

STRATEGY

PARTNERS



Russian chemical industry strategy to 2030

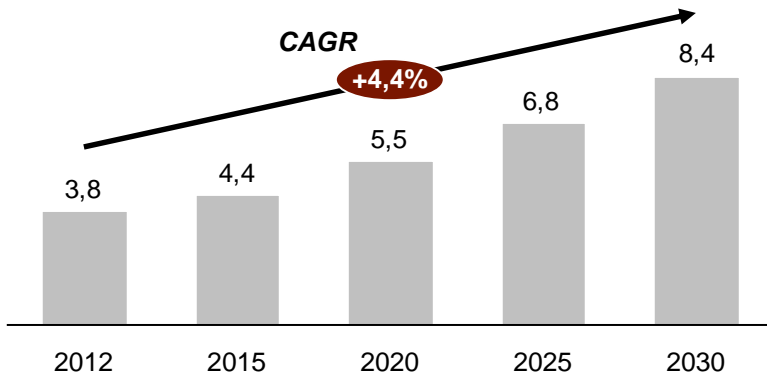
Material for conference presentation

16 April 2014

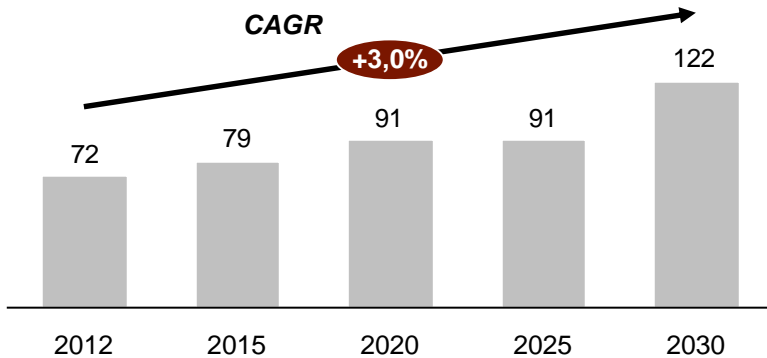
Chemicals industry – the engine of global economic growth and the driver of innovation

Chemical industry is growing growth is 1.5 times faster than global GDP

Global production of chemical industry, 2012-2030, trillion dollars.

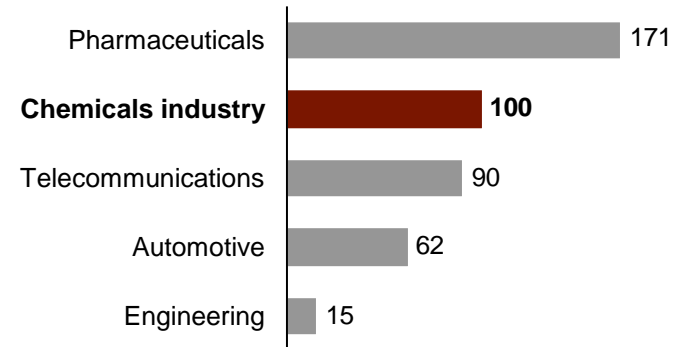


Global GDP dynamics, 2012-2030, trillion dollars.

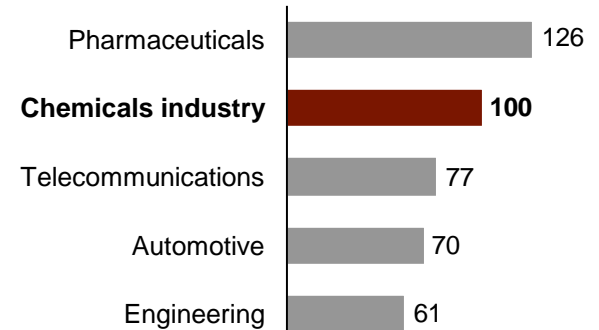


Chemicals industry outstrips other industries by research intensity and labour productivity

R&D expenses per employee, % of chemicals industry's indicators in 2010 (1)



Labour productivity, as a % of chemical industry's indicators, 2010¹



(1) – According to data from countries in the EU

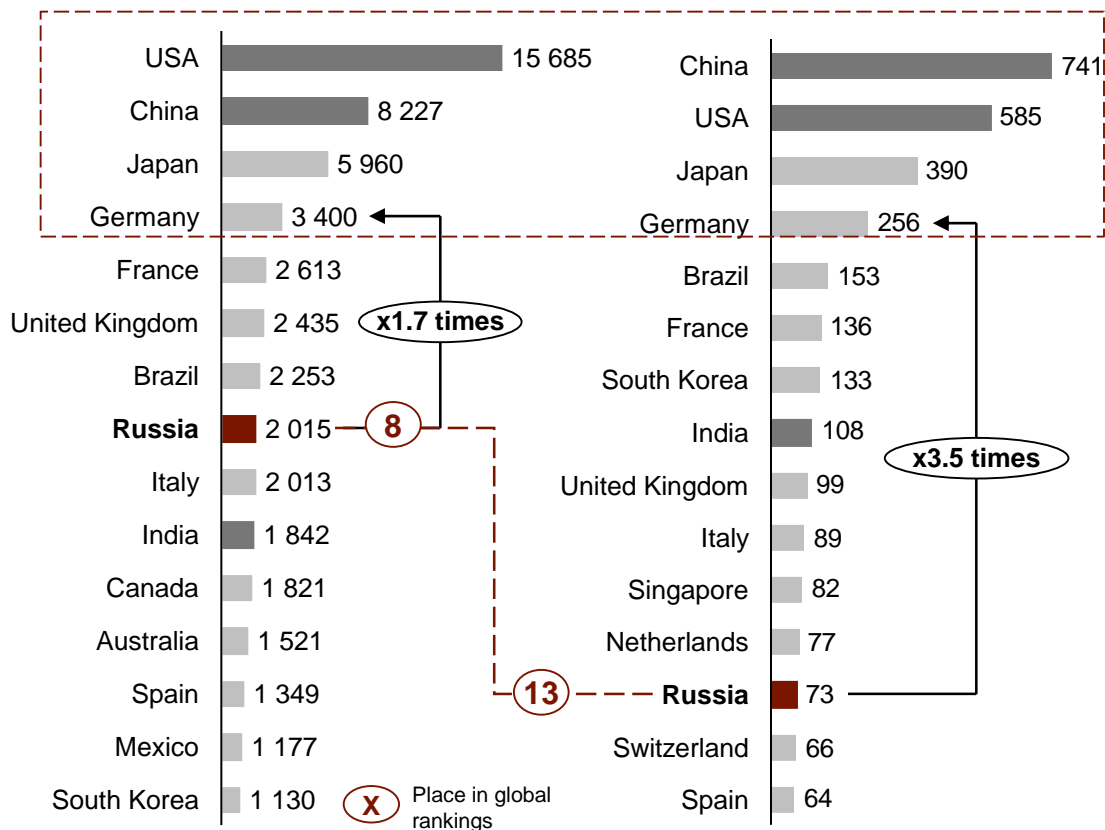
Source: Eurostat, OECD, World Bank, The European chemicals industry in a worldwide perspective, Facts and figures 2012, Marketline, аналитика Strategy Partners Group

The world's largest economies (by GDP) actively support and develop their chemical industries

Countries with the strongest economies are also the world leaders in chemical production

Top-15 countries by GDP, 2012, trillion dollars

Top-15 countries in terms of number of chemicals facilities, 2012, trillion dollars



* Data for 2012; for some countries, the data may be preliminary estimates

Sources: WB, ING, Cefic, national statistics services

Examples of countries that support their chemicals industries



Prices have for a long time been held at a low level for raw gas, which is seen as a **key factor in promoting the competitiveness of the US chemical industry and represents the industrial base** of the USA

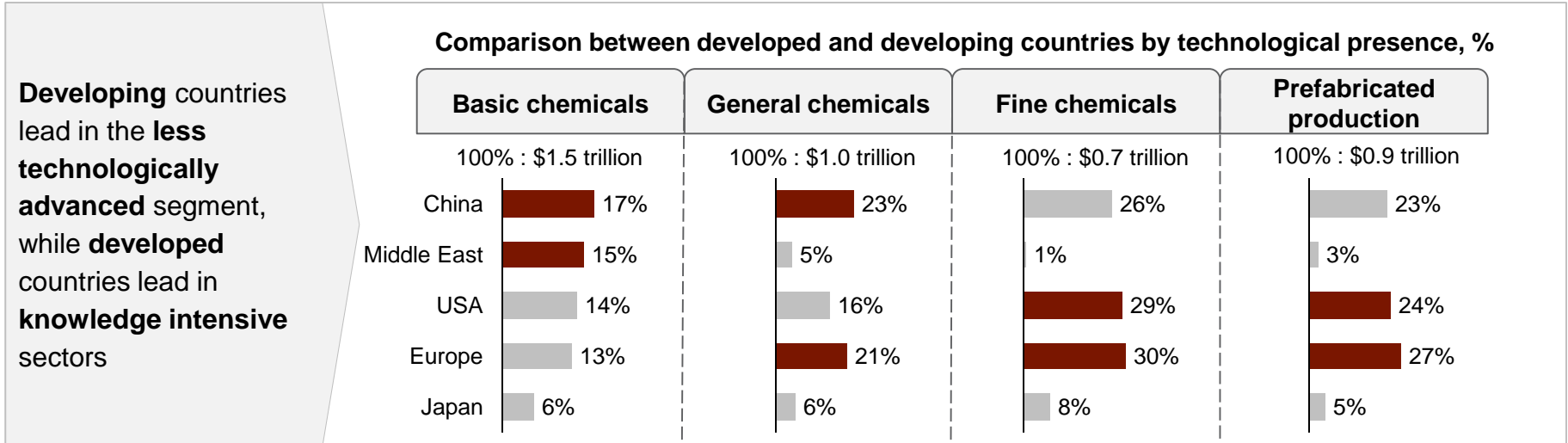
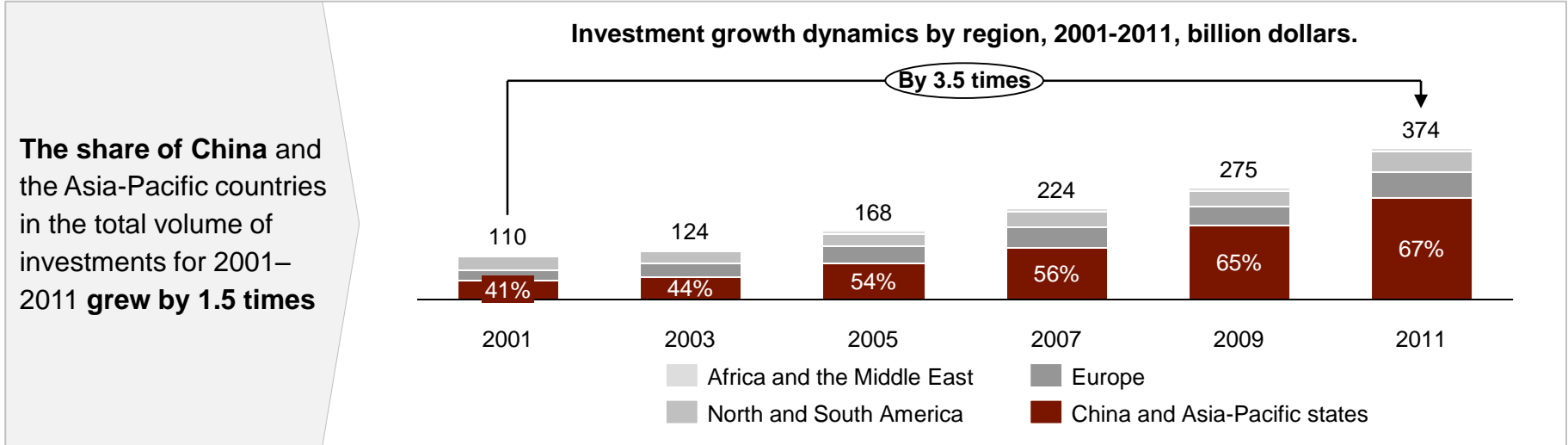


The chemicals industry in China is a priority sector for economic development up to 2020 and the share of chemical products in GDP is expected to **increase twofold**



The Indian development strategy for the chemicals industry envisages a plan to **treble** the volume of chemical production to \$290 billion by 2017, **taking 6% of the world market**

Developed countries maintain control over high-tech segments, while developing countries are increasing bulk chemicals production

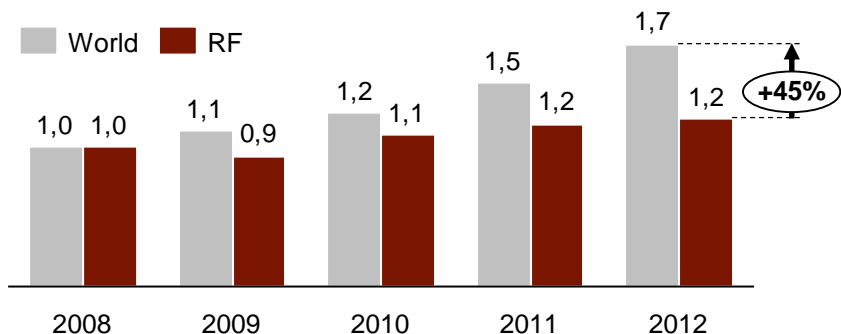


Sources: The European chemical industry in a worldwide perspective, Facts and figures 2012, IHS, Plastics Europe, PWC, The Dow Chemical Company Databook 2010, The Dow of Tomorrow here Today

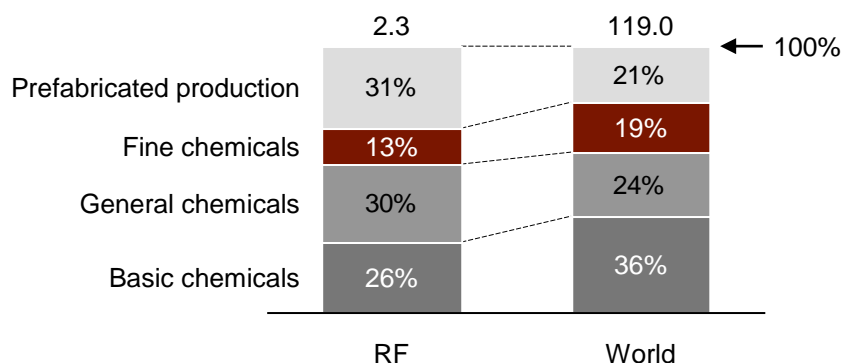
The Russian chemicals industry is characterised by relatively low growth and the poor development of high value-added processing

The development of Russia's chemical industry lags behind global output, and has poorly developed fine chemistry

Output index for the chemicals industry in RF and world, 2008–2012.¹



Structure of chemical industry in RF and the world by segment, 2012, trillion rubles.

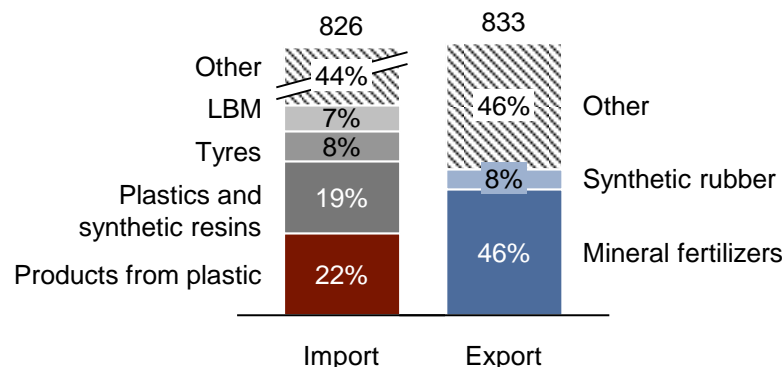


Low value-added products are predominant in Russian export, while high value-added products prevail in import

Market balance of chemical production in the RF 2012, billion rub.



Import and export structure for chemicals, 2012, trillion rubles.

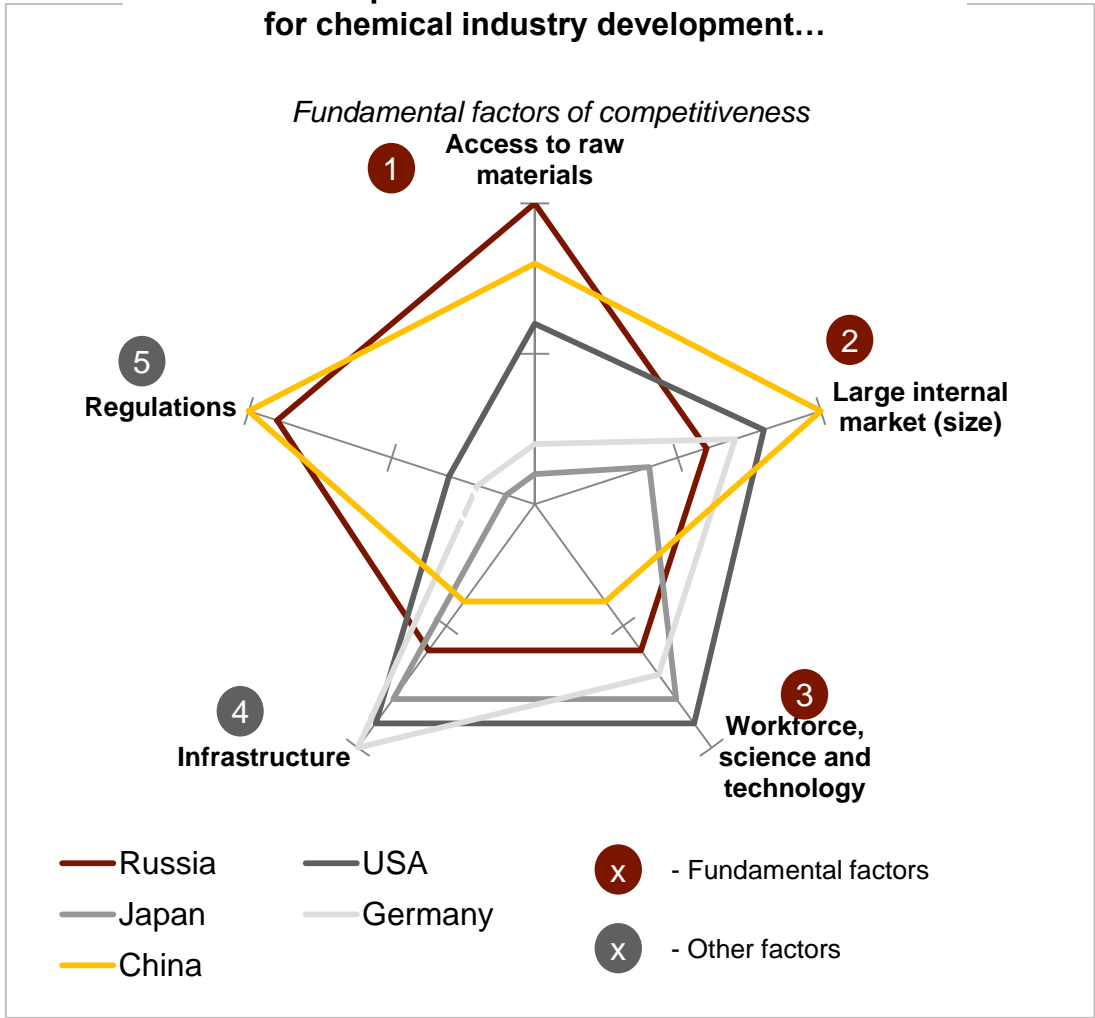


1 – Cumulative total

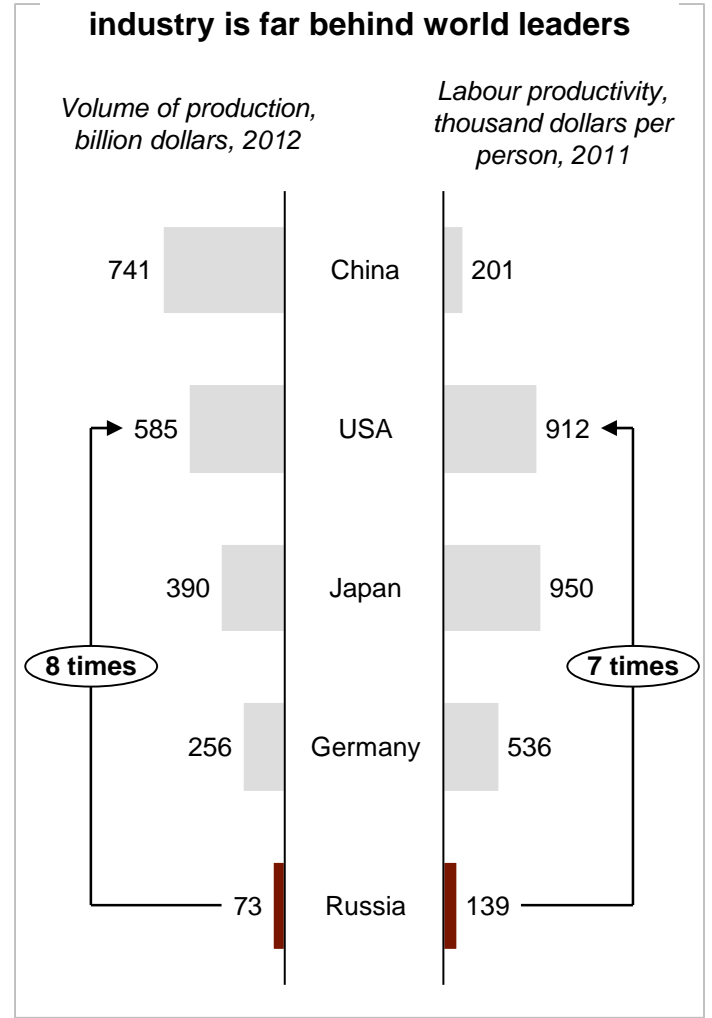
Sources: MarketLine, Petkim, Roland Berger, НИИТЭХИМ, Росстат, Strategy Partners Group's analysis

Despite having all the prerequisites for development of its chemical industry, Russia lags behind the global leaders

Russia is competitive in all the fundamental factors for chemical industry development...



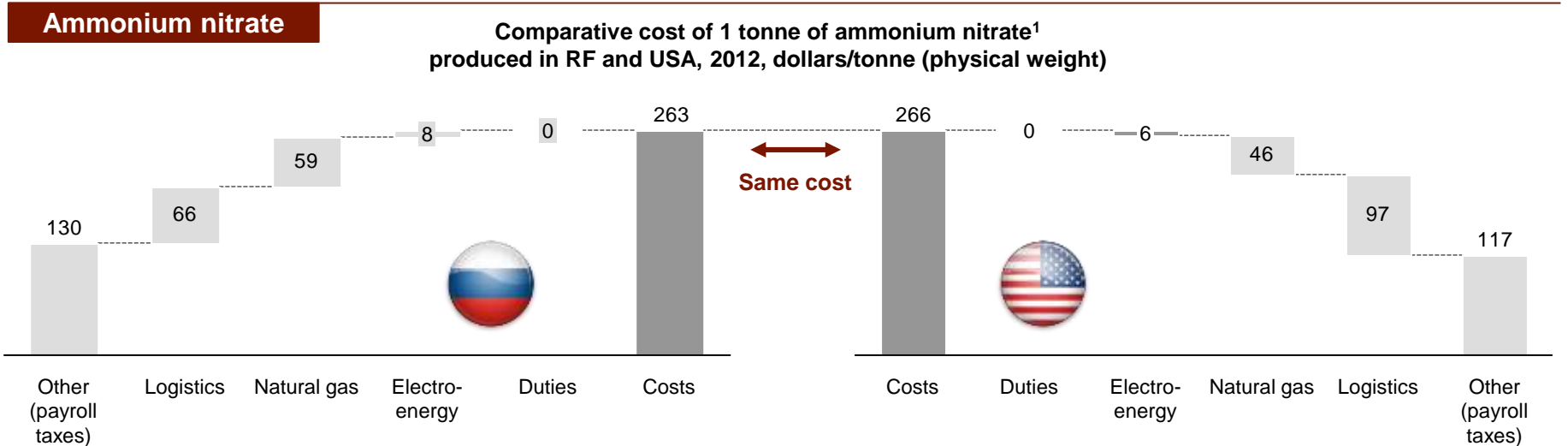
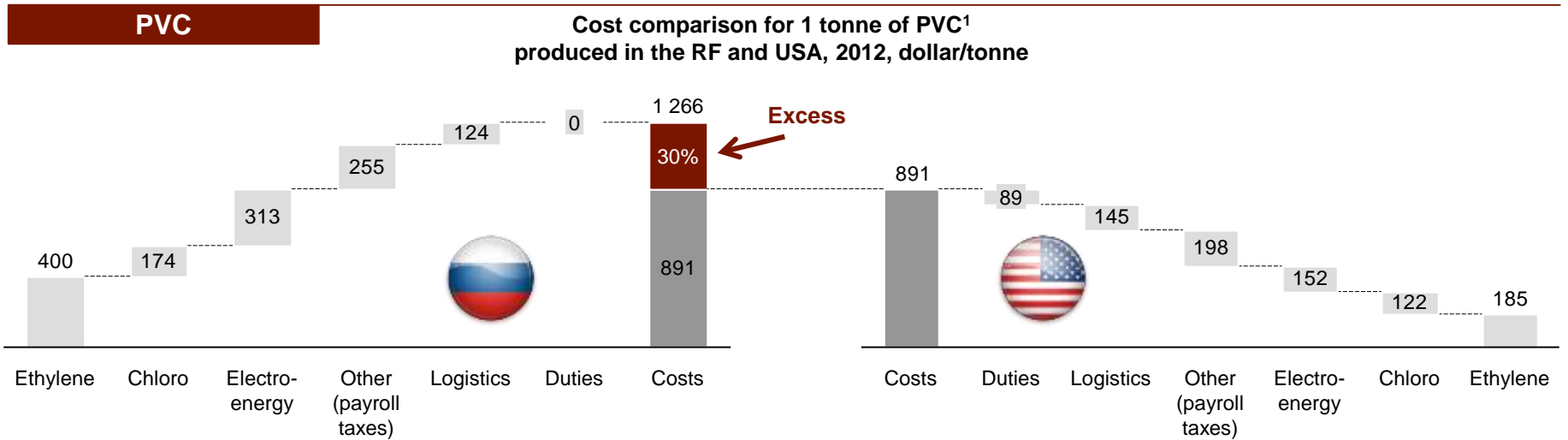
...nevertheless Russian chemical industry is far behind world leaders



Source: Poczta, NAICS, OECD, Eurostat, governments of India, China, Japan (Ministry of Statistics)

Russian chemical industry strategy to 2030

On a number of chemical products domestic producers are not only losing global competitiveness, but competitiveness on the Russian market as well



1 – Basis supply Saint Petersburg (DDP). Payments for the USA are according to import parity

Sources: WTO, Deloitte, Riccom, interviews with sector specialists, SPG analysis

Poor development of Russian chemical industry is due to system-wide problems among which the most significant ones can be underlined

Prioritization list of the key problems in the chemicals industry impacting the competitiveness of its core segments

No	Key industry issues	ME and Methanol	Chemical fibres	LBM	Soda and Chloro	Polymer products	Special chemicals	Cumulative impact
1	High prices and lack of necessary range of raw materials	●	●	●	●	●	●	●
2	Highly depreciated production facilities	●	●	●	●	●	●	●
3	Poor efficiency of the foreign trade policy	●	●	●	●	●	●	●
4	Insufficient development of the human, scientific and technological development of the industry	●	●	●	●	●	●	●
5	High electricity and w/d transport	●	●	●	●	●	●	●
6	Poor quality control standards and systems	●	●	●	●	●	●	●
7	Insufficient internal market capacity	●	●	●	●	●	●	●
8	Dependence of strategic industries on imported raw materials	○	●	●	○	●	●	●
9	High capital and maintenance costs for fixed assets	●	●	●	●	●	●	●
10	Low finance availability and high taxes on enterprises in the industry	●	●	●	●	●	●	●
11	Limited capacity in the logistics infrastructure	●	○	○	●	●	○	●
12	Deficit in the domestic production of competitive chemical equipment	●	●	●	●	●	●	●
13	Out-of-date technical standards for industrial assets	●	●	●	●	●	●	●
14	Low level of integration among manufacturers	○	●	●	○	●	●	●
15	Need to independently develop social and engineering infrastructure during the construction of production facilities	●	●	●	●	●	●	●
16	Poor public procurement efficiency	○	○	●	○	●	●	●

No Key issues in the Russian chemicals industry

Degree of influence ○ Minimum ● Maximum

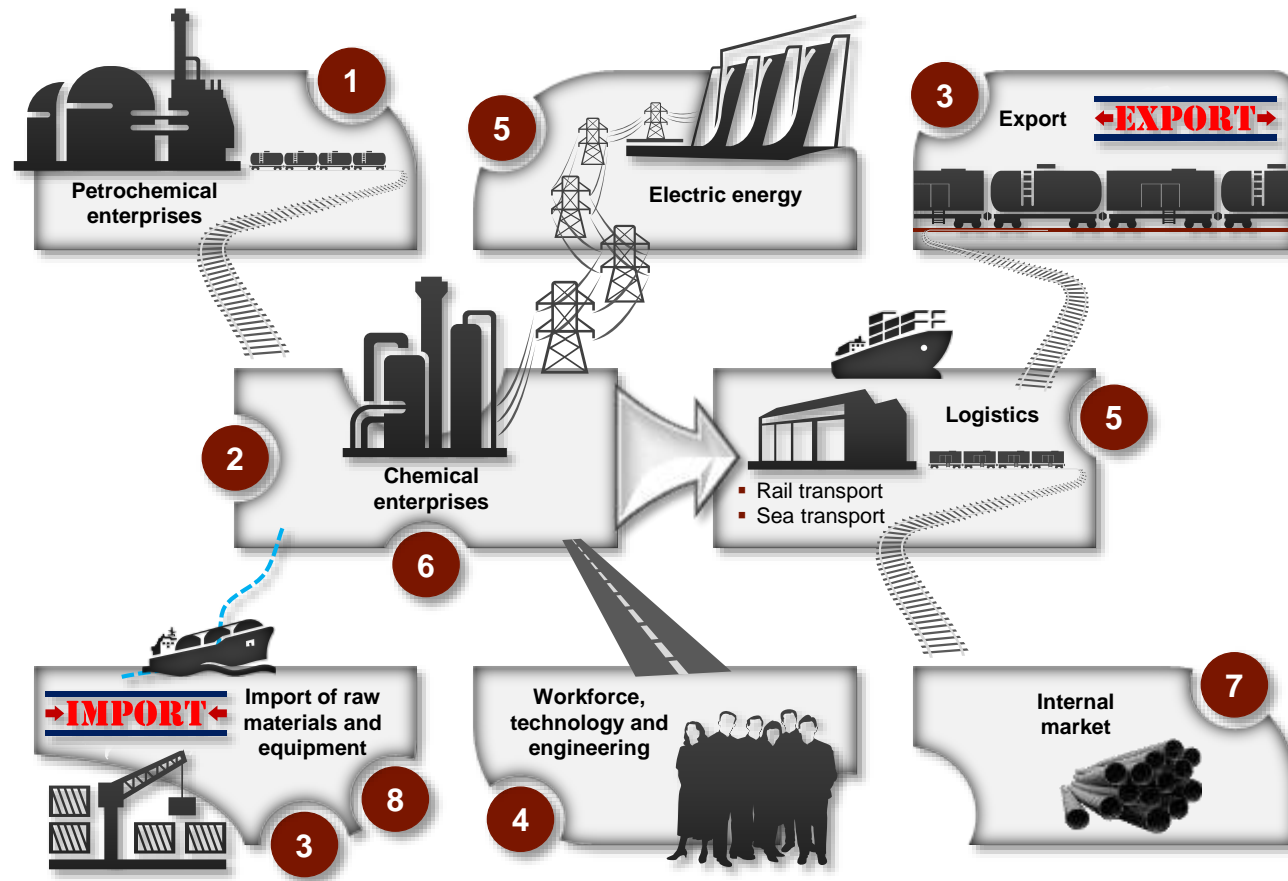
This assessment of the degree of influence of the most pressing problems in the industry is based on, among other things, the results of a survey¹ of the industry, in which **more than 30 companies, professional associations and research institutes took part, along with other representatives from each product area**

1 – this survey of industry organisations was conducted jointly by SPG and the Russian Ministry of Industrial Development as part of the Russian development strategy

Source: surveys of industrial companies, professional associations, research institutes and experts, and SPG analysis

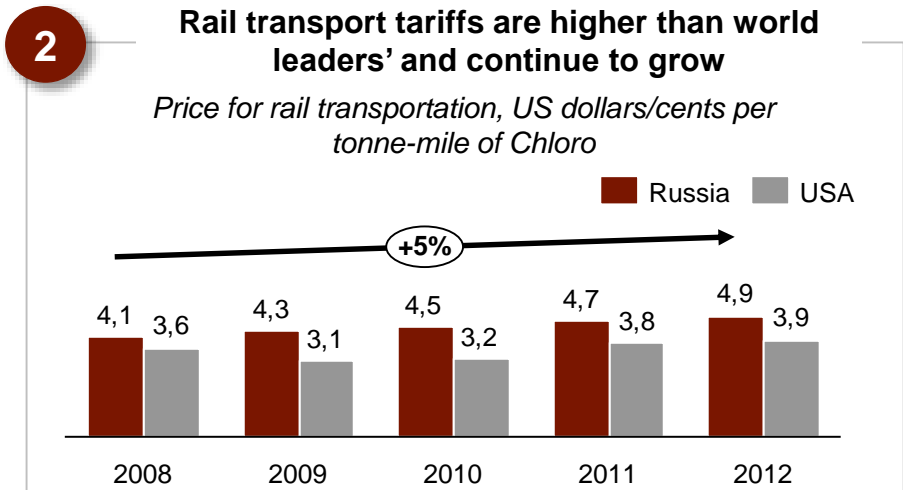
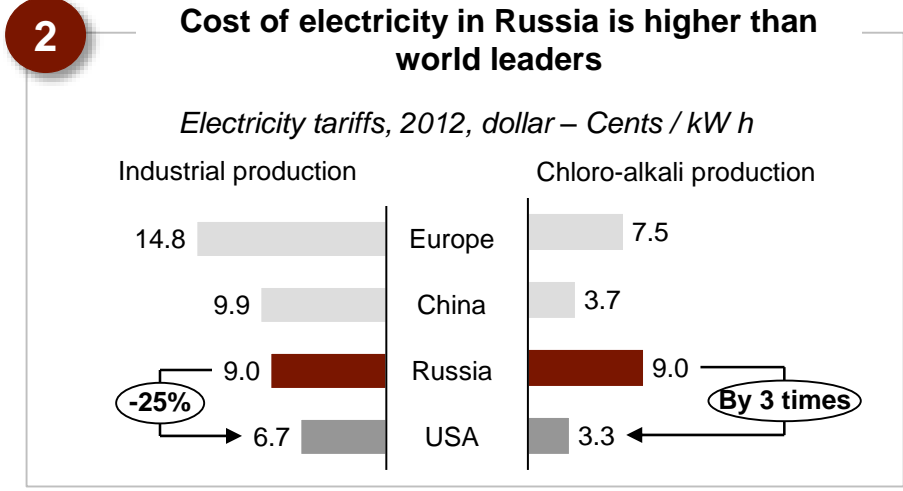
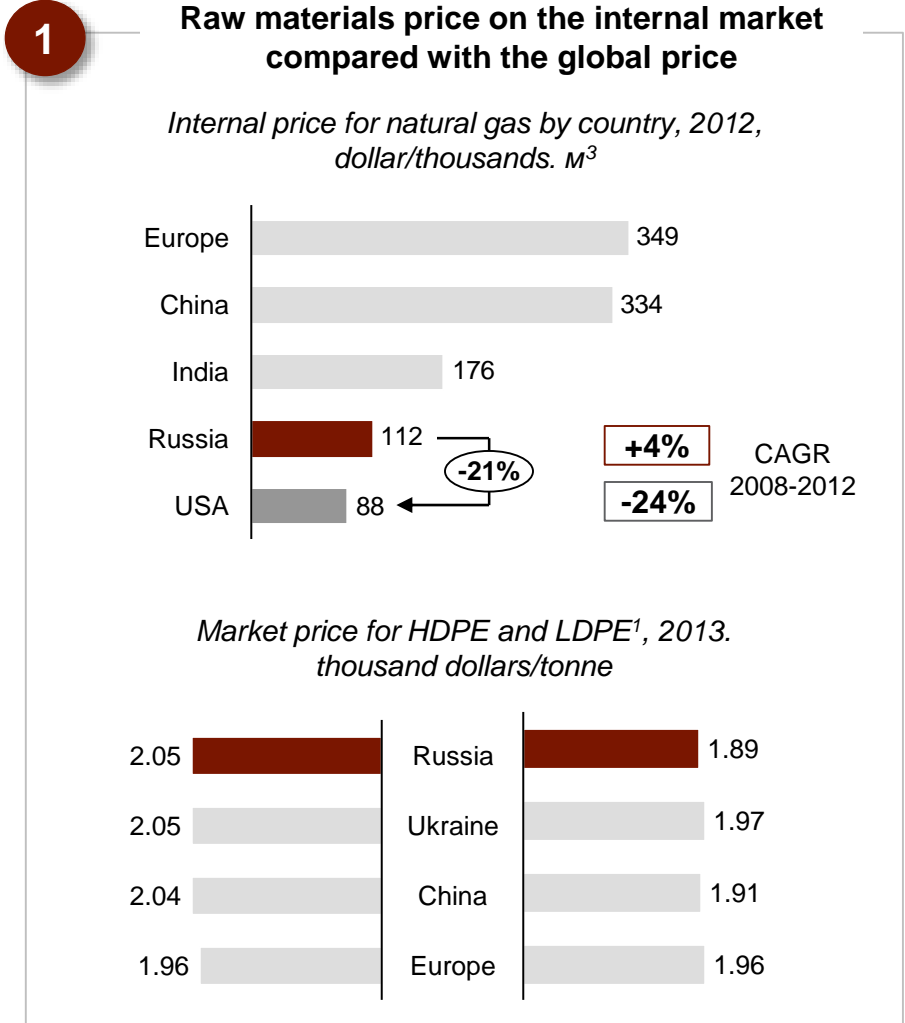
The key problems in the chemicals industry mostly impact the industry's competitiveness

Key problems of the chemicals industry in Russia



1. High prices and lack of necessary range of raw materials
2. Highly deteriorated production facilities
3. Poor foreign trade policies
4. Insufficient development of human, scientific and technological potential within the chemical industry
5. High electricity prices and high prices for transport of goods
6. Poor development of systems of standards and quality control of chemical products
7. Insufficient domestic market capacity
8. Dependence of strategic sectors on imported raw materials

The key problems are the high prices for raw materials, electricity and rail transport



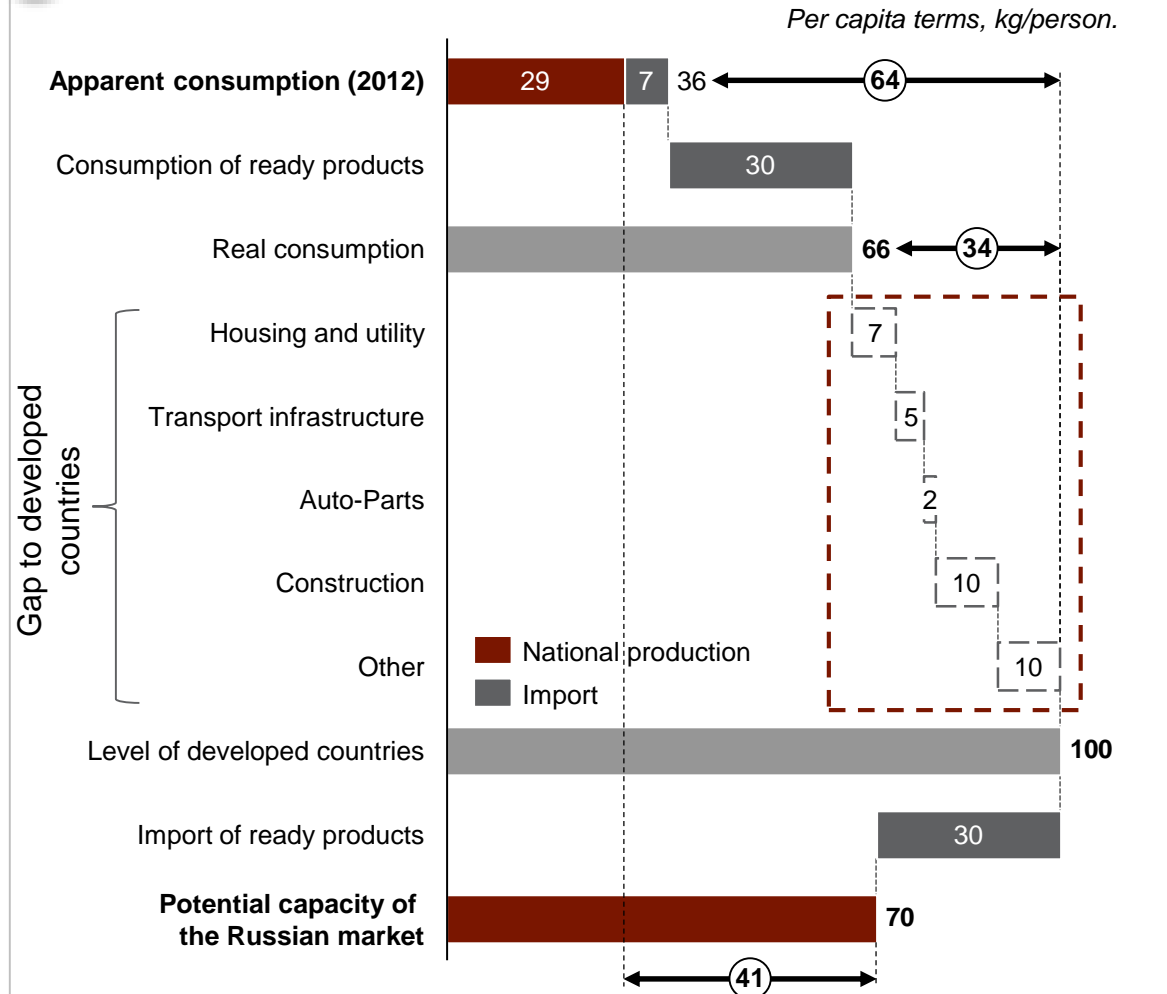
1 – high-density and low-density polyethylene

Sources: NAICS, OECD, Eurostat, UNCTAD, Ministry of Statistics of China, Japan, EIA)

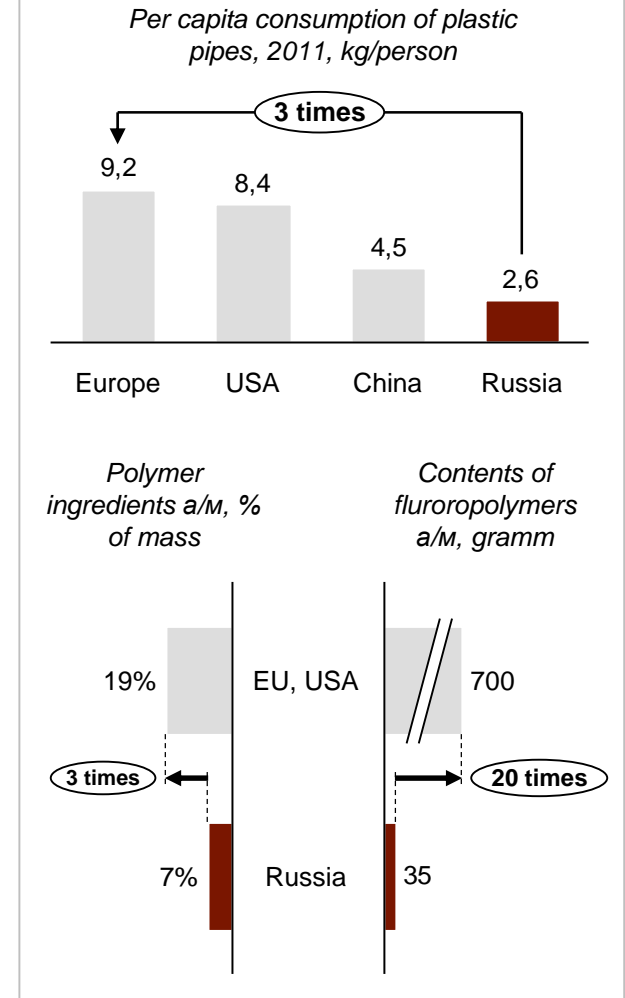
Lack of domestic demand for domestically produced chemical products limits the scale of projects realized in Russian chemical industry

3

The Russian market has great potential for increase in plastics processing products consumption



Examples



*Excluding growth in exports of finished production

Sources: НИИТЭХИМ, Alliance-Analytics, Polyplastic, Rosstat, SPG analysis

Obsolete industry standards and ineffective government regulations reduce demand for chemical products and act as a brake on the growth of high-value added products

4 Industry standards are either absent or obsolete

Problems related to standards on the example of road construction (demand for PMAC¹ and geosynthetics)

Structure of road top

Standard for Russia

Global standards

- There exist a national standard regulating the PMAC
- There are no standards for the construction of roads using PMAC**

5 Import duties hinder the development of high-value added chemicals

Calcium fluoride production in Russia and import duties, 2008-2012, 000' tonnes

Year	Production (000' tonnes)	Import duties (%)
2008	153	13%
2009	127	13%
2010	67	13%
2011	0	13%
2012	0	13%

Closure of 'Yaroslav GOK', only producer of raw materials

Violations of the escalation principle² for import duties before and after Russia's entry into the WTO

Terephthalic acid (5% New rates)

Monoethylene glycol (10% Old rates)

Polyethylene terephthalate (4% New rates)

x% New rates, x% Old rates

1- polymer modified asphalt cement. 2 – import rates on raw materials are higher than processed products

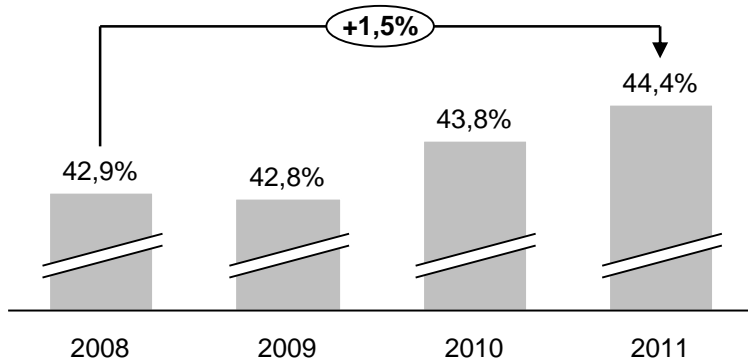
Source: GK 'Avtodor', interview with sector experts, list of MFN tariffs, Rosstat, Strategy Partners analysis

Highly deteriorated production facilities and poor scientific, technological and human capital leave Russian producers lagging behind the world

6

Main production facilities are severely deteriorated

Depreciation dynamics of large and medium sized chemical plants' fixed assets, %

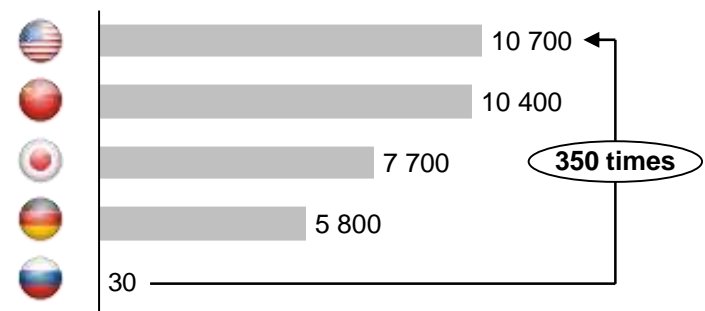


- Certain part of chemical production facilities was installed in the years 1930-1950
- In addition, the old power units need modernising, as their closing-down require far more important investments on recultivation and environmental safety assurance

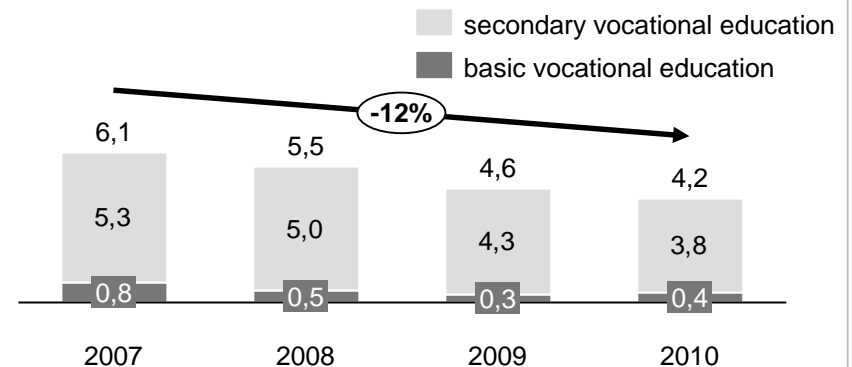
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Russian chemical industry lacks human, scientific and technological capacity

R&D expenditure in chemicals industry, 2011, million dollars.¹



Number of specialists graduating from specialist chemistry educational establishments, 000' people.²

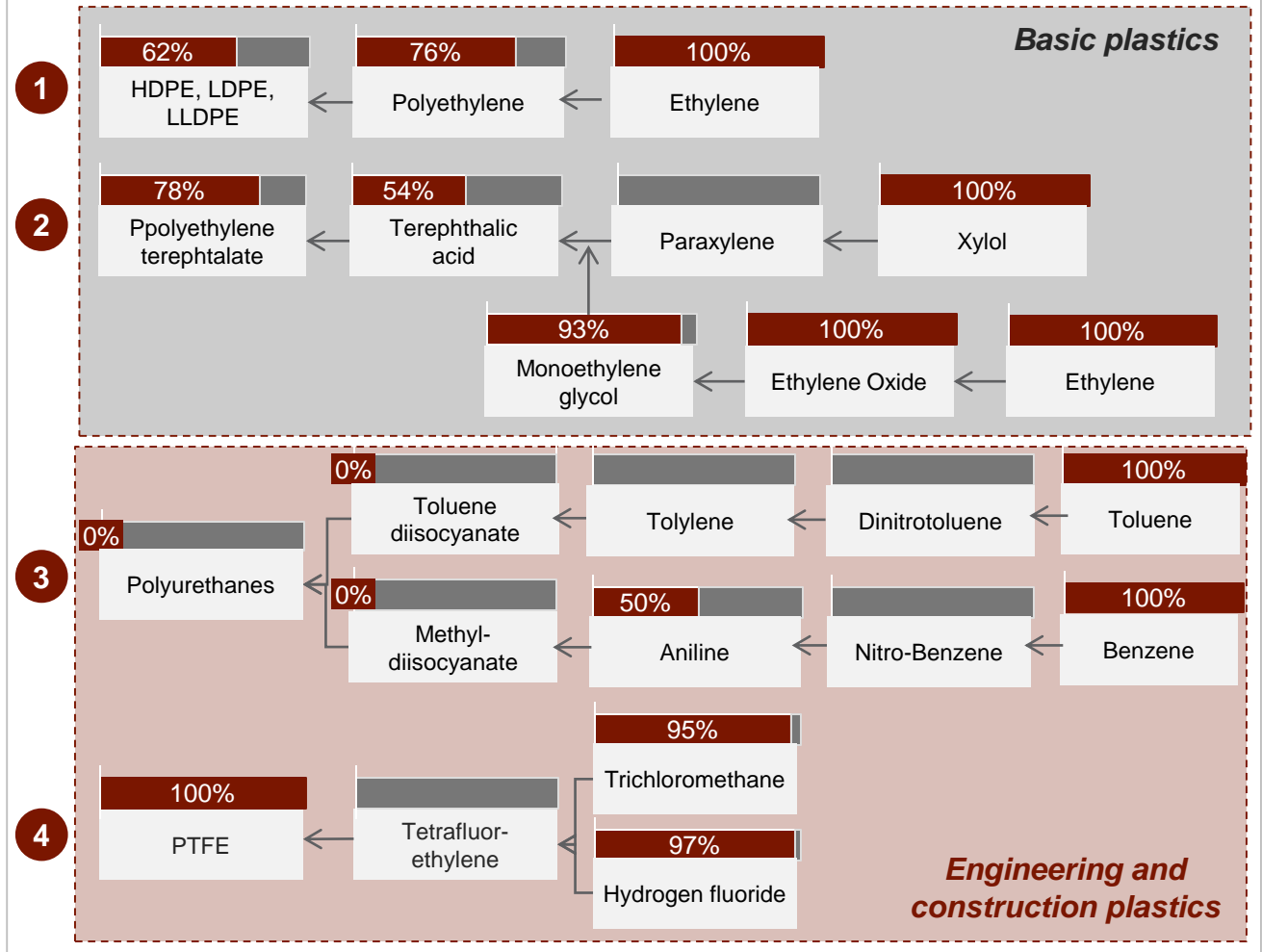


1 – For some companies, R&D expenditures are for 2009 or 2010. 2 – СПО, НПО – Secondary and Primary educational establishments

Source: interview with sector experts, list of MFN tariffs, Rosstat, SPG analysis

Growth in the development of engineering and construction plastics is held back by a lack of basic raw materials and the technical complexity of the processes

Supply of raw materials is oriented on export, while technical backwardness hampers the development of high-tech products

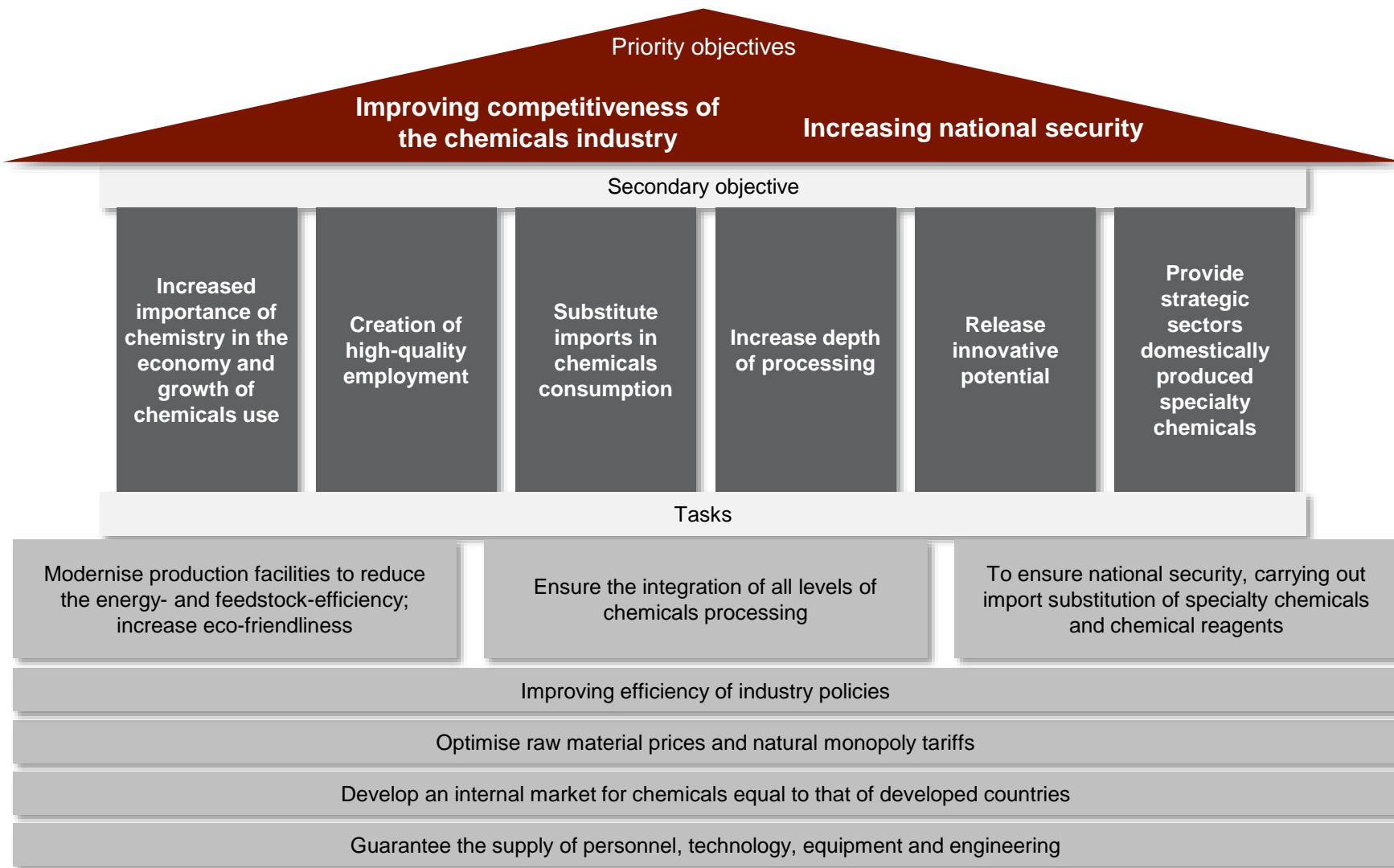


Competitiveness is also reduced by a number of other factors

- High cost of imported raw materials due to logistics and import duties
- High natural monopoly tariffs, reducing the efficiency of energy intensive industries
- Overall technological lag and low automation levels of domestic production facilities
- Obsolete standards relating to polymer production, as well as regulations on their use in consumer industries

Source: Rosstat, UN Comtrade, Deutsche Bank, Polyplastic

The strategic objective is to increase the competitiveness of the chemicals industry and enhance national security, including import substitution in consumption of high value-added products



Support of different product segments will be carried out with the help of tools depending on the contribution segment into the economy and the ability to further develop the product in Russia

1 Two groups of factors to assess

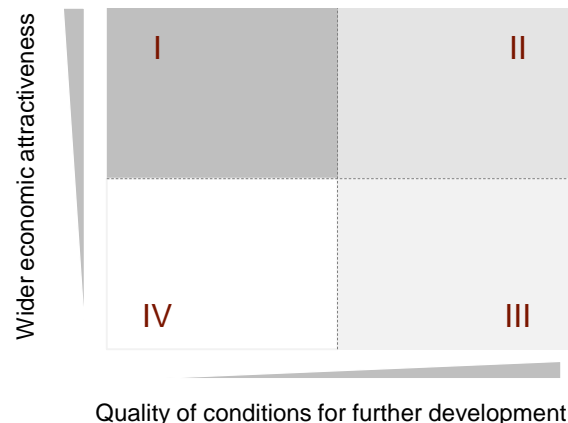
Attractiveness

1. Size of the internal market (30%)
2. Multiplication effect (30%)
3. Export orientation (20%)
4. Internal market growth rate (10%)
5. Value added per employee (10%)

Quality of conditions for further development

1. Guaranteed mineral-raw material base (20%)
2. Availability of technology and competences (15%)
3. Market access (15%):
 - Development of industrial consumers
 - Proximity of and growth in export markets
4. Infrastructure (15%):
 - Energy
 - Transport
5. Human resource availability (15%) :
 - Accessibility
 - Quality
6. Availability of finance (10%)
7. Effective government regulations (10%)

2 Analysis matrix



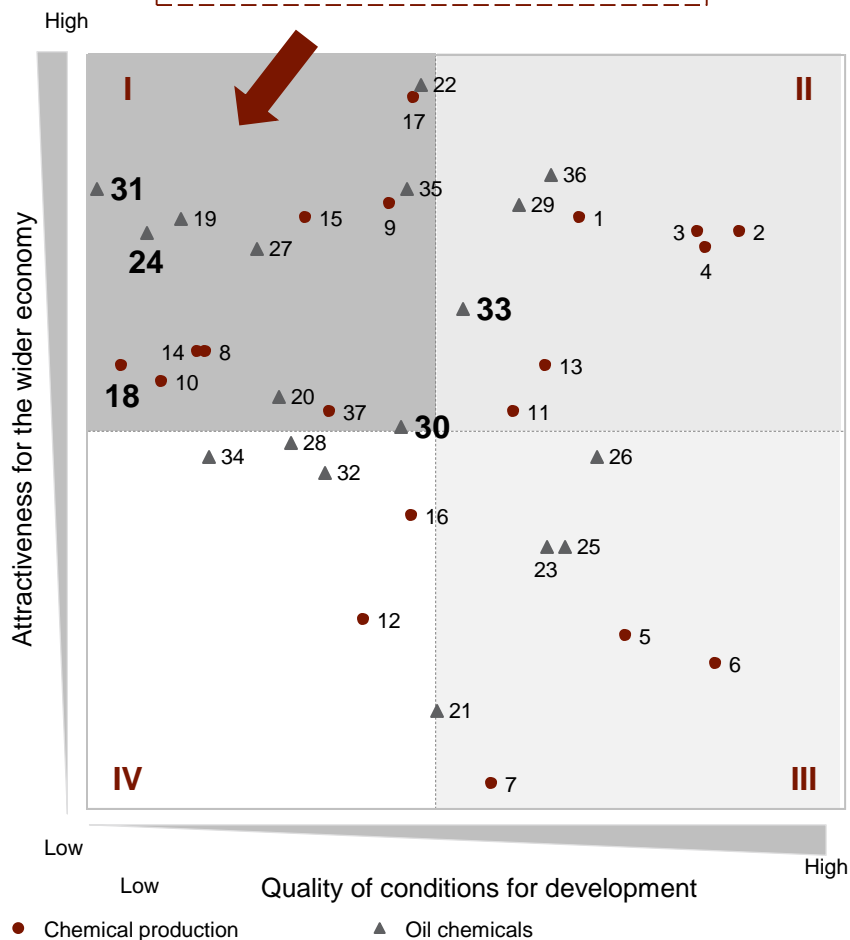
3 Strategic priorities

- I. Area of highest growth potential. Creating the preconditions for developing products in this area will provide the greatest economic benefit
- II. Area with great potential and the necessary conditions for development. Support for the development of long-term competitiveness for manufacturers
- III. Area with unrealised development potential. Demand to be stimulated and promoted on export markets
- IV. Area for self-development; provision of economic support will not bring benefits to the wider economy

The strategy is focused on creating and preserving a favourable environment for the domestic chemical industry advance, including development of construction polymers production

Prioritisation matrix for the production of chemicals

Usually imported and high-value added chemicals with a large domestic market and high growth potential

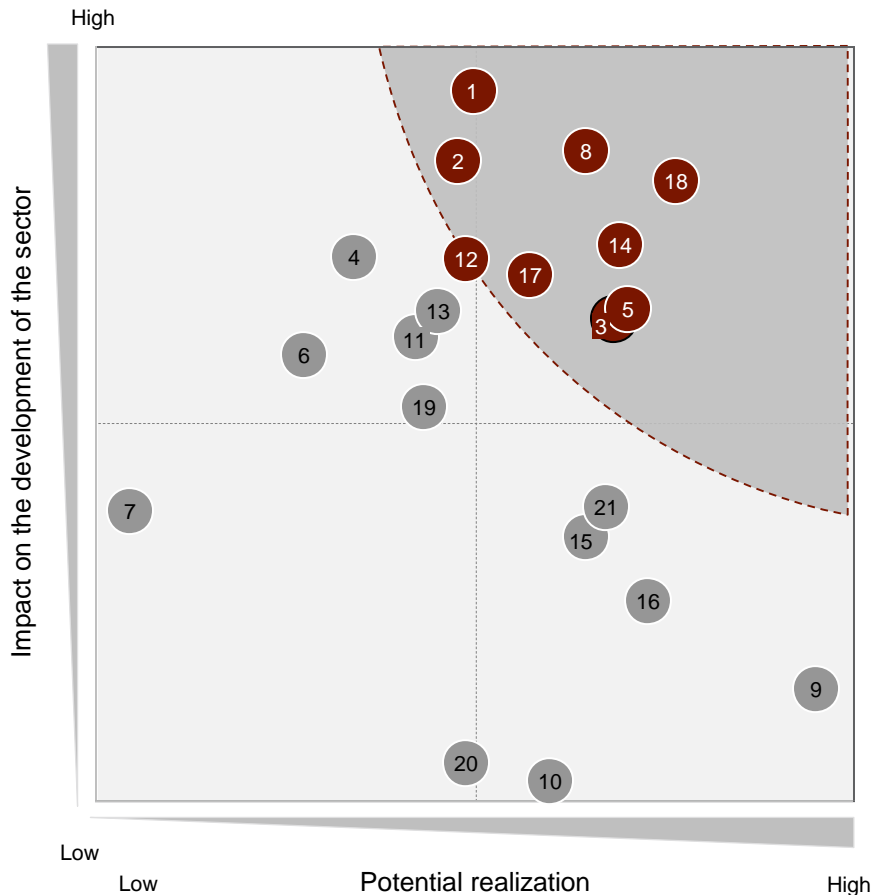


List of priority chemical product segments

- | | |
|--|---|
| <p>I</p> <ul style="list-style-type: none"> 31. Polyurethanes 24. Composite plastics 19. Isocyanates 18. Special chemicals civil 10. Polyacrylonitrile fiber 14. Industrial coatings 8. Polyester fibers 27. Polyethylene 20. Terephthalic acid 15. Decorative coatings 37. Pigments 17. Caustic soda and chlorine 22. Polyvinyl 35. Petrochemical resin 30. Polycarbonate | <p>II</p> <ul style="list-style-type: none"> 29. Polystyrene 36. Tire & Rubber 33. Polyamide 1. Nitrogenous fertilizers 3. Phosphate fertilizers 4. Mixed fertilizers 2. Potash 11. Polyolefin fibers 13. Nonwovens |
| <p>IV</p> <ul style="list-style-type: none"> 34. Other plastics 28. Polyacrylate 32. Acrylonitrile Butadiene Styrene 16. Soda 12. Other synthetic fibers | <p>III</p> <ul style="list-style-type: none"> 21. Basic organic compound 26. Polypropylene 23. High density polyethylene 25. Low density polyethylene 5. Ammonia 6. Methanol 7. Basic inorganic compound |

To achieve the strategic objectives, a wide range of government support initiatives have been proposed among which the most effective ones were selected

Prioritisation matrix for initiatives to develop the chemical industry



List of initiatives to develop the chemical industry

18	Formation of chemical industry parks
8	Promotion of usage of chemical products
14	Support for major national products
1	Normalise government regulation on the industry (moratorium)
5	Support Russian producers in the WTO
3	Develop workforce potential
2	Ensure own industrial base
17	Support production of special chemicals
12	Taxation to simulate investment
9	Develop quality standards governing chemical production
13	Increase access to finance
4	Implementation of industrial safety regulation
11	Implementing strategic documents in related industries
16	Creating a reserve of critical materials
15	Creating a catalogue of critical materials
19	Development of own technology
6	Optimise tariff systems
10	Develop systems to control quality
20	Promoting the transfer and sharing of technology
7	Support for exporters

To bring the strategy to fruition, many problems need to be solved by introducing complex state support instruments (1/2)

Key initiatives to implement the strategy

1. Increased effectiveness of industry regulation

1.1

Investing

Create a supportive business environment to encourage production

- Stabilise government policy regulating the chemicals industry
- Providing nationally-owned raw materials
- Assisting with the localisation of foreign products in Russia

1.4

Develop quality control standards and references

- Develop and update technical regulations governing the use of the chemical products in the chemicals industry
- Apply technical regulations and labelling on chemicals
- Update standards and quality control over chemical products
- Increase quality control effectiveness in the industry and in the raw material sectors
- Optimise the requirements for personnel, transport and production

1.2



Increased effectiveness of safety regulations

- Improve and harmonise the regulatory framework governing the design and construction of the chemicals industry with international standards
- Harmonise environmental regulation with international standards
- Establish a number of tools to control the circulation of chemical products (introduce procedures to notify about new chemical products, etc.)

1.5



Integration with strategic documents in other industries

- Stimulate the development of individual products and consume high-tech materials
- Guaranteed state recognition of projects holding federal significance
- Inclusion within the development strategy activities that promote the use of high-tech materials

1.3



Increased effectiveness of foreign trade

- Support for Russian companies selling internationally, especially in the WTO
- Introduce moratoriums on regulatory changes that may effect the investment climate
- Optimise the tariff systems, including on the import of equipment
- Assist with the localisation of foreign products
- Optimise the certification procedure and customs' processes for produce to be exported

To bring the strategy to fruition, many problems need to be solved by introducing complex state support instruments (2/2)

Key initiatives to implement the strategy

2. Support for priority areas

2.1



Support for investment projects

- Support for modernisation products and new building
- Forming and supporting a national product pool
- Use taxation better and increase access to finance
- Apply accelerated depreciation to equipment
- Develop competent organisations to give credit and be able to appraise industry projects

2.2



Support for national production

- Implement the list of critical materials
- Develop and identify demands for a reserve of critical materials
- Develop instruments to develop internal production within Russia
- Simulate diversification to benefit society
- Create and support a 'small-volume chemicals' industrial park

3. Infrastructure support

3.1



Develop clusters and chemistry industrial parks

- Form an optimal business model for the localisation of clusters and industrial parks
- Secure access to raw materials and to attract anchor residents
- Ensure access to good infrastructure
- Ensure economic benefits are provided to residents
- Ensure access to related services

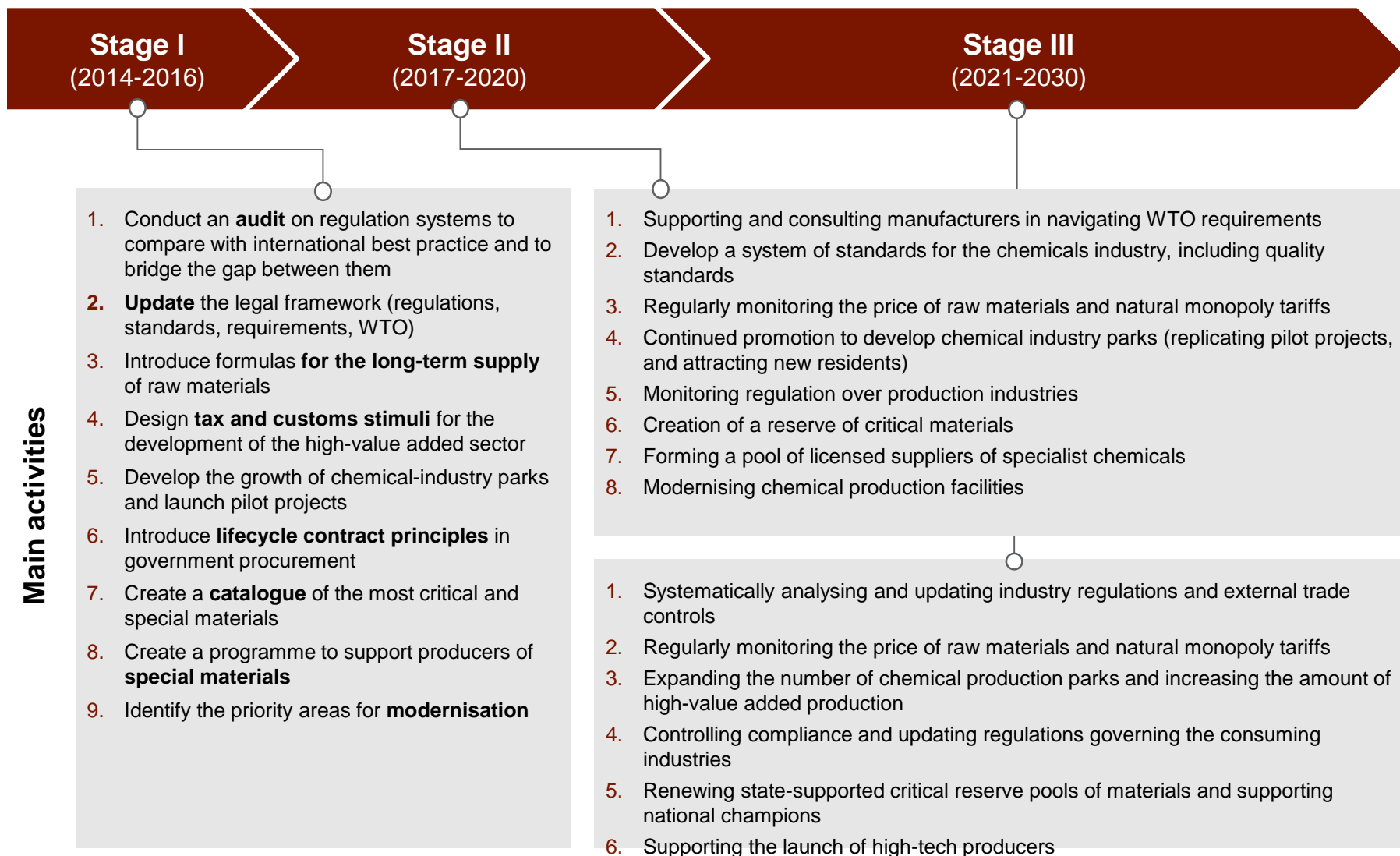
3.2



Support for the development of technology and human capital

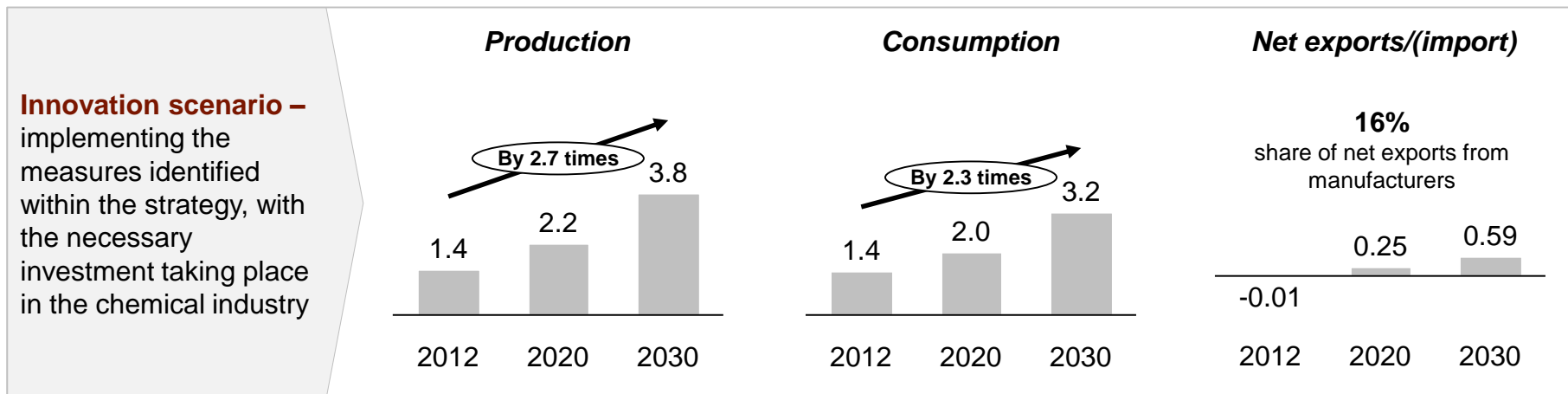
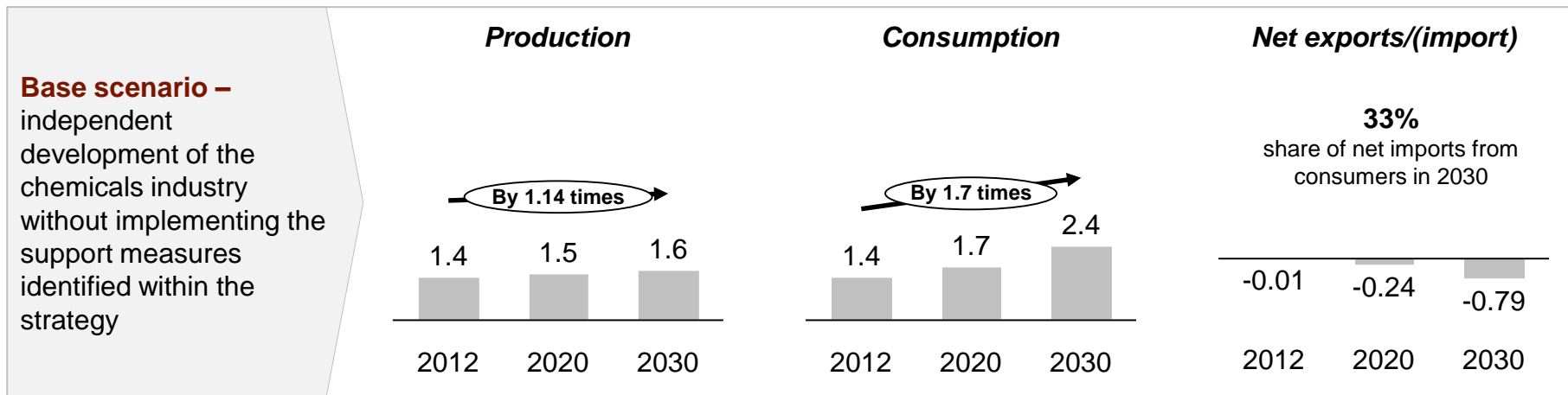
- Support for the performance improvement programs
- Assessing staff needs and developing educational programs to address industry requirements
- Securing state financing
- Support for relevant institutions
- Government financing for corporate programmes
- Subsidizing R&D
- Support for labor productivity growth programs

Plan for implementation of the strategy includes three stages



As a result of the strategy, production of chemicals should see a 2.7 increase, supporting increased consumption

Expected results of the strategy – scenario analysis, trillion rubles¹



1 – 2012 prices

Source: SPG forecasts