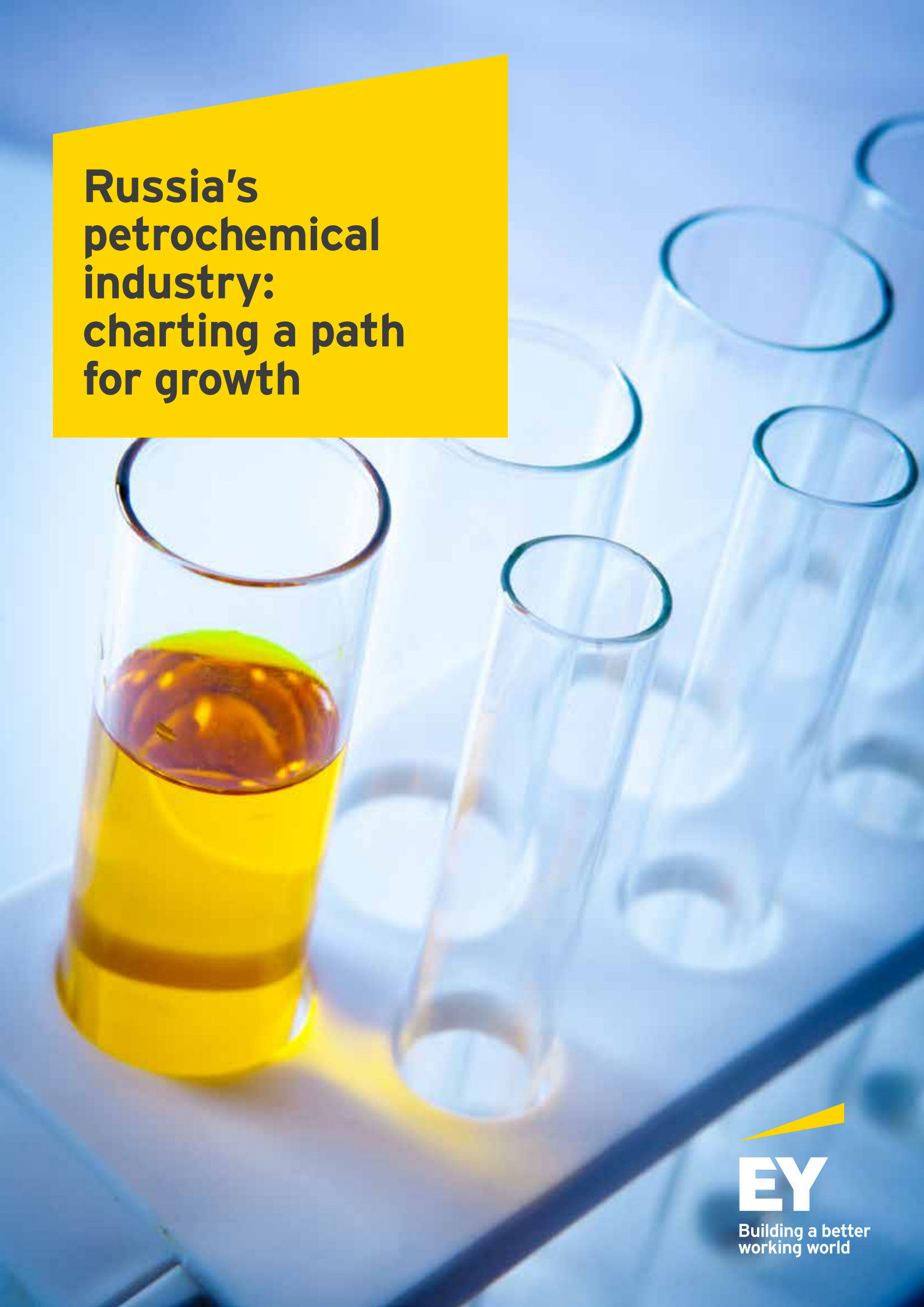
Russia's petrochemical industry: charting a path for growth



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Introduction

As the Russian petrochemical industry remains battered by ongoing developments across the national energy sector, key fundamentals reflecting its role and place in the country's economy leave much to be desired. The petrochemical sector contributes a modest 1.5% to the Russian GDP.

Accounting for approximately 1% of global petrochemical output, Russia ranks last among the top 20 producers, falling behind not only the US and Europe but also Thailand, Taiwan, Brazil, Iran and mainland China. A large number of products with higher added value (such as specialty composites and additives) are not produced in Russia. China and Europe, for example, produce about 25% and 20% of the world's primary plastics, respectively, while Russia produces only 2%.

Global oil majors play as important a role in the world's petrochemical landscape as specialized producers. The petrochemical business generates roughly 13% of total revenues for ExxonMobil, 10% for Shell and Total and 5% for Eni. Together, oil companies produce more than 50% of the world's olefins and aromatics, around one-third of its polystyrene and up to 25% of its polyolefins.

There have been positive shifts in Russia's petrochemical landscape over the past few years, as the Government has paid more attention to the industry's needs. For example, the final version of the "big tax maneuver" legislation takes into account a number of proposals put forward by industry players. This is important to Russia, as a simple analysis suggests petrochemical companies generate significant added value. In 2014, for example, sales proceeds ranged from US$715/ton for crude to US$860/ton and US$900/ton for oil products sold wholesale and via own retail networks, respectively. This is very low compared with both primary and secondary petrochemicals (US$1,200/ton and US$1,700/ton, respectively).

While the Government is obviously interested in monetizing the existing resource base to the greatest extent possible, this requires setting the right priorities and taking the right paths. Considering that the Government's petrochemical sector development plan for the period until 2030 is largely outdated, a multi-scenario road map may now be regarded as a priority. This document is expected to improve the effectiveness of decision-making and become an important benchmark for industry players. The success of this effort will be largely dependent on the active engagement of highly qualified experts and the collaborative work of all stakeholders, including executive authorities, vertically integrated oil companies (VIOCs) and consultants.

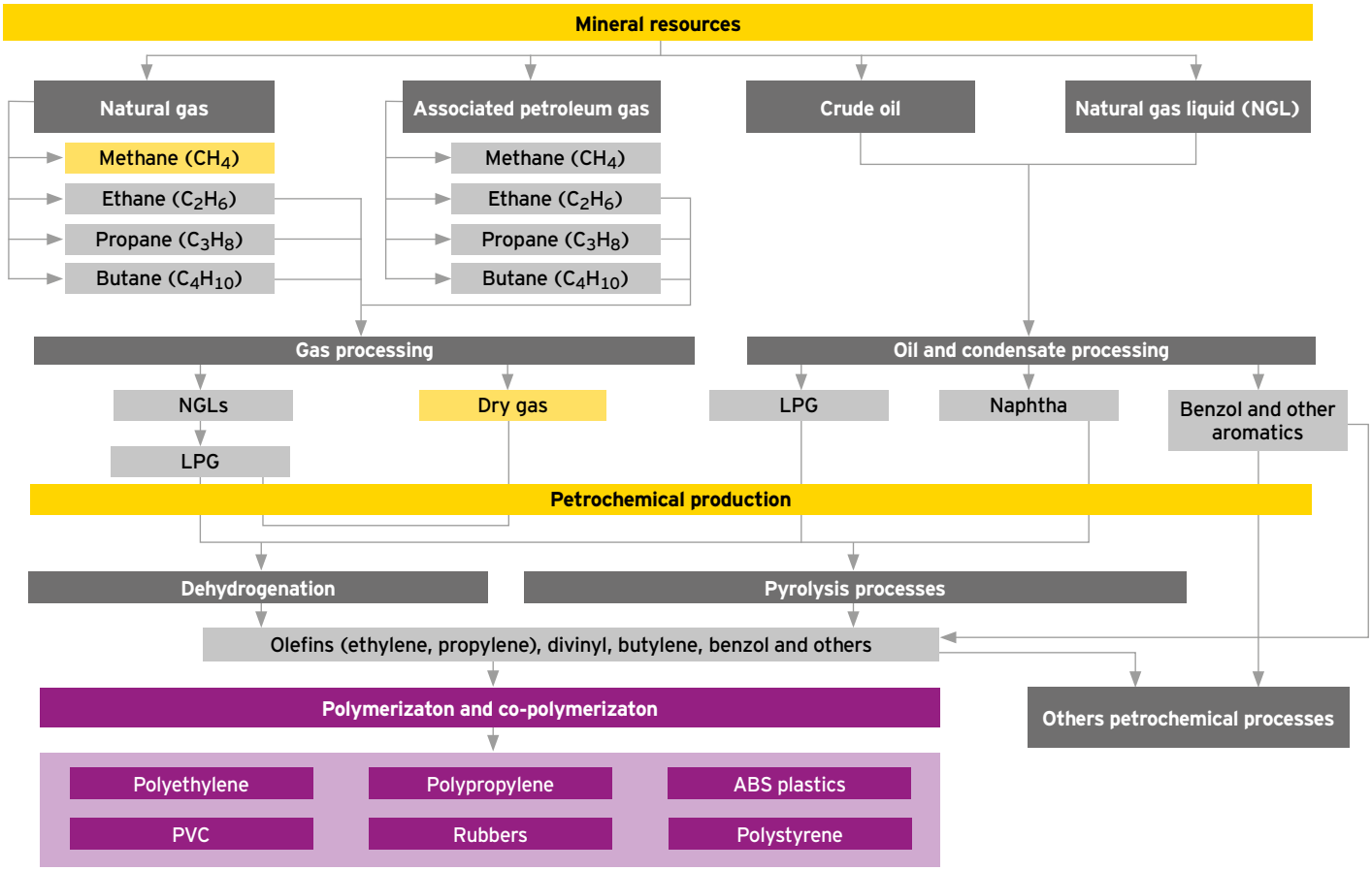
Polymer production

It is commonly held that the petrochemical sector matured into a separate industry in the 1950s and '60s. The first petrochemical product dates back to 1920, when isopropyl alcohol (IPA) was synthesized from waste gases at a thermal cracking unit in the US.

Today, polymers represent the most important product in the value chain (see the flow chart in Figure 1 below). After a number of conversions – which are generally unique to each polymer – the following products are obtained:

- Polyethylene (PE)
- Polypropylene (PP)
- Polyvinyl chloride (PVC)
- Polystyrene (PS)
- Synthetic rubber (SR) and many others.

Figure 1. Polymer production



Source: EY Moscow Oil & Gas Center

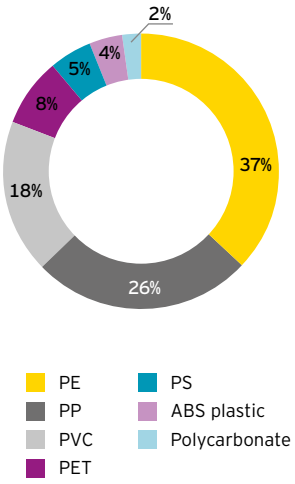
Because materials and products made from polymers are durable, resistant to heat and frost, and have low fragility and density, they are suitable for use in various applications and are sought after among consumers.

Owing to their outstanding performance, polymers are widely used in the machine-building, textiles, agribusiness, life sciences, automotive, shipbuilding and aerospace industries, as well as in everyday life. High molecular weight (HMW) compounds are also used to produce rubber, fibers, plastics, films, paint coatings and materials with semiconducting and magnetic properties.

Polymers globally

The cumulative global consumption of polymers has exceeded 210 million tons. As shown in Figure 2, the most widely consumed product is polyethylene (around 37%), followed by polypropylene (26%) and polyvinyl chloride (roughly 18%).

Figure 2.
Global polymer market



Source: TRICON.

Over the past decade, the production of basic polymers has been moving from North America and Western Europe to the Middle East and Asia-Pacific regions – that is, closer to feedstock sources. This is not surprising given that feedstock costs generally make up over two-thirds of total production costs. Another factor contributing to the changes in production geography is the rapidly rising demand in these regions.

As a result, traditional market participants are facing stiffer competition from Gulf Cooperation Council (GCC) countries, especially Saudi Arabia, a major producer now playing an increasingly prominent role in the global petrochemical industry. Saudi Arabia ramped up its ethylene capacity from 2 million tons in 1991 to over 15 million tons in 2014–15 (ethylene is a basic monomer used to make common polymers). The soaring exports of polymers and other petrochemicals from countries in the Gulf reduce their dependence on oil and gas exports.

China and other East Asian countries have also expanded into the world markets, including Russia. More than 30% of global polymer exports are now coming from these emerging economies.

A favorable investment climate, coupled with advanced technologies and readily available sources of feedstock, allows these exporters to expand their product offerings at low cost both domestically and internationally.

In the coming years, however, North America is likely to see its production of polyolefins revive with the availability of shale gas as a much cheaper source of polyethylene. As a result, polyethylene capacity in North America may rise by more than 9 million tons by 2023.

Russian producers will therefore be facing fierce competition from both the US, with its cheap feedstock, and the Middle East, with its consumer-friendly prices and smart logistics.

Russian polymer market

With its rich reserves making it the second-largest gas and third-largest oil producer in the world in 2014, Russia is a modest player in the primary petrochemical industry. Russia accounts for a very small share of global polymer production (around 2% and 1.5% of the world's polypropylene and polyethylene production, respectively).

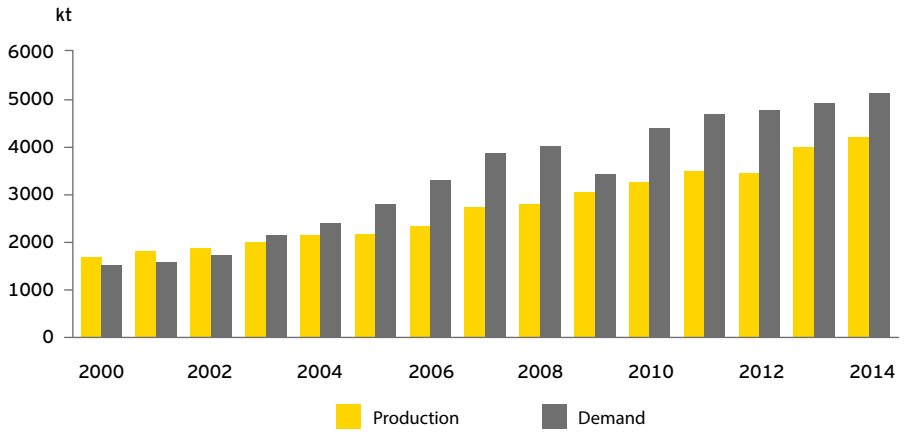
Historical results paint a more upbeat picture, however: over the past 15 years, the domestic industry has been growing at a rate of 7% a year vs. 3% globally (see Figure 3).

The industry has been cyclical in nature over the last 15 years. Russia produced 2.8 million tons of polymers (including 1.7 million tons of basic polymers) in 2000, reaching a post-Soviet record high of 4.3 million tons (including 2.8 million tons of basic polymers) in 2008. Demand was also up: the consumption of primary polymers surged by almost 160% to 4 million tons between 2000 and 2008. Imbalances between demand and supply led to a deficit of commodity polymers on the Russian market.

The 2008–09 crisis eroded consumption, however (by approximately 12% compared with 2007), while production growth remained at the same level. Demand for basic polymers rebounded after 2009, rising by 8% a year through 2014. PVC saw the largest increase in consumption (47%), followed by PE (40%), PP (32%) and PS (43%).

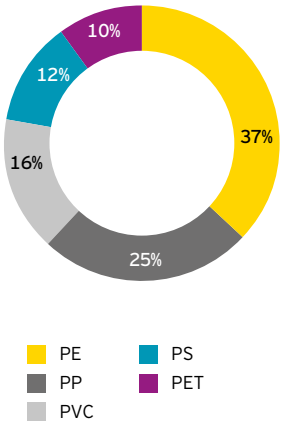
Instead of slowing down in the wake of the 2008–09 crisis, polymer production has been growing at an annual rate of almost 7% on average over the last seven years. A total of 4.4 million tons were produced, with PE accounting for 37%, PP for 25% and PVC for 16% of total output (see Figure 4).

Figure 3. Basic polymer production and demand



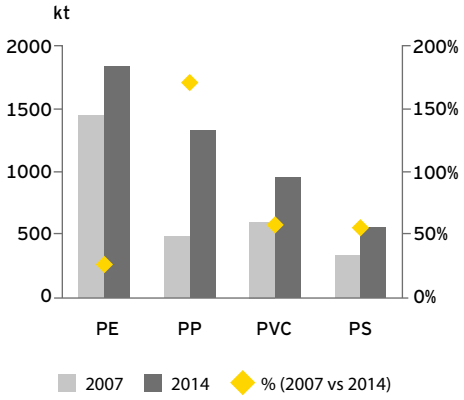
Sources: Rosstat, Market Report, Alliance-Analytics, CREON.

Figure 4.
Production of basic polymers in 2014, by type



Source: Neftegazovaya Vertikal, The Chemical Journal, EY Moscow Oil & Gas Center estimates

Figure 5.
Russia's production capacity for key polymers in 2007 and 2014



Sources: Neftegazovaya Vertikal, CREON, companies, EY Moscow Oil & Gas Center estimates

Disruptions at Russian plants in recent years have been partially offset by the launch of new facilities (see Figure 5), which expanded production capacity for PE by over 370,000 tons, for PP by 840,000 tons, for PVC by 350,000 tons and for PS by about 190,000 tons between 2007 and 2014.

A few projects have been implemented in Russia in the last two years to boost the output of basic polymers. Overall, annual production capacity added in 2013–14 totaled 1.13 million tons.

In 2013, two PP plants were commissioned: one in Omsk, with an installed capacity of 180,000 tons (expanded to 210,000 tons in 2014) and another in Tobolsk, with an installed capacity of 500,000 tons. In 2014, the company POLYEF started a 90,000-ton second line at its polyethylene terephthalate (PET) manufacturing facility, expanding its total production capacity to 210,000 tons,[1] while a newly established company called RusVinyl launched a 330,000-ton PVC plant.[2]

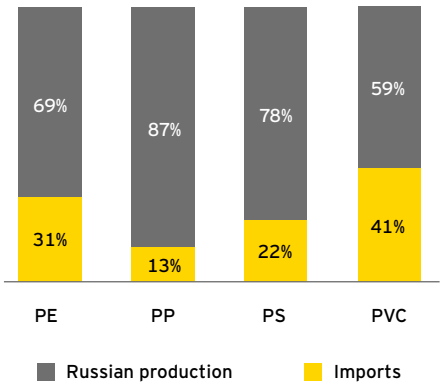
According to the Russian Ministry of Energy, investment in the petrochemical industry rose by 12% in ruble terms in 2014, reaching RUB140 billion. It dropped by about 8% in dollar terms, however, due to the weakening of the national currency (which lost 21% of its value last year).

As the market remains tight, Russia is forced to continue buying materials from foreign manufacturers, but the Ministry of Energy plans to replace imported PE and PP with domestic production by 2017.

Russia reduced imports of basic polymers from 1.4 million tons in 2012 to 1.1 million tons in 2014 after launching four manufacturing facilities in 2013–14.

In 2014, Russia imported 580,000 tons of PE, slightly over 420,000 tons of PVC and 140,000 tons of PP. Imports differ on a segment-by-segment basis (for details, see the sections below) but make up a significant share of domestic consumption overall (see Figure 6).

Figure 6.
Share of imports in Russia's domestic consumption, 2014



Sources: Neftegazovaya Vertikal, EY Moscow Oil & Gas Center estimates

PUS and EU sanctions do not directly target Russia's petrochemical industry or polymer production, but they do have an indirect effect: the foreign capital squeeze makes it difficult for producers to pursue business growth projects that require imported equipment and raw materials.

According to SIBUR, projects in commodity and engineering plastics production depend heavily on imports, which account for an average of 60% to 80% of total costs and cannot be readily substituted in Russia or even Asian countries (e.g., pyrolysis systems, compressors, industrial IT management solutions, reagents, catalysts, additives).[3]

Restrictions on funding, coupled with the weaker ruble, drive debt costs and increase the pressure on the industry.

[1] SIBUR press release, www.sibur.ru/polief/press_center/projects/19378, accessed July 2015.

[2] RusVinyl press release, www.rusvinyl.ru/ru/news/?nid=103&a=entry.show, 19 September 2014.

[3] Interview with SIBUR Strategic Development Director Dmitry Kolobov, www.sibur.ru/press_center/publications/21597, accessed July 2015.

In the current environment, low oil prices provide the petrochemical industry with cheap feedstock, while the correlation between crude and polymer prices is insignificant. Feedstock costs depend on the crude market to a far greater degree than prices of finished products, which largely depend on national economic growth. With a GDP growth rate at 3%, polymer prices will at least remain at the same level, as consumption will increase.

To steer the industry toward sustainable growth, it is essential to diversify trade and stimulate domestic consumption at both the government and business level.

Consumption growth is the key to launching added-value products made from feedstock that is currently exported (naphtha and LPG). As mentioned above, Russian polymers are facing intense competition both from the US and from the Middle East, which are better positioned as low-price producers.

According to the Ministry of Energy, domestic demand can be stimulated by expanding the application range of technology-intense polymers and increasing their per capita consumption, which today amounts to slightly over 30 kilograms (five times lower than in the US and Germany, and three times lower than in Japan), especially in the housing/public utilities, transport and construction sectors. Consumption can also be boosted through:

- Updating strategic policy documents for the chemical industry and related sectors
- Adopting new standards and rules for chemical companies and consuming industries
- Improving customs regulation for the industry
- Increasing government support of investment projects
- Expanding the use of polymers to defense companies

Robust domestic consumption will pave the way for the import substitution of finished goods made from polymers and the launch of value-added goods from feedstock currently exported, yielding outstanding economic effects.

Polyethylene

As noted above, PE production in Russia has grown briskly over the last decade at around 5% a year, resulting in an almost 50% increase from 2005 to 2014 to 1.6 million tons. The total output in 2014 was 14% below its record high, however, due to an accident at the Stavrolen plant[4] in Stavropol Krai, in which a pressure control valve was opened at the ethylene plant, resulting in flaring. This led to the shutdown of the facility in February 2014, with operations returned to normal in April 2015. The plant accounts for 16%, or 300,000 tons, of Russia's total PE production capacity.

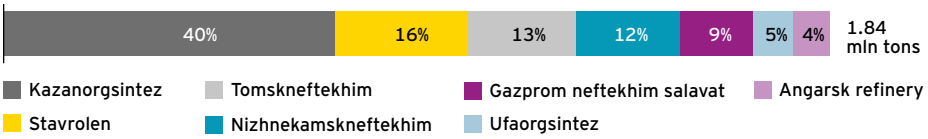
Russia's major PE manufacturers include Kazanorgsintez, Stavrolen, Nizhnekamskneftekhim, Tomskneftekhim, Gazprom Neftekhim Salavat, Angarsk Petrochemical Company and Ufaorgsintez[5] (see Figure 7). Kazanorgsintez dominates the PE market with a share of 40%.

Domestic demand for PE outstripped supply in 2014, rising by 6% to 1.8 million tons. However, the growth has slowed down in recent years.

The PE market continues to be tight and dependent on imports (see Figure 8). PE imports account for a significant share in domestic consumption (31% in 2014 vs. 14% in 2000 and 19% in 2005). They mostly come from South Korea, Saudi Arabia and Belarus, which together supply over 45% of Russia's PE imports. The key factors behind this dependence include, apart from geography, the deterioration of equipment that affects the grade of manufactured products.

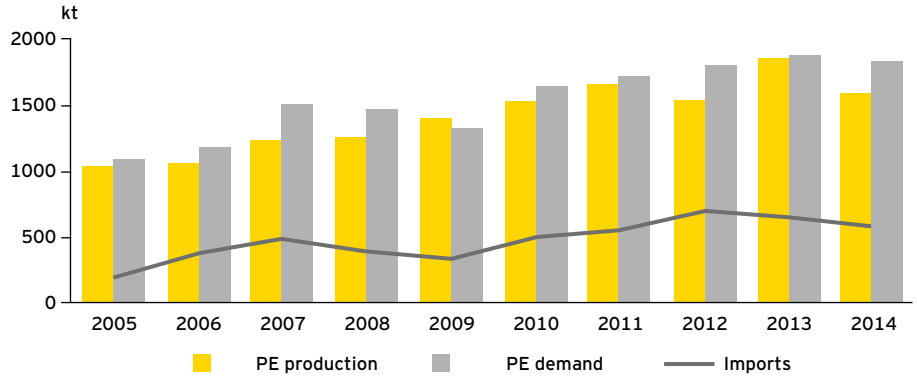
More than 20% of domestically produced PE is sold abroad. Of the total exports, half go to Commonwealth of Independent States (CIS) countries, particularly to member states of the Customs Union (60% of all exports within the CIS). The remaining exports are distributed evenly among China and the EU, which account for around 20% each.

Figure 7. Russia's PE production capacity by company



Sources: Companies, EY Moscow Oil & Gas Center estimates

Figure 8. PE production/demand/imports



Sources: Rosstat, Market Report, Alliance-Analytics, CREON

[4] LUKOIL press release, www.lukoil.ru/press.asp?div_id=1&id=4687&year=2014, 26 February 2014.

[5] Neftegazovaya Vertikal, #6/2014.

Polypropylene

Russia's PP market has been more vibrant than the PE market over the last decade, with average annual growth rates exceeding 10% for both supply and demand.

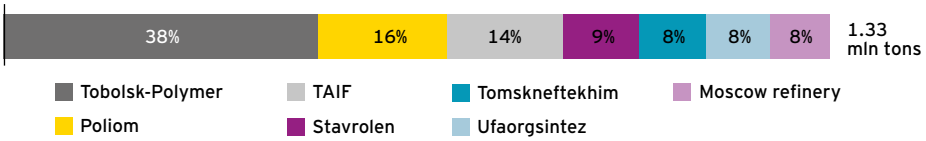
Despite the accident at the Stavrolen plant,[6] PP was the only polymer that had excess supply in 2014 thanks to the launch of new manufacturing facilities. PP output went up 26% to almost 1.1 million tons (the country's annual production capacity is 1.33 million tons).

Major contributors to the growth were the Omsk-based Poliom plant (the Titan Group, SIBUR and Gazprom Neft), which was put into operation in February 2013,[7] and Tobolsk-Polymer (SIBUR) in the Tyumen Region,[8] which was commissioned in October 2013. The installed capacity of the two plants totals 210,000 and 500,000 tons of PP, respectively.

As shown in Figure 9, the new plants (Tobolsk-Polymer and Poliom) cover more than half of the PP market.

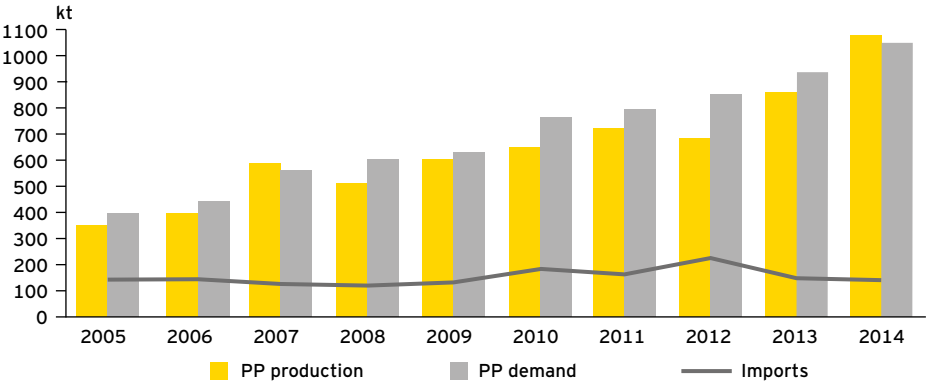
Domestic PP consumption slightly exceeded 1 million tons in 2014. Russia's PP output is broken down into homopolymers (85.4%) and copolymers (14.6%). PP is mostly used in the foundry industry (over 30% of total domestic consumption), tape fibers and yarns (28%), and films (20%).

Figure 9. Russia's PP production capacity



Sources: Companies, EY Moscow Oil & Gas Center estimates

Figure 10. PP production/demand/imports



Sources: Rosstat, Market Report, Alliance-Analytics, CREON

[6] LUKOIL press release, www.lukoil.ru/press.asp?div_id=1&id=4687&year=2014, 26 February 2014.

[7] Titan Group press release, www.titan-omsk.ru/news/4710, accessed July 2015.

[8] SIBUR press release, www.sibur.ru/tpolymer/press_center/company/18148, accessed July 2015.

Polyvinyl chloride

Demand for PVC has spiked by almost 90% in the past decade, while supply has lagged behind, growing by over 20% (or 2% a year).

In contrast to global PVC consumption, which was climbing 4.9% a year between 2009 and 2014 (including 5.4% in the US, 5.7% in Western Europe and 7.1% in East Asia), the growth in Russia and other CIS countries stood at around 8% a year.

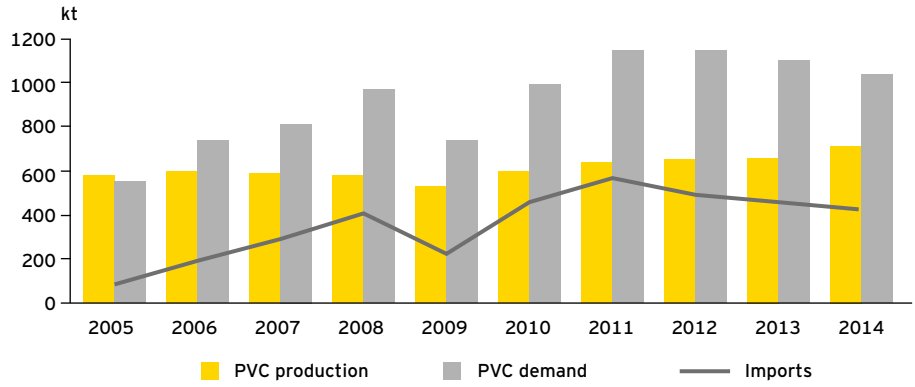
Russia became a net importer of PVC due to its high demand (see Figure 11).

More than 80% of Russian-consumed PVC is used for manufacturing moldings (including moldings for windows), plastic compounds for cables, and floor and wall coatings. This consumption structure is uncommon in developed markets, where PVC is mostly used in pipes, fittings and moldings.

In Russia, PVC is made by the following companies, who have large-scale operations even by international standards: Sayanskkhimplast (Irkutsk Region),[9] Bashkir Soda Company (Sterlitamak)[10] and Kaustik (Volgograd).[11] SIBUR-Neftekhim's Kaprolaktam plant based in the Nizhny Novgorod Region also produced PVC before its closure in 2013.[12]

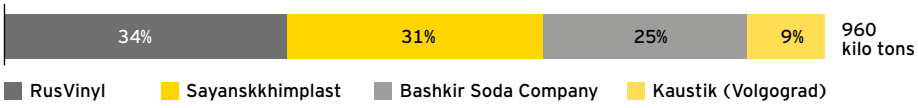
In September 2014, RusVinyl, a modern, integrated PVC plant with an estimated capacity of 300,000 tons of suspension and 30,000 tons of emulsion, was put into operation in the Nizhny Novgorod Region.[13] RusVinyl is a 50/50 joint venture established by Russia's SIBUR and SolVin Holding Nederland, which is jointly owned by Solvay and German chemicals major BASF. The plant will use ethylene made by SIBUR-Neftekhim's pyrolysis plant in Kstovo. The Kstovo plant's ethylene production capacity was expanded to serve the needs of what appears to be one of the largest investment projects involving foreign investment in the Russian chemical industry (a total of RUB60 billion was invested).[14] In sum, Russia's PVC production capacity is mostly distributed between RusVinyl, Sayanskkhimplast and Bashkir Soda Company (see Figure 12).

Figure 11. PVC production/demand/imports



Sources: Rosstat, Market Report, Alliance-Analytics, CREON

Figure 12. Russia's PVC production capacity



Sources: Companies, EY Moscow Oil & Gas Center estimates

[9] Market Report Company website, www.mrcplast.ru/news-news_open-307966.html, 2 April 2014.

[10] Market Report Company website, www.mrcplast.ru/news-news_open-307687.html, 24 March 2014.

[11] NEFT ROSSII website, www.oilru.com/news/429765, 6 October 2014.

[12] SIBUR press release, www.sibur.ru/snh/press_center/company/16696, accessed July 2015.

[13] RusVinyl website, www.rusvinyl.ru/ru/2, accessed July 2015.

[14] RusVinyl website, www.rusvinyl.ru/ru/news/?nid=103&a=entry.show, 19 September 2014.

Future demand

The performance properties and applications of polymers depend on their physical attributes. The main consumers of polyethylene and polypropylene are manufacturers of containers, packages and films. They use around 50% of total PE and PP consumed. Generally, films are made as a primary product to be further used in bags and other packages. Around 10%–15% of total PE consumption is used in household goods. Another 3%–5% is used in the manufacturing of electronic appliances. Thus, the demand structure is mainly shaped by households, which is evidenced by a strong link between household spending and polymer consumption (see Figure 13).

Globally, PVC is the third-most-consumed-polymer. It ranks second in Russia, where it is primarily used in the construction industry. Around 45% of PVC consumption is used in profile applications such as doors and windows; another 15% is used in flooring and wall coverings. Previously, consumption growth depended heavily on the scale of construction, with the ratio standing at around 70%, while the ratio of real GDP growth to demand significantly exceeded 90%. Both new construction projects and maintenance and repair work on existing buildings contributed to the rising demand for construction materials made of polymers.

Polymer consumption projections should therefore be built upon estimates of future GDP and household spending.

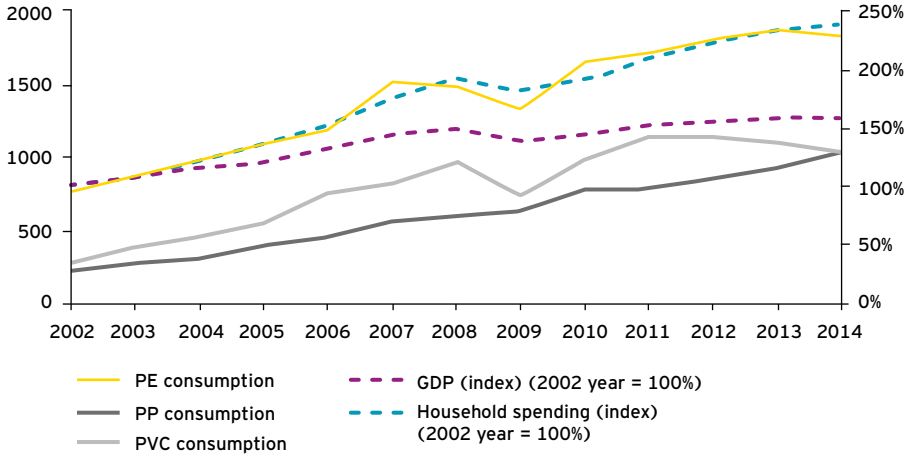
According to the social and economic development forecast unveiled by the Ministry of Economic Development in February of this year, Russia's economy is expected to shrink in 2015, with a 3.5% fall in real GDP. Household expenditures in physical volume are projected to drop by 7.2% compared with the previous year. According to our estimates, PE consumption in Russia will go down by about 6% in 2015 if the projections come true. Thus, the ratio of sensitivity of polymer demand to household expenditures will amount to 0.8. This is not as severe as in previous periods, like the 2009 downturn, when PE consumption contracted by 10% on the back of a 7.8% fall in the GDP and a 5% reduction in household expenditures, measured in physical volumes.

In contrast to the 2008–09 recession, PE consumption is not projected to fall as much as household spending. We assume that the import substitution initiative will help sustain demand for PP and PE in the short term. The sizable ruble depreciation and the ban on foreign food imports are likely to be important contributing factors. PE and PP consumption may also be supported at adequate levels by the films and packaging industry. According to customs data, imports started to decline in dollar terms in June 2014. Food and agricultural imports dwindled sharply year-on-year in August 2014, as Russia responded with sanctions against EU food producers, while the pressure on the national currency strengthened. Rising import prices, coupled with the 42% drop in the ruble vs. the US dollar from 1 January 2014 to 31 December 2014, appear to have had an impact on consumption. This trend may continue into 2015 with the import substitution measures and oil prices remaining at the current level.

According to our estimates, Russia's PP consumption may reduce by 5% in 2015. At the same time, demand may grow higher than projected in 2015–16 if a shift to export parity pricing takes place and the launch of new facilities in Russia help eliminate the current deficit.

Given the key applications of PVC in Russia (new construction projects and repairs), we expect its demand to be very vulnerable in 2015. Traditionally, the scale of construction depends on economic conditions and funding. Given the high debt costs and slumping margins, the construction industry is likely to suffer a dark year. Russia's construction ministry has projected that residential construction output will drop by 10%–15% in 2015. According to Rosstat, residential houses accounted for 77% of all newly commissioned buildings in 2014. As debt costs have soared beyond the mortgage market, a similar downturn is expected in nonresidential building construction. Given this, it is also logical to expect a contraction in demand for PVC profiles for the renovation of existing residential buildings due to the decline in household spending. Our estimates suggest that PVC demand in Russia may fall by around 10%.

Figure 13.
Russia's polymer consumption and key economic indicators, 2002–14



Sources: Rosstat, EY Moscow Oil & Gas Center estimates

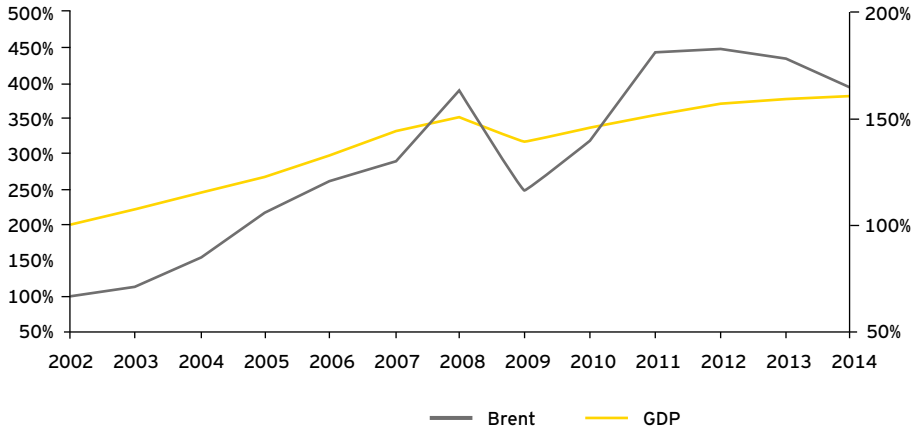
When projecting domestic polymer consumption beyond 2015, one should keep in mind the dependence of Russia's economic growth on oil prices. The link between Russia's real GDP growth and oil prices is shown in Figure 14.

This link will most likely continue to shape Russia's national economy over the next five years.

According to the cumulative projections of a number of think tanks, oil prices will range between US$55 and US$77 per barrel in the next three to five years, while Russia's GDP growth may reach 2% after rebounding in 2017 (see Figure 15).

When commenting on Russia's economic outlook, experts agree the recovery will be rather slow. Our polymer consumption projections are based on this assumption.

Figure 14.
Movements in oil prices and Russia's real GDP in 2002–14 (with base year 2002)



Sources: Rosstat, Bloomberg, EY Moscow Oil & Gas Center estimates

Figure 15. Forecast of oil prices and Russia's real GDP growth

	2015F*	2016F*	2017F*	2018F*	2019F*
Brent, US$/bbl.					
Centre of Development Institute National Research University Higher School of Economics (NRU HSE)	50.0	50.0	50.0	51.0	52.0
Ministry of Economic Development of the RF (scenario 1)**	60.0	70.0	75.0	80.0	
EIU	54.4	71.4	86.1	93.8	92.4
Business Monitor International (BMI)	55.0	60.0	62.0	65.0	66.0
Oxford Economics	61.4	69.5	74.3	77.7	81.2
World Bank (basic scenario)	53.2	56.9			
Median	54.7	64.8	74.3	77.7	73.6
Mean	55.7	63.0	69.5	73.5	72.9
GDP growth (Russia)					
Centre of Development Institute National Research University Higher School of Economics (NRU HSE)	-6.5%	-4.4%	-0.6%		
Ministry of Economic Development of the RF (scenario 1)**	-2.5%	2.8%	2.6%	2.5%	
EIU	-4.0%	0.3%	2.4%	1.7%	1.5%
World Bank (basic scenario)	-3.8%	-0.3%	2.2%		
Median	-4.0%	0.0%	2.0%	2.0%	2.0%
Mean	-4.0%	0.0%	2.0%	2.0%	2.0%

* Forecast
** Media reports
Sources: Higher School of Economics, EIU, BMI, Oxford Economics, WB, media reports, EY Moscow Oil & Gas Center estimates

Is there a future for bioplastics in Russia?

The global trend toward eco-friendly materials is driving the development of biopolymers. This is largely attributed to legislative initiatives pursued by a number of countries aimed at restricting the use of plastic bags. Italy was the first nation in Europe to introduce a ban on non-compostable single-use plastic bags in 2011. Mainland China, South Africa, Taiwan, Bangladesh and many others have banned ultra-thin plastic bags. Beginning in 2016, France is planning to ban single-use plastic bags that are not biodegradable. Rather than banning plastic bags altogether, some nations have introduced a special charge. For example, Ireland imposed a tax of €0.15 per bag in 2002, which was raised to €0.22 in 2007. This practice was embraced by other European countries, including Belgium, Switzerland, Germany, Spain, Norway and the Netherlands. In April 2014, the European Parliament passed a directive to cut the use of plastic bags by 50% by 2017 and 80% two years later.

With about 55% of the world's total consumption, Europe has now become the dominant market for biodegradable polymers, well ahead of North America (29%) and Asia (16%). According to IHS Chemicals, the demand for biopolyolefins will continue to rise steadily, at around 15% each year, until 2017. At the same time, this segment will hardly exceed 1% of the total plastics market by 2022.

There is only a very modest biopolymers market in Russia, requiring significant investment. Since biopolymers are far more expensive to produce than conventional polymers, their success in Russia will depend on whether the Government will be ready to support these projects by providing various investment subsidies and encouraging the consumption of biodegradable plastics.

A draft legislation (Federal Law No. 280796-6) designed to ban retail sales of alcoholic beverages with alcohol content over 4% in plastic containers and restrict retail sales of drinks with a lower percentage of alcohol to containers not exceeding 0.5 liters appears to be the first step in this process. The law was adopted in its first reading by the State Duma in 2014 and was supported by the Russian Government the following year, although it proposed imposing a 1.5-liter restriction on the capacity of plastic containers starting 1 July 2016. Plastic containers, however, account for only a modest share of the packaging market. Rather than changing to biodegradable materials, the transition is likely to be directed toward lower-capacity containers.

In addition, work is under way on a road map to phase out non-biodegradable plastics used for retail food packaging by replacing conventional plastic packages (predominantly, single-use plastic bags) with biodegradable ones.

Future supply and project risks

Petrochemical production in Russia has encountered many bumps along the road, with project delays being quite common in recent years. This is illustrated by the different commissioning schedules set forth in the 2011 and 2013 versions of the Government's petrochemical sector development plan for the period until 2030. In the later version, the commissioning dates were moved back one to three years on average despite a relatively favorable economic environment, stable exchange rates and positive tax moves taken by the Government. The commissioning schedule must have been revised because of the technical difficulties associated with implementing and managing these projects due to their complex nature.

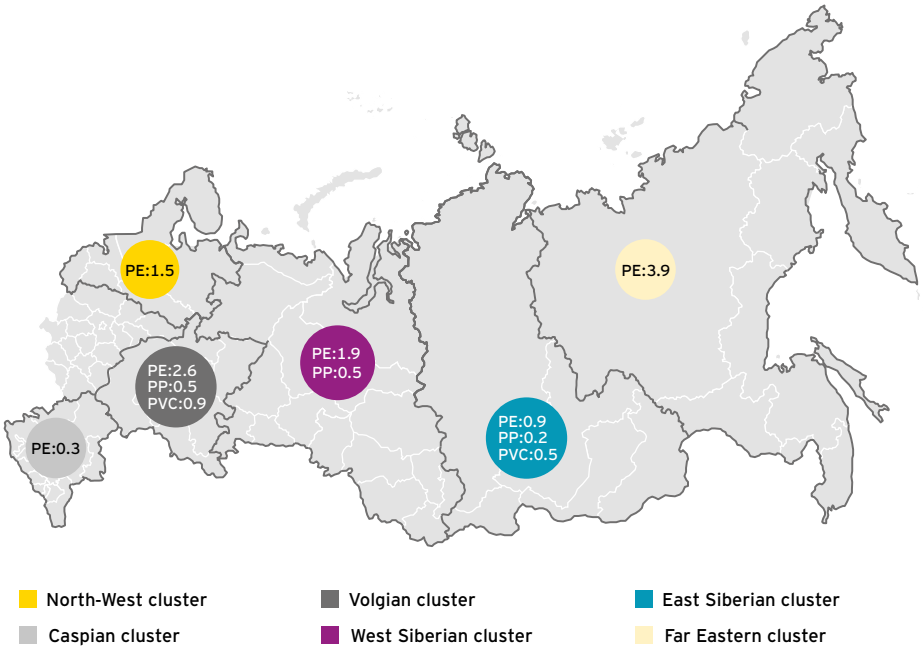
The uncertainty about the majority of top-tier projects has recently increased in response to:

- An economic slowdown affecting the accuracy of long-term demand projections
- Shrinking liquidity on the capital markets impacting the fund-raising landscape
- The depreciation of the national currency leading to more expensive imports and potential foreign-exchange losses
- Higher uncertainty about sanctions, adding to the technical challenges associated with the projects
- Changes in the tax environment triggered by the "big tax maneuver"

Vertically integrated oil companies are handling most of the projects currently in the pipeline. Faced with weaker financials (amid tumbling oil prices and the effects of the "tax maneuver"), they are likely to cut their petrochemical budgets, meaning those petrochemical companies with a proven track record of executing complex projects have the highest chance of turning their plans into reality.

As it stands, we expect manufacturers will make major revisions to their existing plans. Projects are likely to be shelved again rather than canceled outright. The structure of the domestic plastics industry has changed considerably since the release of the Government's petrochemical sector development plan for the period until 2030. Low-pressure polyethylene (LPPE), linear low-density polyethylene (LLDPE) and PVC are still deficient on the market. With the recent addition of new capacity and the bleak growth outlook for the Russian economy, any decision to implement a project in the coming five years – whether in whole or in part – should be considered while taking into account export logistics.

Figure 16. Capacity to be added by 2028, million tons



Source: Company data

Polyethylene

Disclosures by industry players suggest that in the next 10-15 years domestic PE capacity may go up by 11 million tons (see Figure 16) as a result of both the introduction of new facilities and the modernization of existing ones. Expansion projects to increase the industry's capacity by 2.1 million tons are already underway, with 430,000 tons expected to be added by 2020. Greenfield projects with a combined capacity of 1.6 million tons are also in the works at varying phases, but their completion dates are uncertain due to financing constraints. Timeframes for other projects that could add over 7 million tons of capacity are not clear either, with their schedules being largely out of date or merely speculative, partially because their target deadlines are too far away.

Polypropylene

Due to the nature of PP production, an increase in PP capacity depends on the expansion or introduction of new PE facilities. Reportedly, a total of 1.1 million tons are planned to be added to existing capacity, including 150,000 at the Angarsk Polymer Plant,[15] 480,000 tons at Nizhnekamskneftekhim[16] and 500,000 tons at ZapSibNeftekhim-2, a petrochemical complex to be constructed by SIBUR in Tobolsk in western Siberia.[17] Production in Angarsk may be commenced in 2017, while other projects are not scheduled for completion until after 2020.

Polyvinyl chloride

After the launch of RusVinyl, an integrated plant in the Nizhny Novgorod Region, three major undertakings remain in the pipeline: a new project in the Samara Region handled by SANORS[18] and two capacity expansions, one by Bashkir Soda Company (BSC) at the Kaustik plant in Sterlitamak (Bashkortostan)[19] and the other by Sayanskkhimplast in the Irkutsk Region.[20] Together, these projects will more than double Russia's current PVC capacity by adding an extra 1.4 million tons. Yet BSC and Sayanskkhimplast are facing serious challenges amid the uncertainty about future feedstock supplies. In the case of BSC, the project does not envisage a pyrolysis process, so the company will need to increase ethylene purchases from its current supplier, Gazprom Neftekhim Salavat, or from Nizhnekamskneftekhim (via ethylene pipelines). This may be an issue, as both suppliers intend to expand their own polymer production. The project by Sayanskkhimplast is contingent upon the progress at the Kovykta field and the development of local infrastructure. As for SANORS, an extra 500,000 tons of PVC[21] may be achieved as part of an integrated petrochemical project. Now that SANORS has been acquired by Rosneft, it is quite likely that the oil major will review its strategies in the Samara Region to meet the targets set for the Angarsk and Eastern Petrochemical Companies. With this in mind, no major changes should be expected on the PVC front until 2020.

The analysis of strategy announcements by industry players suggests that PE and PP capacity will increase by 25% and 20%, respectively, over the next five years. With future consumption growth being moderate, there will be a surplus of these polymers on the domestic market. Yet changes in the supply and demand balance may lead to a shift to export parity pricing. As soon as the demand rebounds in 2016–17, the PVC market may move back from surplus to deficit.

While in their announced plans Russian players are mostly focused on an increased output of basic polymers and specialty product offerings, their peers in other countries take a different approach. The general trend among international manufacturers is toward an integrated production, which is driven largely by the existing product mix.

Most of these are diversified companies, such as Borealis[22] and SABIC,[23] which produce inorganic chemicals and mineral fertilizers along with petrochemical products. Polymers account for around 60% of total revenues earned by Borealis[24] and an estimated one-third of SABIC's revenues.[25]

Some companies, such as Dow Chemical,[26] Royal DSM[27] and INEOS,[28] have an even wider product range spanning from pesticides, beauty care ingredients, and biomedical materials to textiles and clothing. The research and production of specialty polymers and materials, however, make up an integral part of their business. Royal DSM, for example, sets a target level of innovation sales, which is measured as sales from innovative products and applications introduced within the last five years.

Expanding the production of basic polymers is also on the agenda for international companies, with the choice of geography being primarily driven by the proximity of cheap feedstock (US, the Middle East) or growing consumption (China, Southeast Asia). The majority of companies (INEOS, Sasol, Dow Chemical, ExxonMobil, etc.) undertake the large-scale construction of ethylene and polyolefin facilities. With the growing success of tight oil production in the US, new facilities that can produce around 9 million tons of ethylene and 4 million tons of PE may be put on stream in the next couple of years.

[15] RUPEC Information & Analytical Center report, www.rupec.ru/news/30358, accessed July 2015.

[16] Nizhnekamskneftekhim press release, www.nknh.ru/pressroom/publications/nknkh-planiruet-prinyat-investreshenie-po-etilenovomu-kompleksu-v-2015g, 7 February 2014; RUPEC Information & Analytical Center report, www.rupec.ru/news/30525, accessed July 2015.

[17] SIBUR press release, www.sibur.ru/press_center/projects/21580, accessed July 2015.

[18] SANORS press release, sanors.ru/presscenter/news/1713, accessed July 2015.

[19] RUPEC Information & Analytical Center, www.rupec.ru/news/29430, accessed July 2015.

[20] RUPEC Information & Analytical Center, www.rupec.ru/news/31071, accessed July 2015.

[21] PLASTICS: Industriya Pererabootki Plastmass, Issue No. (134), 2014

[22] Borealis press release, www.borealisgroup.com/en/fertilizers/fertilizers, accessed July 2015.

[23] SABIC press release, www.sabic.com/corporate/en/productsandservices/fertilizers, accessed July 2015.

[24] Borealis annual report, 2014.

[25] EY Moscow Oil & Gas Center's calculations based on the public report by Moody's Investors Service (Saudi Basic Industries Corporation company profile, December 2013).

[26] Dow Chemical annual report, 2014.

[27] Royal DSM annual report, 2014.

[28] INEOS website, www.ineos.com/products, accessed July 2015.

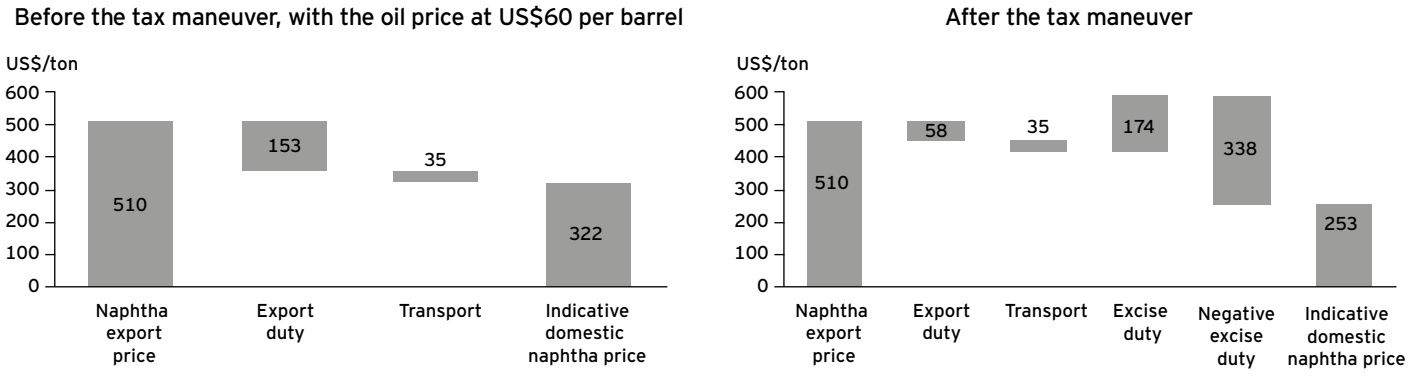
Effects of the tax maneuver on production economics

Apart from the external factors influencing the petrochemical industry, there are internal challenges such as recent legal amendments adopted as part of the so-called "big tax maneuver."

The key initiatives included cuts in cross-subsidies between the upstream and downstream segments and the simultaneous lowering of oil export duty. Changes were also made to the taxation of oil products, resulting in an export duty cut on straight-run petrol. This has had a double effect on naphtha prices. Since export duty on oil products is calculated as a derivative from crude duty, the export netback price of naphtha (the international price less the export duty and transportation costs) is to increase noticeably. According to our estimates, this price could rise by approximately RUB 2,600 per ton compared with the 2014 tax environment, with the ruble-to-US-dollar exchange rate standing at 56 and the naphtha export price remaining at US$510 per ton. However, the authorities plan to introduce so-called negative excise duty for naphtha producers to support them with what can be seen as government subsidies after the implementation of the tax maneuver (see Figure 17).

According to our estimates, the tax maneuver effects on the petrochemical industry, initially deemed to be outright negative, will be close to zero owing to the proposed mechanism to compensate for the rise in the export netback price. It appears the tax maneuver will not result in slimmer margins for polymer producers. Naphtha accounts for almost 50% of the feedstock used in pyrolysis processes.

Figure 17. Tax effects on the prices of petrochemical feedstock (naphtha)



Sources: Bloomberg, EY Moscow Oil & Gas Center estimates

Conclusion

The recent changes in Russia's macroeconomic fundamentals and geopolitical environment will have lasting effects on the national economy. On the one hand, many petrochemical companies will have to deal with new risks, as demand for their products depends highly on the GDP. But on the other hand, the situation provides opportunities for business growth that can be realized through improved performance and the right strategy.

That said, approaches vary among global petrochemical producers: some are determined to go ahead with their capacity expansion plans and step up investment in 2015 (including Dow Chemical[29] and LyondellBasell[30]), while others (Lanxess) are focusing on operational efficiency, streamlining organizational structures, and pursuing personnel and capacity rationalization plans.

Amid tightening competition on both the domestic and international markets, the petrochemical industry needs an integrated approach and the strongest commitment possible from industry participants, the federal government and the expert community in order to choose the right path for growth. Otherwise, the available investment opportunities may not be fully realized, and the negative effects on added value will echo across the entire industry. The first essential step, we believe, is to update the Government's petrochemical sector development plan for the period until 2030 to align it with other important strategic documents, including draft future growth guidelines for the oil and gas industry, Russia's energy strategy for the period until 2035 and a range of social and economic growth projections and programs.

[29] IIndustrial Info Resources report, www.industrialinfo.com/news/abstract.jsp?newsitemID=246607, 30 January 2015.

[30] "LyondellBasell to Expand Production Capacity of Tri-ethylene Glycol," LyondellBasel, www.prnewswire.com/news-releases/lyondellbasell-to-expand-production-capacity-of-tri-ethylene-glycol-300054781.html, 24 March 2015, via PR Newswire.

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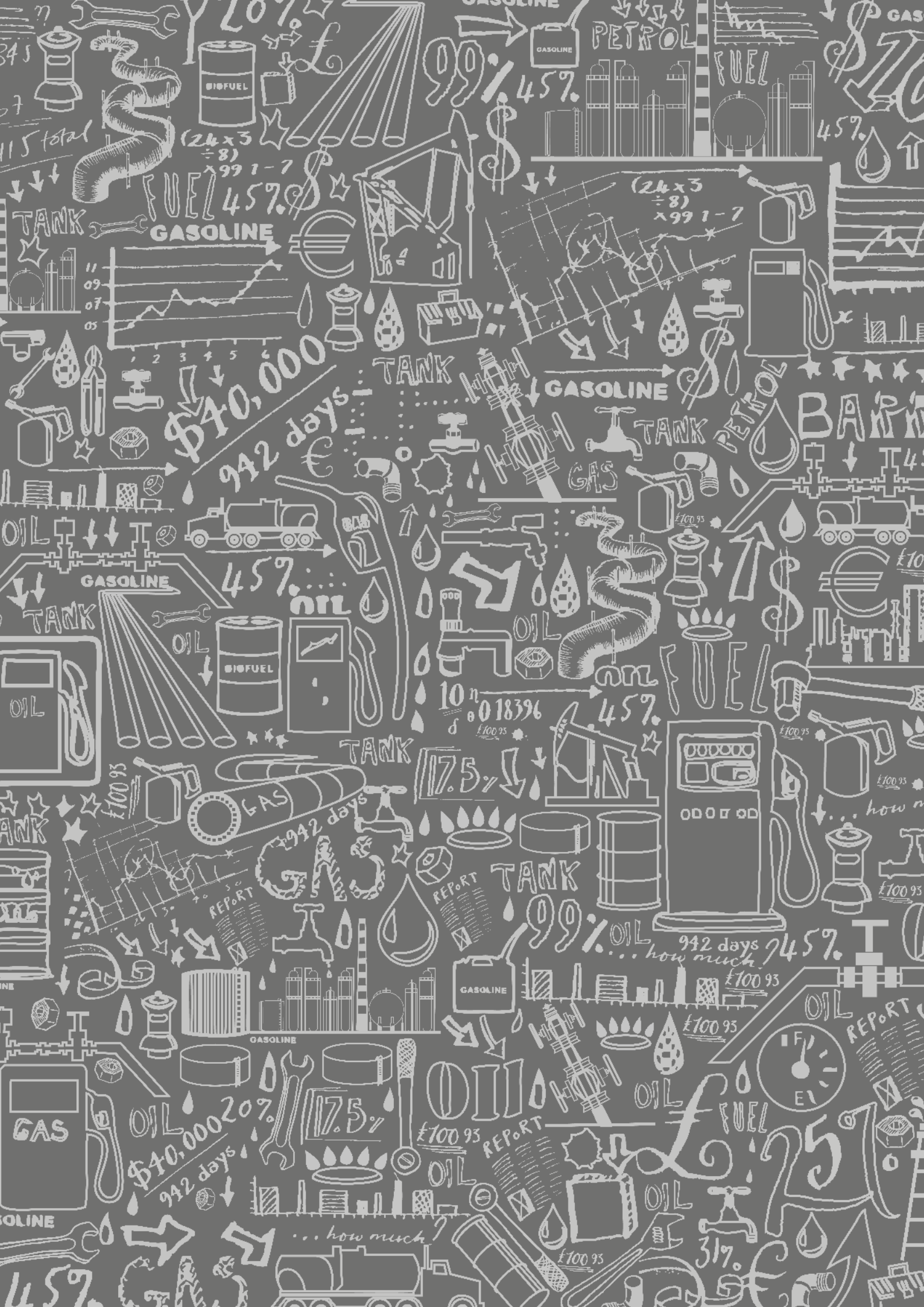
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