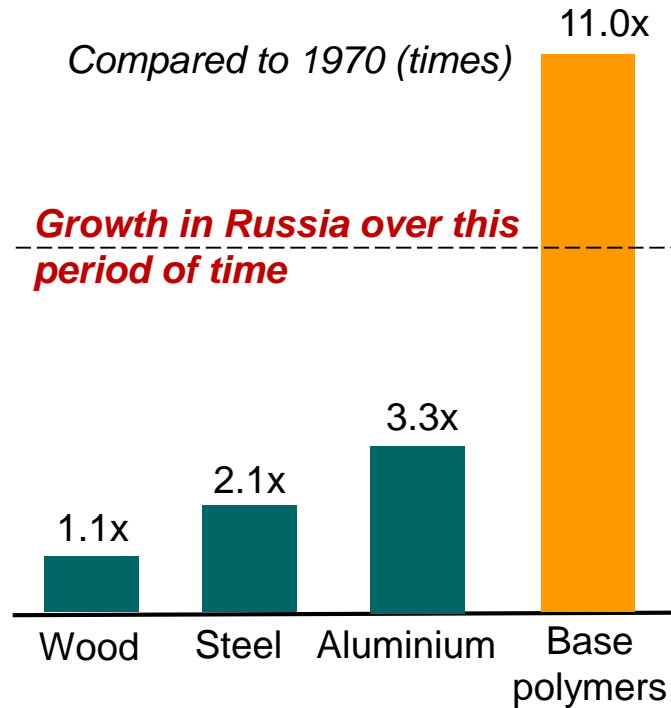
Cheap and multifunctional



## ...have defined rapid growth of polymer consumption globally

Growth of organic product and polymer consumption

Compared to 1970 (times)



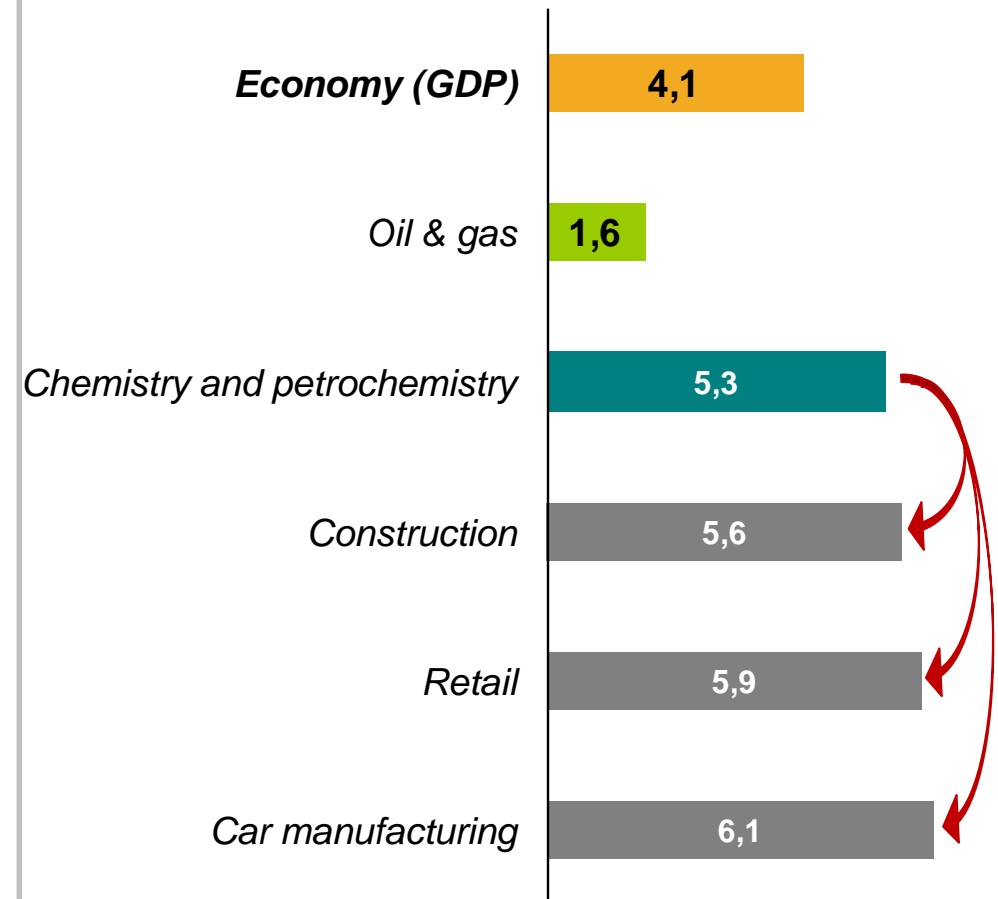
# PETROCHEMISTRY CAN BE A DRIVING FORCE FOR ECONOMY, WITHOUT IT AN EFFICIENT DEVELOPMENT OF OIL & GAS INDUSTRY IS IMPOSSIBLE



## Petrochemistry can be another locomotive pulling Russian economy

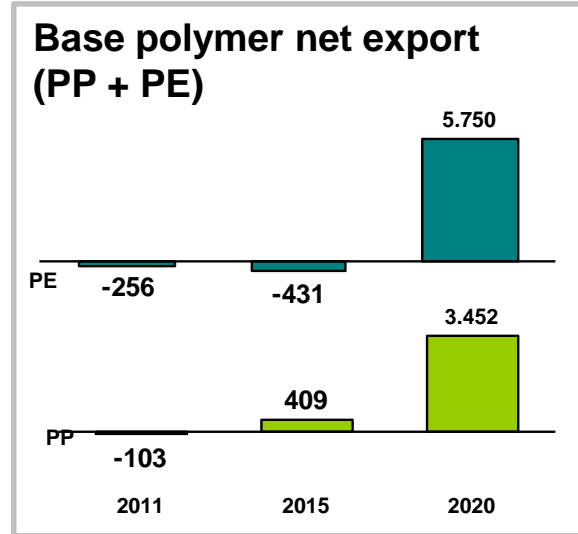
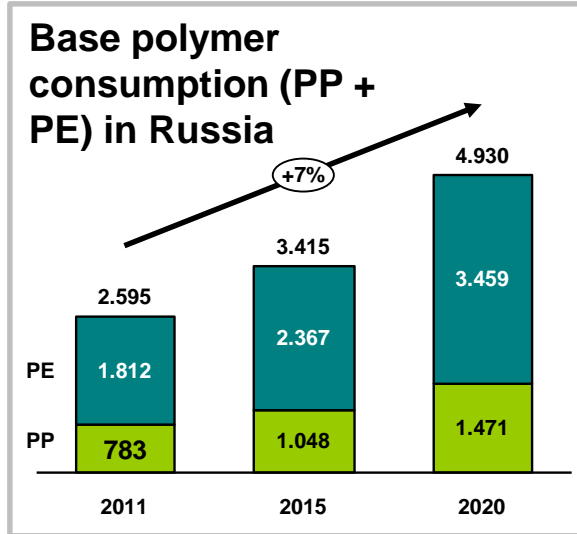
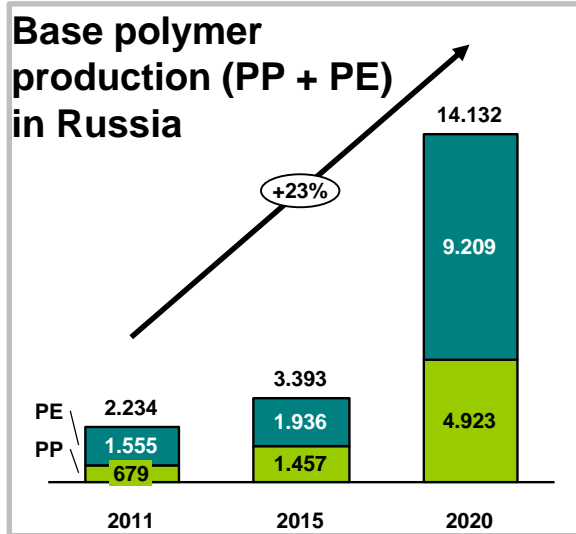
- Petrochemistry feedstock is by-products from oil and gas production and crude refining
- By-products come from the production sites remote from sales markets
- One job in petrochemistry means 4.5 jobs in other spheres of economy
- One petrochemical GDP rouble gives at least 1.9 GDP roubles for economy
- Petrochemical industry requires 2.5 less power than is retained by its products when they are applied

## Average growth rate of economy and particular industries in Russia in 2003-2012, %

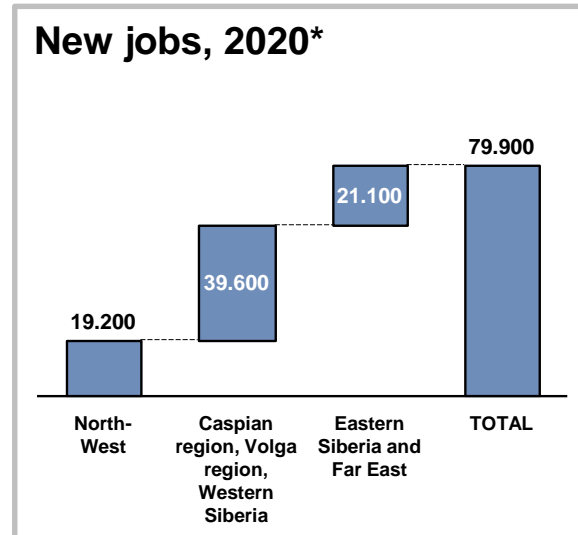
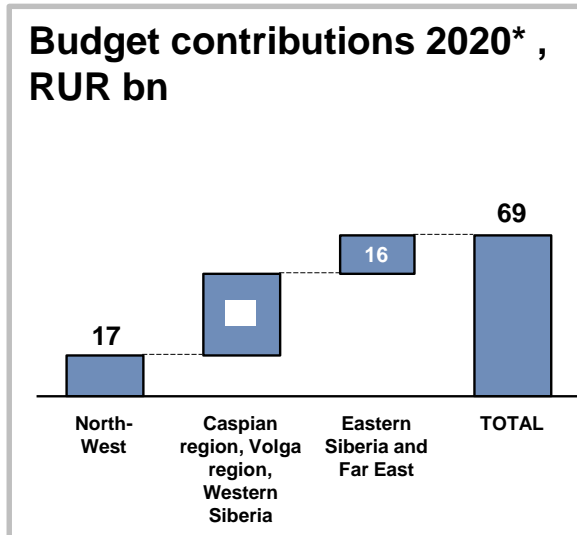
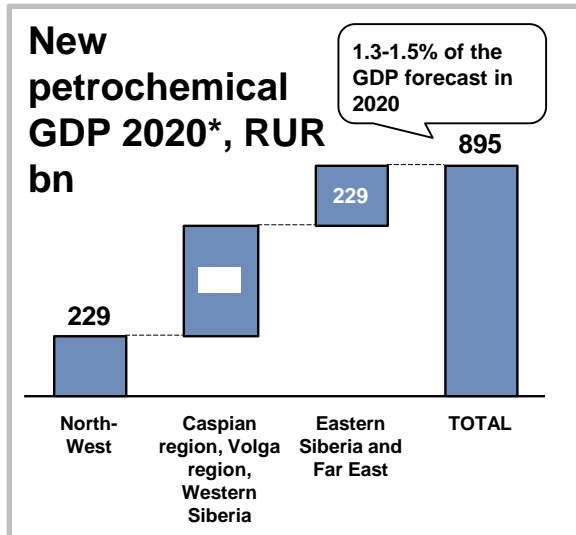


# FULFILMENT MAXIMUM INDUSTRY POTENTIAL WILL PUSH RUSSIAN PETROCHEMISTRY FORWARD BOTH IN TERMS OF QUANTITY AND QUALITY, AND DOUBLE THE IMPORTANCE OF THE INDUSTRY FOR THE ECONOMY

Industry development parameters

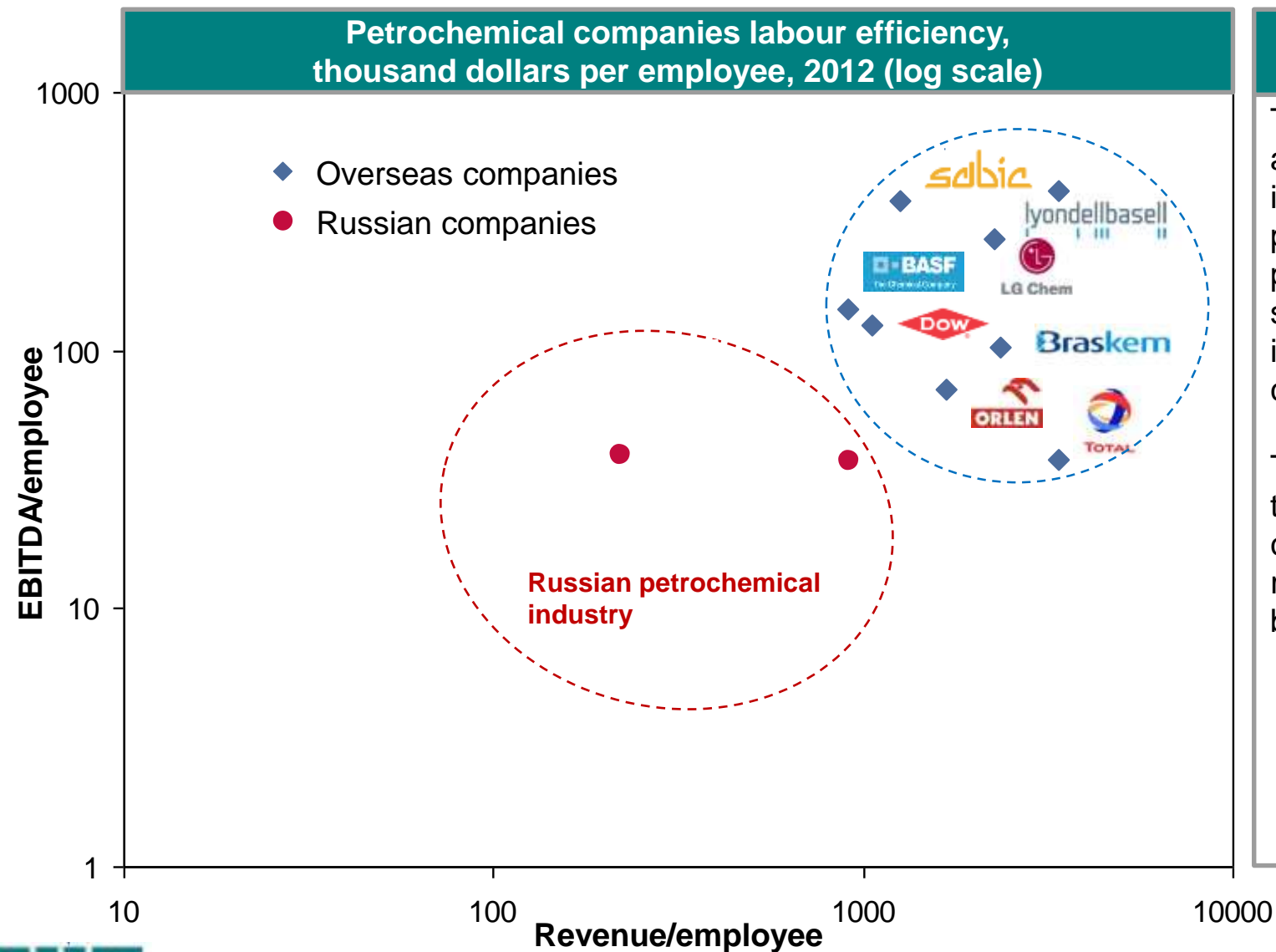


Contribution of petrochemistry to Russian economy



Note: \* Contribution to Russian economy for the account of capacity introduced in 2013-21, best-case scenario, Plan 2030  
Source: Plan for RF petrochemical development till 2030 developed by the Ministry of Energy of Russian Federation

# BUT, SAY, LABOUR EFFICIENCY IN THE PETROCHEMICAL INDUSTRY IS RELATIVELY LOW, THOUGH POSITIVE DYNAMICS HAS BEEN OBSERVED

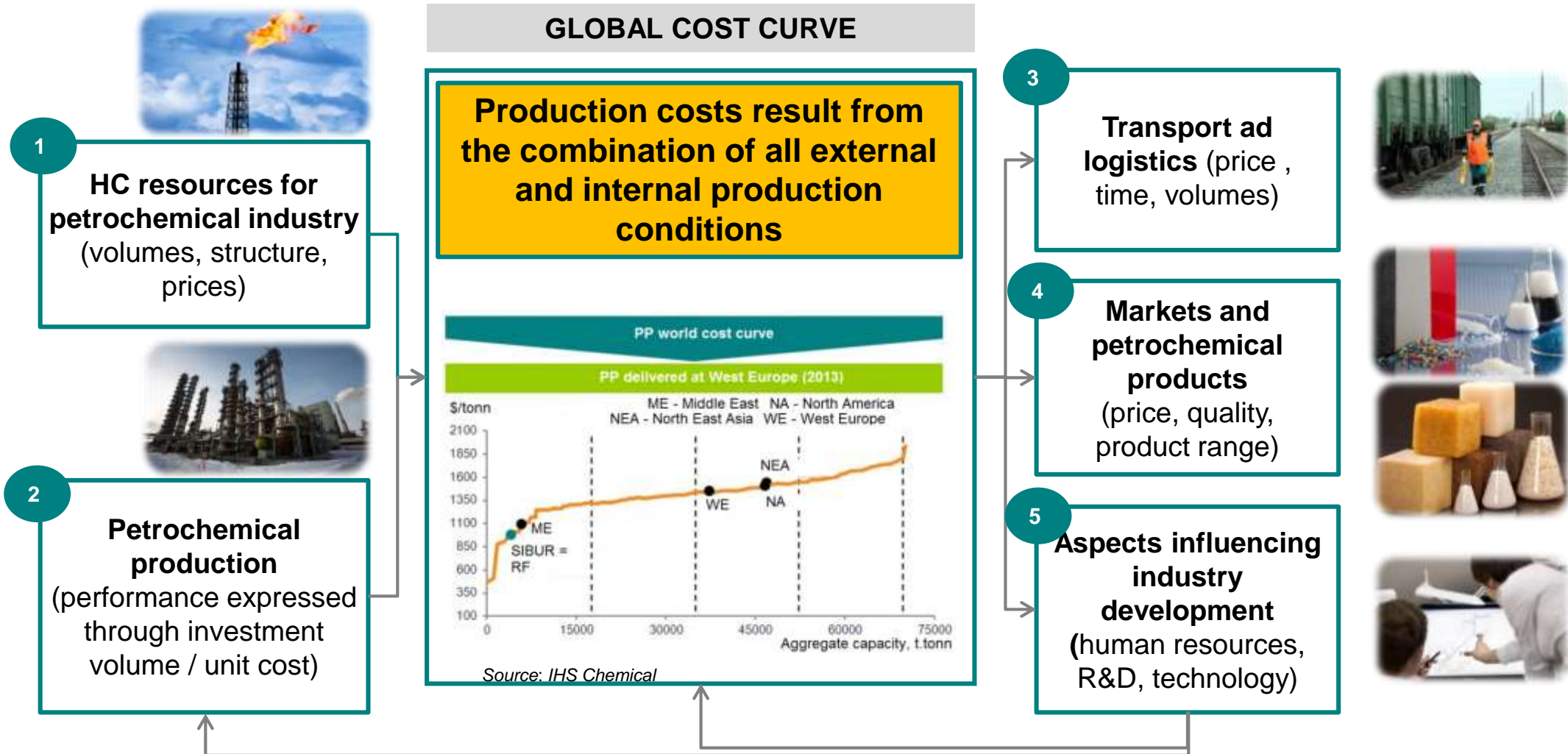


**Summary**

Though there has been a significant progress in terms of performance, Russian petrochemical industry still lags behind international companies

This is related to both technological level of capacities and regulation and business environment

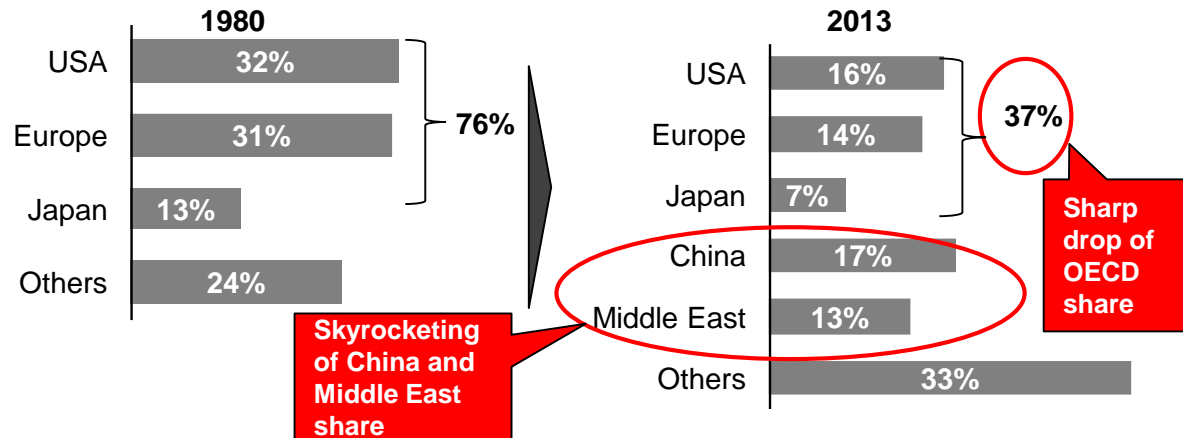
# ...AND LONG-TERM COMPETITIVENESS IS A KEY CONDITION FOR THE INDUSTRY TO REACH NEW HORIZONS...



# IN VIEW OF THE NEW TENDENCIES: DEMAND GROWTH IN THE DEVELOPING COUNTRIES, INCREASING INTEGRATION AND CAPACITY CONCENTRATION



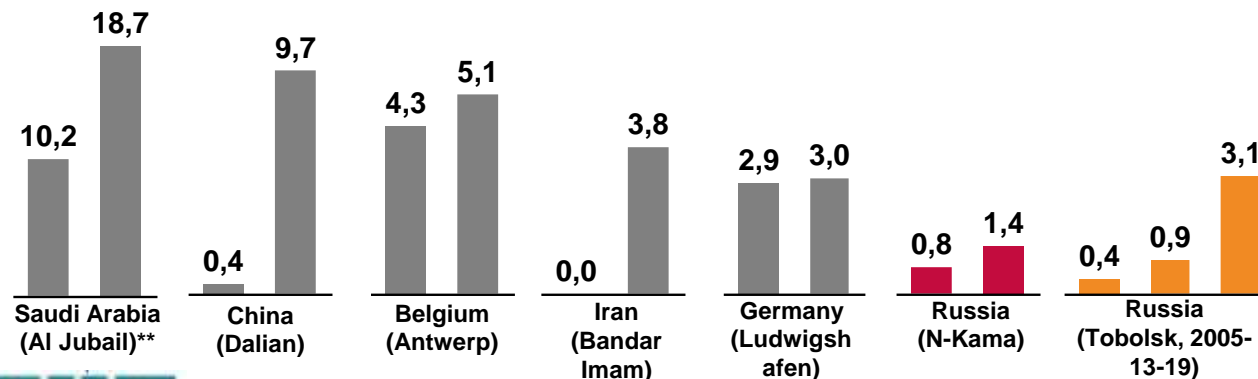
Geography of world petrochemicals, % of global petrochemical production, 1980-2013



Global petrochemicals – new geography and capacity growth

- **New geography of world-scale petrochemical greenfield projects:**
  - Growing role of Middle East (based on subsidizing feedstock costs)
  - Growing role of Asia (petrochemicals are vital for their growth)
- **Increasing integration, capacity concentration and growth in number and types of facilities** located at one site
- **Unit capacity and CAPEX growth**
- **In Europe integration is focused on the most competitive (integrated) locations**, while smaller/older facilities are closed
- **Russian petrochemical industry is among the most “disintegrated”**

Concentration rate of petrochemicals in various geographies, mln t of finished goods,\* 2005-2013



Source: IHS, Nexant  
 Note: \* installed capacity; \*\* in 1995 was 4 million tons



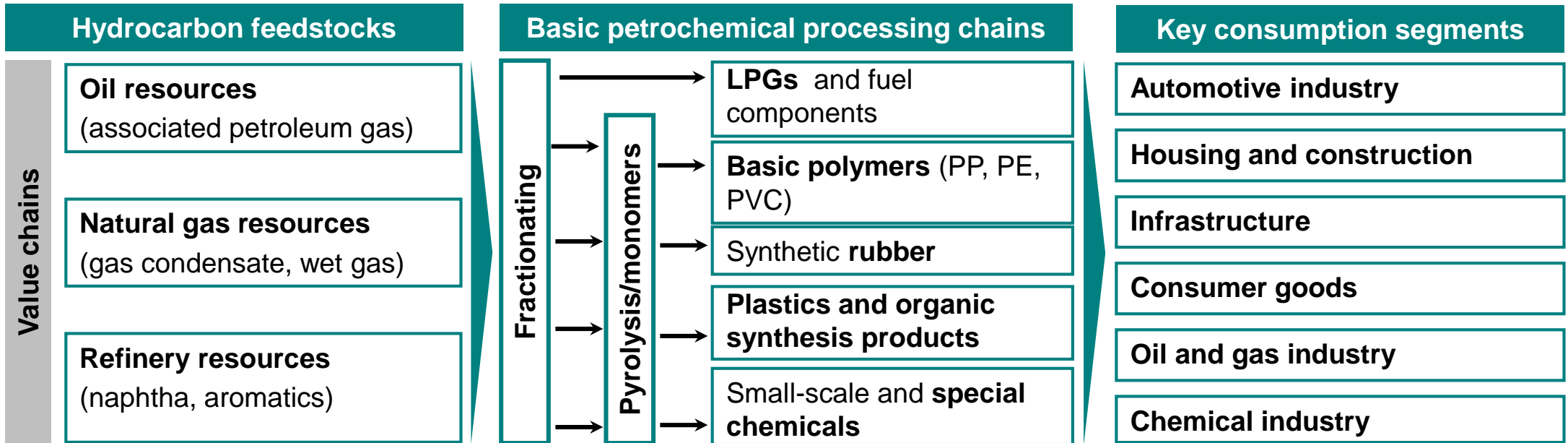


- **Petrochemicals - a bit of interesting** (*and not always obvious*) **facts**
- **Petrochemicals RF - huge growth potential** (*but realize it will not be easy*)



- **Petrochemicals - creating a competitive value** (*and what prevents it*)

# VALUE CHAIN/COMPETITIVENESS CREATION IN PETROCHEMICALS – MAJOR SEGMENTS (WHERE IT IS CREATED / NOT CREATED)



- | Key challenges   |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• <b>Separate strategies</b> of economically effective utilization of gas, oil and refinery resources (C2+ components extraction)</li> <li>• <b>Cost of logistics</b> as proportion of total feedstock costs and total cost for different value chains</li> </ul> | <ul style="list-style-type: none"> <li>• Selection of <b>the most economically effective (by cost competitiveness)</b> greenfield projects (including intra-cluster optimization/specialization)</li> <li>• Total <b>internal optimization</b> of existing capacities with competitive potential</li> <li>• <b>Selective closure</b> of least competitive capacities</li> <li>• <b>Separate sectoral strategies</b> for value chains which are based/not based on hydrocarbon costs</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Stimulation of internal demand and import substitution</b> (localization of petrochemical production)</li> <li>• Stimulation/prescriptive regulation of <b>modern innovative materials usage</b></li> </ul> |

# INDUSTRY COMPETITIVENESS AND ITS IMPORTANCE TO THE NATIONAL ECONOMY ARE IN QUOTATIONS AND ASSIGNMENTS OF COUNTRY'S LEADERS



## Key quotations



*«... we should become owners in our own market» «As for the increase of duties, it shouldn't be as a body blow for business, it should be careful. We need to show the future.»*



*«Chemical and petrochemical industries remain important segments of our domestic economy. Almost all industries are consumers of their products»*



*«Russia imports 18 billion dollars not only in the form of polymers, but also in the form of derivative products" ... consider the possibility to subsidize part of the interest rates of loans raised for technical re-order»*



*«Surplus value increases from 200% to 533% and then to 947%, if the movement to a very high-added value products - synthetic fibers and fabrics»  
«... potential of stimulation of domestic petrochemical product demand is the elimination of petrochemical products import, which are the subject of almost one million tons per year»*

## Key assignments

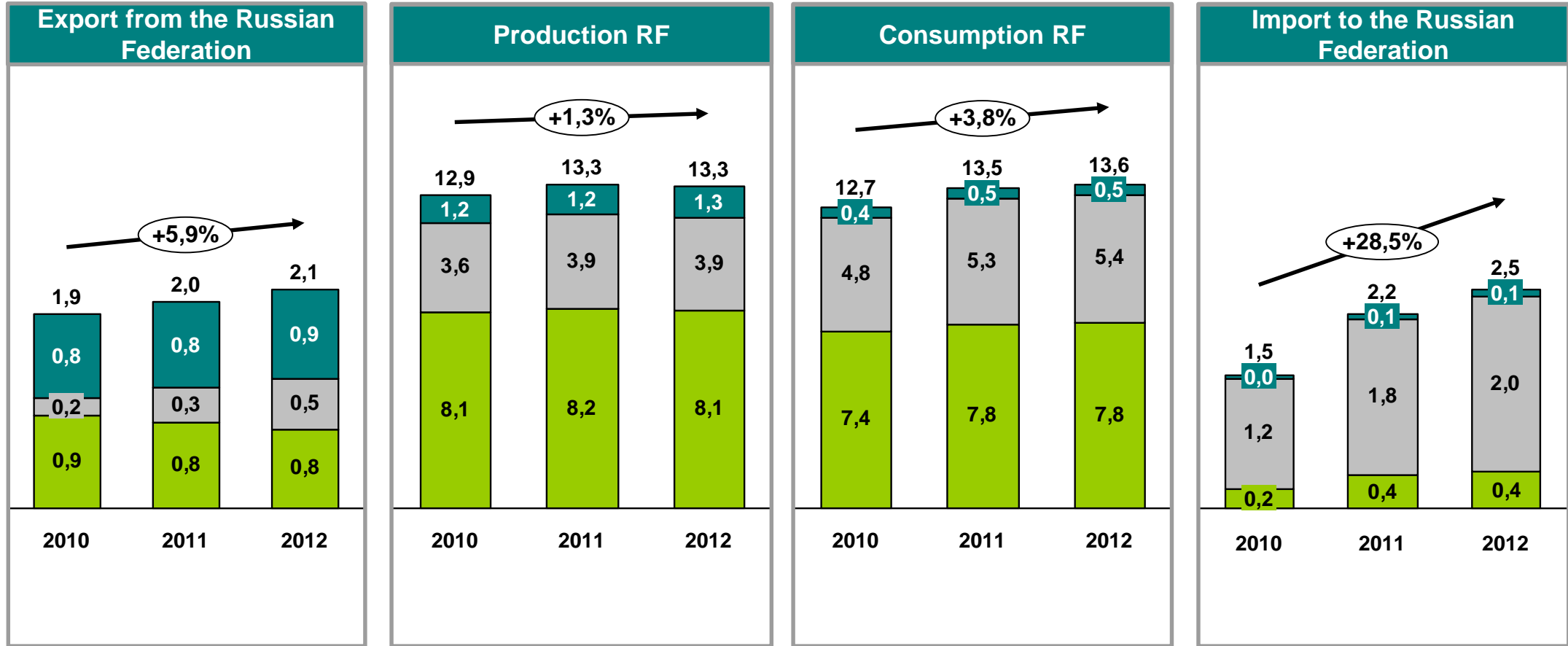
- The expansion of use of **advanced materials** of **Russian petrochemical industry** in road building and construction
- Arrangement of conditions for **expansion of production** and procurement of **ecologically friendly (green) products** of chemical and petrochemical industries
- Promotion of **separate waste collection** for **secondary recycling of polymer products**
- Expansionary measures for gas- and petrochemical products **domestic demand** by **change of consumption standards** and using of these products under **technical and construction rules and regulations**
- **The Customs and Tariff regulation** of petrochemical feedstock exports, including **LPG exports**
- **Compensation mechanism of shortfall in income of Russian Railways** under the current tariff regulation
- **Relationships** based of **long-term contracts** between **petrochemical companies** and the main feedstock **suppliers**, and **infrastructure companies**
- **Protection** of existing business entities **as part of the WTO**
- Establishing of **rates of import customs duties** on high- and low-added value petrochemical products

# BESIDES THERE ARE 2 ASPECTS OF THE INDUSTRY'S COMPETITION – INTERNAL AND EXTERNAL



million tons per annum

- Synthetic rubbers
- Plastics
- Products of organic synthesis

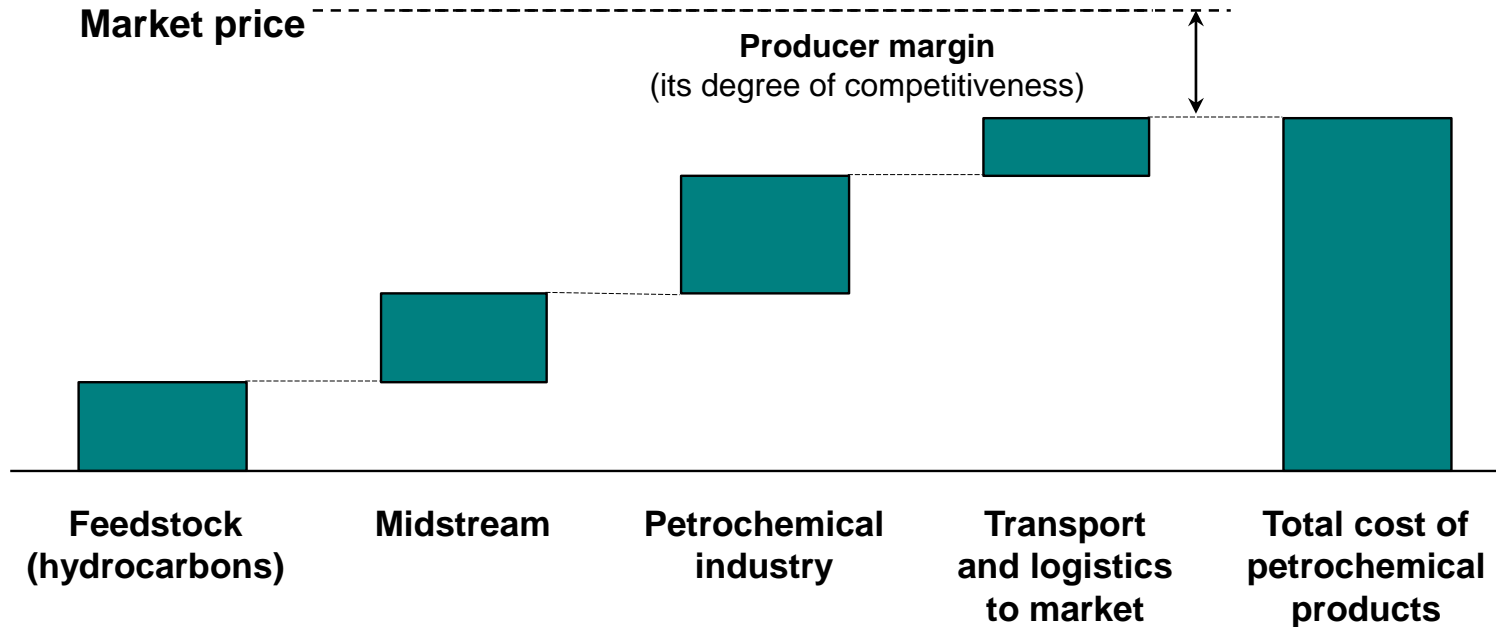


External competition

Internal competition

Source: CJSC «Alliance Analytics», MARKET REPORT

# MOST OBJECTIVE QUANTITATIVE REFLECTION OF COMPETITIVENESS OF PETROCHEMICALS IS SO-CALLED "COST CURVE"



## Growth factors of long-term competitiveness

- **Volume growth** of petrochemical feedstock
- More **competitive (light) structure** of feedstock
- **Deep monetization of hydrocarbons**, additional revenue receipts to the state and business, and jobs
- **Reducing capital and operating costs**
- **Reduction of lead time in design engineering and construction** of capacities
- **Increased competitiveness of petrochemical industry in Russian Federation through logistics component**
- **Reduced commodity exports** in favor of products with high added value
- **Jobs** in small and medium enterprises

### Competitive factors

- |  |  |   |   |
|--|--|---|---|
| <ul style="list-style-type: none"> <li>• Long-term contracts</li> <li>• Competitive price</li> <li>• Integrated use of feedstock</li> <li>• Government regulation</li> </ul> | <ul style="list-style-type: none"> <li>• Increasing the level of extraction of liquid raw hydrocarbon from APG</li> <li>• New large capacity</li> <li>• Consolidation of the feed streams</li> </ul> | <ul style="list-style-type: none"> <li>• Cost reduction through economies of scale</li> <li>• Modern cost-effective power system</li> <li>• Diversified and marketable product portfolio</li> </ul> | <ul style="list-style-type: none"> <li>• Refusal of transportation of liquid products</li> <li>• Use of hard thread graphs for railway transportation</li> <li>• Logistics outsourcing development</li> </ul> |
|--|--|---|---|

# THERE ARE 4 KEY FACTORS OF COMPETITIVE ADVANTAGE OF PETROCHEMICALS FEEDSTOCK PROCUREMENT



Success factors	Description	SIBUR's case
Long-term contracts	<ul style="list-style-type: none"> <li>• <b>Long-term fixation of conditions</b> (minimal volume, guaranteed volume, delivery terms, etc.)</li> <li>• Ability to <b>plan large-scale investments</b> (from both sides)</li> </ul>	<p><b>Long-term contracts</b> (until 2032) for APG procurement with <b>Novatek and Rosneft</b>.  <b>Guaranteed volumes of APG up to 10 BCM per annum</b></p>
Profitable and competitive price	<ul style="list-style-type: none"> <li>• <b>Closeness to feedstock source</b></li> <li>• The presence of “<b>free market</b>” / <b>efficient market regulation</b></li> <li>• <b>Competitive price</b> compared to the world's major producers of petrochemicals</li> </ul>	<p>Most <b>production sites</b> - “<b>near the feedstock</b>”. New projects are considered “<b>near the feedstock</b>” and <b>competitive on the domestic and foreign markets (Europe, China)</b></p>
Integrated utilization of C <sub>2+</sub> resources	<ul style="list-style-type: none"> <li>• “<b>Feedstock basket</b>” (cyclical balancing / hedging)</li> <li>• Involvement of <b>ethane to processing</b></li> <li>• <b>Mixed feedstock steam-crackers</b></li> </ul>	<p>All SIBUR steam-crackers are mixed feedstock sourced            Involvement of <b>ethane</b> (Zap-Sib 2, Transvalgas, Belogorskiy projects)            Situational <b>business model of processing /exports of raw materials</b></p>
Government policy	<ul style="list-style-type: none"> <li>• <b>Technical regulation</b> (including new projects capital expenses efficiency)</li> <li>• <b>Customs</b> regulation</li> <li>• <b>Tariff</b> regulation</li> </ul>	<p><b>Large scale investment program</b> (including through competent state regulation)</p>

# THE KEY COMPETITIVE CHALLENGE IN MIDSTREAM IS ECONOMICALLY JUSTIFIED «EXTENSION» OF INFRASTRUCTURE



	Competitiveness factors	SIBUR's case
Gas feedstock processing	<ul style="list-style-type: none"> <li>• Increase in NGL extraction rate from the APG. Processing volumes increase (new major capacities)</li> <li>• Processing costs decrease (energy efficiency, etc.)</li> </ul>	Construction of Vyngapurovskiy, Yuzhno-Priobskiy GPP and extension of Yuzhno-Balikskiy GPP, increase in NGL extraction rate at Yuzhno-Balikskiy GPP up to 98%, Gubkiskiy up to 99%, Vyngapurovskiy GPP up to 99%)
Gas feedstock transportation	<ul style="list-style-type: none"> <li>• Access to growing volumes of NGL's and feedstock flows consolidation</li> <li>• Logistics optimization (moving from railroad to pipeline transportation within one region)</li> </ul>	Construction of NGL pipeline Purovsk – Pyt-Yakh – Tobolsk (length 1100 km, 8 mln tpa of Raw NGL capacity)
Fractionation	<ul style="list-style-type: none"> <li>• Access to feedstock for petrochemical projects</li> <li>• A wide range of fractions</li> <li>• High quality of products (low rate of impurities, etc.)</li> </ul>	Gas fractionation capacity extension from 3,8 mln tpa to 6,6 mln tpa (construction of GFU-2)

# CONSTRUCTION OF MODERN LARGE SCALE CAPACITIES AND DIVERSIFICATION OF PRODUCT PORTFOLIO ARE NEEDED TO CREATE LONG-TERM COMPETITIVENESS



	Competitiveness factors	SIBUR examples
<p><b>Large-scale capacities</b></p>	<ul style="list-style-type: none"> <li>Construction of large-scale capacities allows to reduce costs through <b>economies of scale</b></li> <li>Modern capacities <b>are more efficient</b> in terms of feedstock and energy, and requires <b>less personnel</b></li> <li>The <b>modern construction standards (if possible)</b> are used in construction of new capacities</li> </ul>	<ul style="list-style-type: none"> <li><b>Tobolsk-Polymer</b> - 500 ktpa (PP)</li> <li><b>RusVinyl</b> - 330 ktpa (PVC)</li> <li><b>SBS 50</b> - 50 ktpa</li> <li><b>CFU</b> - 6.6 mln tpa (NGL)</li> </ul>
<p><b>Product portfolio</b></p>	<ul style="list-style-type: none"> <li>Companies need to <b>diversify their product portfolio</b>, it has to be <b>focused on industries with minimal exposure to economic cycles</b></li> <li>Produce <b>products, demanded in various industries</b></li> </ul>	<ul style="list-style-type: none"> <li><b>PVC</b> – construction, housing and utility sector</li> <li><b>EPS</b> – construction and packaging</li> <li><b>SBS, geosynthetics</b> – road construction</li> </ul>



# LARGE-CAPACITY FACILITIES IN PETROCHEMICAL. PRODUCT RANGE EXPANSION

EXAMPLE SIBUR

Projects	Years of project implementation	Capacity, ktpa	Improvement of competition/ Business-model
	2006 > '08 > '09 > '12 > '13 > 2014		
Tobolsk-Polymer	●————●	500 	World-class power, low cost of raw materials, modern technology provide highly competitive products in the domestic and foreign markets
RusVinyl	●————●	330 	<ul style="list-style-type: none"> <li>• Low raw material costs</li> <li>• Technological leadership through a joint venture with advanced technology licensor</li> <li>• Orientation to the receptive and unsaturated internal market (the project is in the region of consumption)</li> </ul>
TPE-50	●————●	50 	Russia's only plant of high-tech additives in paving and roofing materials
EPS	●————●	100 	Polystyrene - modern efficient polymeric insulating material Production oriented to the receptive and an unsaturated domestic market

Total investments in major petrochemical projects in 2009-2013 amounted to 88 billion rubles

# TRANSPORT AND LOGISTICS DECISIONS "TO MARKETS AND CONSUMERS"

## - A SERIES OF DECISIONS ALLOW TO COMPENSATE OBJECTIVE LOGISTICS CHALLENGES FOR RUSSIAN COMPANIES



	Description	Example SIBUR
Optimization of railway chain	<ul style="list-style-type: none"> <li>Refusal of transportation of liquid products (e.g. NGL) on the basis of processing into final and intermediates products polypropylene, polyethylene</li> <li>Use of hard thread graphs for railway transportation</li> <li>Development of shipping operation through the Shuttle Container Trains</li> </ul>	<ul style="list-style-type: none"> <li>Elimination of deficiencies Industrial Railway</li> <li>Conversion "liquid to solid" - Tobolsk-Polymer, ZapSib-2</li> <li>Least cost routing</li> </ul>
Logistics platforms	<ul style="list-style-type: none"> <li>Logistics outsourcing development</li> <li>Creation of distribution centers in the regions of consumption</li> <li>Reduction of logistics costs for deliveries to the Russian market</li> <li>Improvement of the service performance indicators of logistic channel (turnaround time, just-in-time, reliability, quality of supply)</li> <li>Increase flexibility when shipped - Increase speed of reaction to market changes and customer needs</li> </ul>	<ul style="list-style-type: none"> <li>Tobolsk</li> <li>Tomsk</li> <li>Nizhny Novgorod</li> <li>RusVinyl</li> <li>Hub in the Moscow region</li> </ul>
New export channels	<ul style="list-style-type: none"> <li>Bulk cargo transportation development (bulk containers)</li> <li>Development of a network of distribution centers in Europe, China and India</li> <li>Infrastructure development of the Far East</li> <li>Development of maritime logistic chains</li> </ul>	<ul style="list-style-type: none"> <li>Ust - Luga</li> </ul>

# KEY FACTOR OF “INTERNAL COMPETITIVENESS” – STATE POLICY OF DEMAND STIMULATION AND IMPORT SUBSTITUTION



## What is happening in the world



- Stimulation of domestic production to reduce dependence on imports and to create additional jobs



- Industry restructuring and transition to deeper processing
- Active support for development and application of new technologies



- Development of new Industry standards



- Demand stimulation in petrochemical-consuming industries



- Regulation of customs to protect domestic production (import duties)
- Direct state support of R & D



- Preferential taxation and tariff regime
- Simplification of administrative procedures

## What should be done in Russia

To stimulate domestic demand in key petrochemical consuming industries (Housing and utility, construction, auto industry, packaging, etc):



- Promotion of application of new high-performance materials



- Changes in technological standards and regulations



- Introduction of new specific requirements and bonuses, to stimulate consumption of petrochemical products

# «EXTERNAL» (EXPORT) COMPETITION OF THE RF PETROCHEMISTRY DEPENDS NOT ONLY ON COST COMPETITION, BUT ALSO ON MEASURES OF EXPORT AND EXPORT CHANNELS STIMULATION

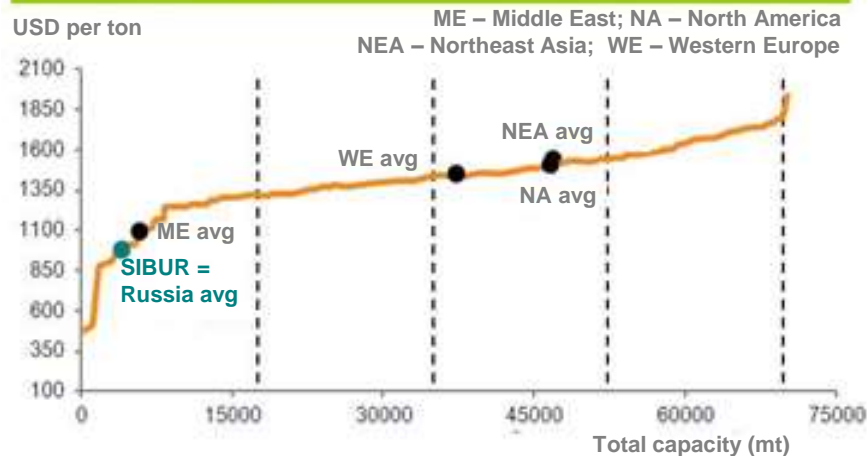


## Business tasks

- New capacities constructing
- Improving the competitiveness of Russian industries
- Expanding the range of RF production (including high value-added)
- Product certification for access to international markets
- Opening up new international markets

### The world cost curve for PP

#### PP with delivery to Western Europe (2013)



## Government tasks

- Legitimate programs of domestic market protection within the Customs union, the WTO and other international organizations (customs and tariff regulation improvement)
- To provide a support of the international expansion projects of petrochemicals companies
- To promote regional integration programs in order to simplify an access to the Russian Federation production (EU, SEA)
- To compensate a part of the export credits interest rates from the federal budget, the export credits insurance
- To draw up the Program of the national standards development harmonized with the international and regional standards and providing the competitiveness of the Russian chemical and petrochemical industry
- Participation in exhibition actions, the organization of expositions of achievements of the chemical and petrochemical industry at the largest international exhibition forums, informational and organizational support of the industry's companies and scientific institutes taking part in these actions
- The world market of chemical and petrochemical production monitoring

# HORIZON 2015-2020 – SIBUR’S VISION OF ITS STRATEGIC DEVELOPMENT AND FUTURE GROWTH



An integrated petrochemical site ZapSibNeftekhim will be created on the basis of available resource base and infrastructure in the region

(Currently the project has not received a final investment decision status)

## ... and one of the global leaders of the industry

- One of the largest single ethylene-producing capacities in the world
- №5 world industrial site of polyethylene producing
- №6 world industrial site of polypropylene producing
- Satisfy about 1% of global consumption of polymers in 2019

## ... the project will be one of the largest industrial construction in RF

More than 120 thousand tons of a metalwork

975 thousand tons of reinforced concrete

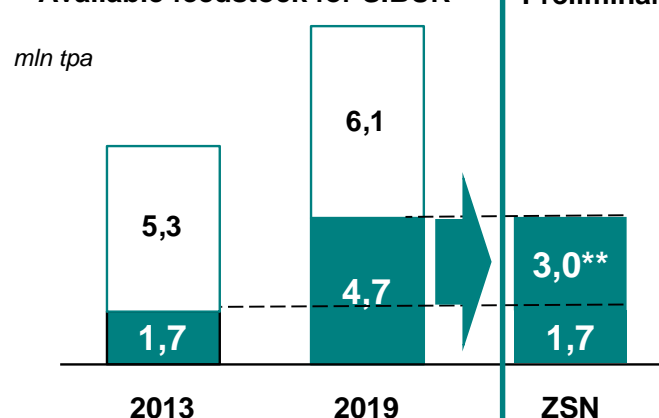


More than 16,000 workers and engineers

petrochemical feedstock from “oil chain” (from APG processing)

petrochemical feedstock from “gas chain” (from gas preparation for transportation)

Available feedstock for SIBUR\*\*\*



Preliminary configuration of ZapSibNeftekhim

Ethylene – 1,5  
Propylene – 0,53  
Other – 0,25

