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MONTHLY NEWS

Chemical Industry News for Central Europe, South East Europe and Eurasia

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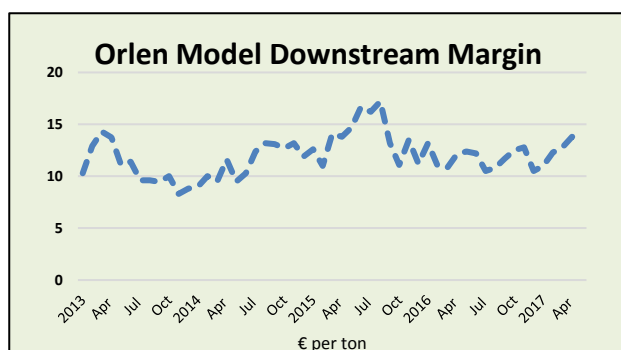
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CENTRAL & SOUTH-EAST EUROPE



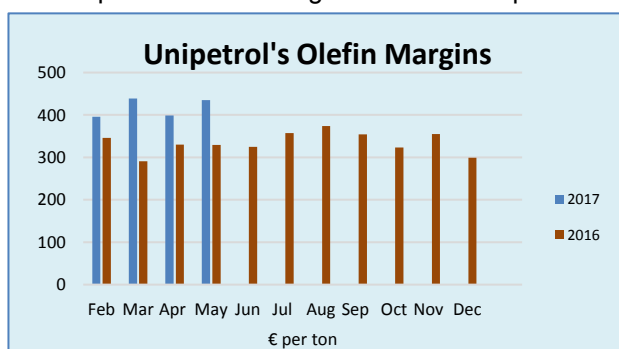
Central European refining margins & supply

PKN Orlen's refining margins were recorded at \$6.40 per barrel in May, down from \$7 in April, whilst Unipetrol's margin dropped from \$3.92 to \$3.4 and MOL's from \$6.8 to \$6.1. Polish refiner Grupa Lotos recorded a decline in refining margins in May to \$6.7 per barrel against \$8.03 in April. Grupa Lotos increased its purchases of oil from non-Russian sources to 32% of total shipments in the first five months in 2017 against 25% in the same period last year. For the first time, PKN Orlen has arranged for deliveries of 700,000 tons of crude from the Kashagan field in Kazakhstan. Orlen is also

this year for its Polish and Lithuanian refineries from the Kashagan field in Kazakhstan. Orlen is also purchasing crude from Saudi Arabia and Iran in 2017.

Central European petrochemical margins

Orlen's petrochemical margin rose to €1017 per ton in May, the highest level since January 2016. Margins for Orlen rarely exceed €1000 per ton for petrochemicals, except notably for a four-month period in the middle of 2015.



In the first five months in 2017 the average amount of Orlen's petrochemical margin amounted to €959.2 per ton, which was 3% less than in 2016 (€989.6), but at the same time by 14% more than in 2015 (€841.2). The rise in petrochemical margins is expected to help second quarter results.

Czech Polyethylene Trade (unit-kilo tons)

Exports	Jan-Apr 17	Jan-Apr 16	Jan-Apr 15
LDPE	27.9	21.5	21.9
HDPE	70.4	27.6	91.5
EVA	0.4	0.4	0.5
Other	4.1	7.7	7.4
Total	102.9	57.3	121.3

Imports	Jan-Apr 17	Jan-Apr 16	Jan-Apr 15
LDPE	52.6	55.0	47.9
HDPE	39.4	48.2	30.7
EVA	3.5	3.1	2.8
Other	9.1	11.5	9.3
Total	104.6	117.8	90.7

MOL's petrochemical margins have stabilised, recording €601 per ton in May after several months of lower numbers. Unipetrol's petrochemical margin for olefins, which are calculated differently from Orlen, rose to €435 per ton in May from €399 in April. Polyolefin margins for Unipetrol rose to €446 per ton in April against €419 in May. The resumption of ethylene production at Litvinov in Q4 last year has seen a rise in polyethylene export activity and a slight fall in imports.

US LNG supplies arrive for first time in Poland

PGNiG received its first American LNG cargo in June, delivered to the LNG Terminal at Swinoujscie, Poland. It is the first type of delivery to Central and East Europe, with PGNiG claiming that it is planning to conclude further spot agreements. The purchase of gas from the US are the consequences of the company's strategy to diversify gas delivery sources for Poland. PGNiG also sources LNG from Qatar, and states it is unaffected by

the political difficulties in the region.

PKN Orlen-petrochemical strategy

PKN Orlen has reaffirmed its strategic objectives intends to develop the petrochemical division and at the same time carry out projects related to new energy sources. PKN Orlen has emphasized that the key issue for the company is to increase the efficiency of assets, including the construction of the metathesis plant at Plock, and the construction of the new polyethylene plant at Litvinov.

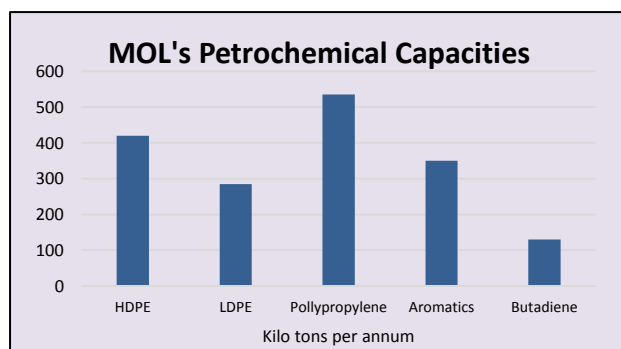
MOL-LDPE plant modernisation

In line with its long-term strategy the MOL Group is diversifying away from motor fuels and expanding its petrochemicals portfolio with the aim of becoming a leading chemical company in Central and East Europe. The group plans to invest approximately \$4.5 billion on growth projects over the next decade, deepening its downstream integration throughout the value chain whilst also moving towards semi-commodity and specialty products. MOL commissioned a new butadiene plant in 2015, while the synthetic rubber plant (SSBR), currently under construction, is scheduled to start operations in 2018. Previously MOL hoped to start the new plant by the end of 2017, but start-up has now been delayed. The €300-million SSBR project includes 49% owned by MOL and the remaining 51% owned by JSR.

MOL's Monomer Expansion Plans				
Monomer	Facility	Location	Impact (ktpa)	Completion
Propylene	Steam Cracker	Tiszaújváros	60 increases	2020-2021
C4	Steam Cracker	Tiszaújváros	80 increases	2020-2021
Propylene	FCC	Százhalombatta	65 increases	2020-2021
Ethylene	Steam Cracker	Bratislava	280-300 total	2020-2021

Petrochemical and chemical investments are intended to be built upon existing hydrocarbon sites within MOL's refineries, mostly focused on TVK and Slovnaft in addition to the Danube refinery at Százhalombatta. The investments should enhance MOL's current

strategy of deepening its downstream integration along the value chain, whilst also moving towards semi-commodity and specialty products.



As part of its investment programme at Tiszaújváros MOL has selected Burckhardt Compression to modernise the Hyper Compressor at its LDPE plant. The Hyper Compressor at the LDPE plant has been in operation at Tiszaújváros since 1991. Burckhardt Compression will deploy qualified service engineers and provide specific training for MOL Group both on-site and at its headquarters in Switzerland.

One of the new product areas MOL wishes to develop is polyols and the group is assessing the expansion of the propylene value chain. Propylene oxide is a project consideration to feed the production of polyols to meet the growing demand in Central and East Europe. The regional deficit for polyols is rising, and MOL believes it can develop the product chain to add to the only existing producer PCC Exol.

PDH Poland contractors and share issue

PDH Poland is currently assessing general contracting companies for the turnkey propylene project to be constructed at Police. The contract obligations, when concluded, are expected to include the installation for propylene, a sea terminal for unloading and storage of propane and the supply of electricity. The tender provides the option in the form of construction of a plant to produce polypropylene, or to examine possible options on how to use the propylene monomer.

PDH Poland Potential Contractors	
▪	Konsorcjum: APS, Polimex-Mostostal, IDS-Bud
▪	Konsorcjum: Maire Tecnimont, Energopol-Szczecin
▪	Hyundai Engineering
▪	Technip
▪	Samsung Engineering

Originally, the deadline for submitting claims was established on 20 February 2017, and then it was extended to 1 March. Selecting the general contractor is expected to take place by December 2017.

Regarding finance Grupa Azot has agreed to purchase shares of a new issue of Series C for PDH Poland for a total value of zł 22.82 million. Shares have been created for investments into PDH Poland, valued at around zł 2.69 billion. Up to 5.2 million shares have been offered to support the construction of the 427,000 tpa propylene plant. In terms of strategic significance, the PDH project could refocus the main interest of Grupa Azoty towards the north of Poland rather than the south at Tarnow. Opinions on the construction of the PDH plant at Police are varied, although from a market point of view, the extra propylene would play an important part in reversing the deficit in propylene supply.

Rompetrol Rafinare-petrochemical investment

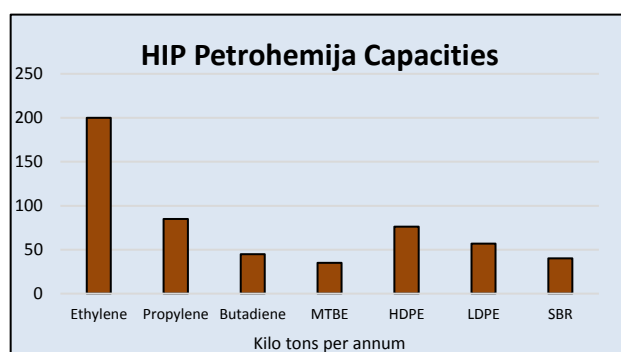
Rompetrol Rafinare (KazMunaiGaz) is one of the companies interested in buying the HIP Petrohemija petrochemical plant in Serbia. Besides HIP Petrohemija, the Serbian state is trying to privatise other two petrochemical plants, namely the methanol producer MSK Kikinda and the fertiliser producer HIP Azotara. Russian company Gazprom Neft already controls the NIS refinery at Pancevo, to the north of

Belgrade.

Serbian Chemical Exports (unit-kilo tons)		
Product	Jan-Mar 17	Jan-Mar 16
Polyethylene	27.5	25.7
Polypropylene	7.1	3.3
Styrene Butadiene Rubber	2.6	5.5
Methanol	30.1	30.3
Acetic Acid	23.5	15.4

Rompetrol is interested in Petrohemija as it is keen on developing its petrochemical activity, especially since it has remained the only polymers producer in Romania on the Petromidia refinery platform. Rompetrol Rafinare recorded an EBITDA of \$34 million in the first quarter, like the first three months of

2016. Petromidia Navodari and Vega Ploiesti together accounted for \$27 million of EBITDA based on revenues of \$698 million, up 21% over the same period last year. The majority stakeholder in Rompetrol Rafinare is the group KMG International while the Romanian state has a minority 44.7% stake in the company. Rompetrol Rafinare aims to process around 5.6 million tpa in 2017, 3.5% up on 2016.



HIP Petrohemija owns petrochemical plants in Pancevo, Elemir and Crepaja. The company specialises in the production of high- and low-density polyethylene and other petrochemical products. The Serbian government owns 54.89% of HIP Petrohemija's share capital, while NIS controls 12.72%. In 2016 HIP Petrohemija exported 118,800 tons of polyethylene against 78,800 tons in 2015.

Spolana chlorine technology extension

Spolana has had its mercury technology permit extended to 30 November 2017 from June 2017, thus allowing it a reprieve from closing production. By December Spolana aims to have developed alternative production processes using externally purchased raw EDC.

Extending the existing authorisation by five months will allow Spolana to finalise preparations its new raw material arrangements. Spolana, which is the sole Czech producer of caprolactam and PVC, reduced revenues by 27% in 2016 to Kc 3.74 and a recorded a fourfold increase in its accounting loss of Kc 473 million. Under Unipetrol Spolana is assessing prospects for a new membrane plant, although the conflict of interest amongst smaller shareholders is providing a hurdle to reaching a final decision.

Spolchemie chlorine conversion

Spolchemie, has invested Kc 1.9 billion in its new membrane electrolysis line, which is the only one in Europe capable of producing both sodium hydroxide and potassium hydroxide. After completing the construction at the end of 2016, the plant contractors have been engaged in the necessary preparation, testing and tuning, and the plant is close to full start-up. The company has already supplied the first test products of new plant to its customers and the official launch is planned by Spolchemie this September.

Polish Chemical Production (unit-kilo tons)

Product	Jan-Apr 17	Jan-Apr 16
Caustic Soda Liquid	117.7	109.7
Caustic Soda Solid	27.1	25.0
Soda Ash	205.3	413.7
Ethylene	163.6	184.5
Propylene	117.6	131.5
Butadiene	5610.8	20.9
Toluene	1806.7	4.7
Phenol	3003.2	14.4
Caprolactam	56.1	56.0
Acetic Acid	5.6	2.6
Polyethylene	115.1	131.2
Polystyrene	17.9	19.7
EPS	27.4	31.7
PVC	98.6	94.0
Polypropylene	87.7	91.2
Synthetic Rubber	84.1	71.4
Ammonia (Gaseous)	1029.0	977.0
Ammonia (Liquid)	32.4	32.3
Pesticides	18.8	8.3
Nitric Acid	833.0	847.0
Nitrogen Fertilisers	729.0	711.1
Phosphate Fertilisers	170.1	165.4
Potassium Fertilisers	154.0	143.2

At the same time, with the first launch of the membrane technology, the company shut down its production in the original amalgam electrolysis process, which the latest state-of-the-art technology is replacing due to legislative requirements from the European Union. The new technology will also allow for a doubling of the existing production up to 60,000 tpa. The launch of membrane electrolysis will now enable Spolchemie to consolidate the strategic position of the largest producer of potassium hydroxide in Central Europe and a major player on the European market. Total costs for the construction of new plant at Usti Nad Labem amounted to Kc 1.9 billion, representing the largest investment in the history of the company.

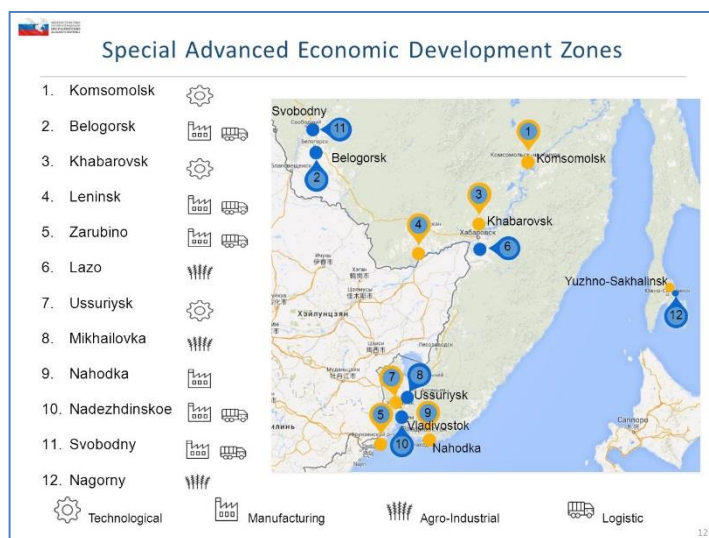
RUSSIA

Siberia & Russian Far East

Far East TORs & petrochemicals

In early June the State Duma or Russian parliament, provided an increase in funding for the Far East TORs (advanced economic development areas) in which petrochemical projects form a key part both in the Primorsky Kray and the Amur Oblast.

TORs were first started in 2014 and were created to create favourable conditions for attracting investments, ensuring rapid socio-economic development and creation of comfortable conditions for the population. These regional industrial areas include many tax benefits, including the use of over five years of zero rate of income tax. Advantages also include reduced deductions for insurance premiums to the Russian Federation for a period up to ten years.



The Petrochemical TOR in the Primorsky Kray is based on the VNHK refinery and petrochemical project at Nakhodka and the Bolshoy Kamen shipyard which is being constructed to provide ships for transporting chemical products. The Primorsky Kray is also involved in the creation of social infrastructure helping to provide living areas for workers and families.

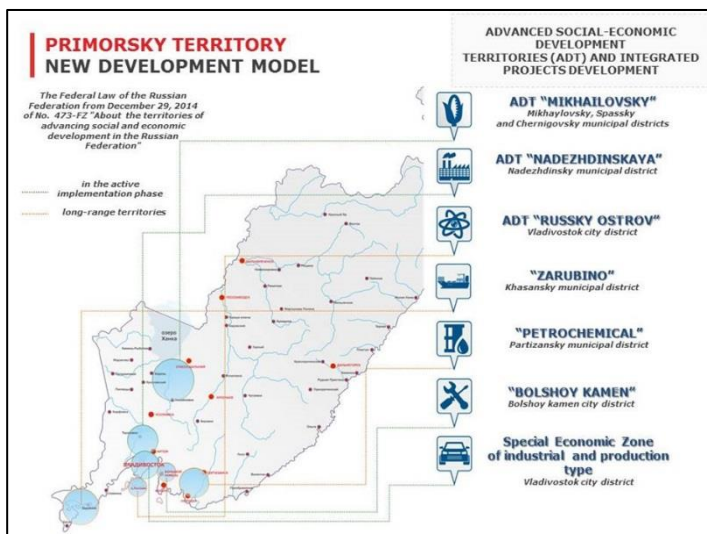
Regarding the Amur Oblast, official approval was granted on 3 June for the creation of the Svobodny TOR, in which Gazprom's Amur Gas Processing Plant (GPP) is being constructed and SIBUR's gas-chemical complex is under consideration. Creating the Svobodny

TOR has been designed to promote and develop industrial cooperation and integration with China and other countries in the Asia-Pacific region. The, strategic aim includes the development of small and medium business, attraction of investments, will create new jobs, increase tax revenues to the federal, regional and local budgets.

Other residents in the Svobodny TOR could include the Skovorodino methanol project and the Amur Plant of Metal Construction, which intends to supply its products to the construction Amur GPP. The minimum required capex to become a resident of the Svobodny TOR is \$0.5 million. The economic activities include the production of petroleum products, chemical products, rubber and plastic products, and machinery and equipment. Most of the production will be exported to China. The Russian government has instructed Minvostokrazvitiya the Russian Federation together with Gazprom and the regional government of the Amur region to prepare a long-term plan for the development of Svobodny. The model of Tobolsk is being used as the example of how the town might develop in conjunction with the construction of gas processing and petrochemical facilities.

VNHK, access road and gas supply

Russian state organisation Glavgosexpertiza has approved the construction of the access road to the proposed VNHK complex at Nakhodka connecting the cities of Artyom, Nakhodka and Vostochny port in the Primorsky Krai. The project involves the construction of an access road as part of the VNHK complex infrastructure. The length of the new highway will comprise around 15 km. Recently, Glavgosexpertiza issued a positive assessment for the construction of the Eastern Petrochemical Company (VNHK).



the necessary infrastructure for the transport of gas to the complex at Nakhodka. At the same time Gazprom believes that Rosneft should supply the gas.

Rosneft seeking financial support for VNKH

Rosneft has asked for state financial support for the construction of the VNHK complex, due to the impact of sanctions in attracting international finance. Rosneft President Sechin has invited the Russian government to buy bonds worth around 1.5 trillion roubles, or provide sites for production or support financially the construction of oil complex. US sanctions have limited the possibility for Rosneft to secure finance for the Nakhodka complex. At present sanctions on US finance apply to companies Rosneft, Novatek, Gazprombank and VEB.

Power of Siberia-construction target 1,100 km for 2017

Gazprom has outlined a target to construct over 1,100 km of the Power of Siberia gas pipeline in 2017 from its total design length of 3,000 km. The provisional construction target for 2018 comprises over 600 km of the pipeline. The Power of Siberia pipeline is above all a political project, firstly to intensify relations with China and secondly to reduce the dependency of gas sales to the European market.

In June Gazprom and CPC started talks on a specific timeframe for initiation of gas deliveries to China over the Power of Siberia gas pipeline. However, there are some reported difficulties between the two sides as Beijing seems to have dampened its interest in Russian gas at the expense of LPG supplies from the US. Another reason for the cooling of China towards the Power of Siberia is the growing import of natural gas from other sources such as Central Asia. China currently consumes about 200 billion cubic metres of gas



per annum, of which about 130 billion cubic metres are produced in China itself and one third is imported. Notably China receives a price of \$230 per thousand cubic metres from Turkmenistan, much lower than Russia can afford to offer without losing significantly.

The low price of \$230 is partly possible as almost all payments for natural gas are going to repay the loan of \$8 billion which China provided Turkmenistan in 2011 for the pipeline. Turkmenistan does not benefit from selling gas to China, but has few alternatives. It is often pointed out that China has plenty of options and thus can play the suppliers off against one another. Therefore, Gazprom will most likely will have to temper ambition or bury the idea of building a western route to China, known as Power of Siberia-2, from Yamal.

SIBUR-Amur Gas-Chemical Complex-decision by 2018

SIBUR has indicated that it intends to make an investment decision to proceed with its project for the Amur Gas Chemical Complex, to be located at Svobodny, by the beginning of 2018. The raw material for the gas-chemical complex would form a key part of the construction of the fourth stage of the Amur

Gas Processing Plant (GPP) and Gazprom would need to know whether to incorporate SIBUR's feedstock requirements into the design set-up.

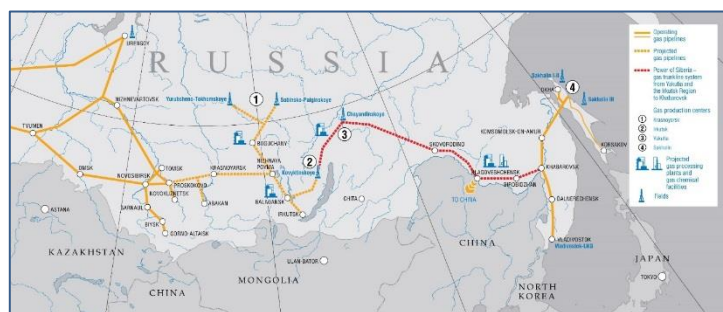
Russian Chemical Imports by value (\$ million)		
Product Group	Jan-May 17	Jan-May 16
Organic & inorganic chemicals	1,863.5	1,539.5
Pharmaceuticals	3,957.9	3,104.7
Cosmetics	1,092.9	908.7
Soap and detergents	479.4	436.0
Polymers and Rubber	4,079.2	3,387.6
Others	2,325.2	2,183.7
Total	13,798.1	11,560.1

for the project SIBUR and RusHydro have recently signed an agreement for the proposed Amur chemical complex under which both parties agreed on the possibility of considering options for a sustainable energy supply.

As SIBUR is heavily involved in the development of the Svobodny area and the gas processing plant it is more than likely that the gas-chemical project will be authorised unless there are some major developments. Moreover, SIBUR is talking to Chinese investors about possible participation in the Amur petrochemical project. In preparation

Amur Gas Processing Plant latest contracts

Russian engineering company NIPGazpererabotka has signed contracts with Maire Tecnimont and Sinopec Engineering Group in June for the design, procurement and construction of common facilities for the Amur Gas Processing Plant (GPP). The Sinopec consortium, including Tecnimont, and was



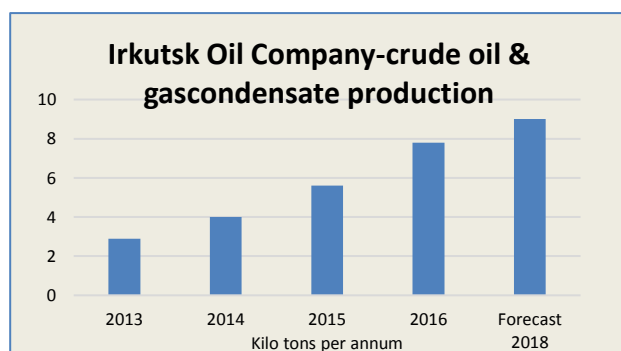
selected as the EPC contractor from open competitive procedures. Contractors participating in the construction of the Amur GPP include Podvodtruboprovodstroy, Stroytransgaz, UCSC Most, Asphalt, Svyazstroyontazh, CAP-Holding and Trust Zapsibgidrostroy. Some of these contractors cooperate with enterprises of the Amur region, using the services of electricity, supplies concrete products

and products needed for the device of external networks of water supply and sanitation.

The composition of the contractual obligations with Sinopec include equipment and premises including storage facilities for liquefied petroleum gas with loading racks, in addition to power, administrative and support objects for the gas processing plant. The prerequisite of the contract is to attract Russian specialised organisation for the supply of automation systems. The most important factors of the Amur GPP is the export potential of the region, as Svobodny a prime location near the competitive Asia-Pacific countries.

Besides Sinopec, China Petroleum Engineering & Construction Corporation has won responsibility to design, manufacture, supply of equipment and construction of booster compressor stations, drying installations and gas purification, and gas fractionation for the Amur GPP. Regarding logistics, Russian

Railways Logistics has formed a joint project with VTG Rail Logistics GmbH for the delivery of parts of the equipment for the construction of the Amur GPP at Svobodny.



Irkutsk Oil Company (INK)

Irkutsk Oil Company (INK) has outlined plans to begin construction of the plant for polymers in the Ust-Kut area of northern Irkutsk in 2018. Work should take about four years under which INK is exploring the possibility of building a plant for polyolefin production, up to 600,000 tpa.

The two sites comprise 257 hectares and 173 hectares respectively, both of which are located close to the Lena River. Construction of Ust-Kut Polymer Plant represents the third stage of the investment programme, which is to be completed in 2022. INK is considering technology from major global licensors technologies such as Linde, Technip and CB & I. The raw material source for production is to consist of ethane from the Yarakta oil and gas field.

Zapsibneftekhim-logistics platform starts installation

SIBUR has started building its logistics platform for the ZapSibNeftekhim complex which is to be completed by the end of 2017. This includes the installation of silos and storage areas designed for temporary storage prior to packaging of finished products companies. Silos are being constructed by German company Zeppelin. A total of forty-five silos will be installed, including twelve for storage of polypropylene, fifteen for high density polyethylene and eighteen for low-pressure polyethylene.



The logistics platform is intended for temporary storage, packaging and shipment of finished products. In addition to silo storage warehouses in the facility will include a complex packaging, storage and shipment; three overpass pipelines, as well as the container yard with a capacity of 300 containers per day.

Other Petrochemical Projects



Astrakhan gas-chemical complex

Gazprom and Caspian Innovative Company signed a memorandum on 2 June in cooperation in the creation of gas chemical production based on the Astrakhan gas processing plant. The memorandum provides for techno-economic feasibility assessment in Astrakhan chemical capacities oriented processing ethane to ethylene followed by obtaining a polymer product. The project also requires reconstruction of the low-temperature gas separation plants.

Under the memorandum the Caspian Innovative Company will prepare a timeline of investment for construction of the gas chemical complex. The capacity of the proposed polyethylene plant is expected to comprise 300,000 tpa. According to the parent company, the construction production could start as early as the fourth quarter of 2017, with operational start-up targeted for 2020.

Nizhnekamskneftekhim Project Investments (unit-kilo tons)

Product	1st Phase	2nd Phase
Ethylene	600	600
Propylene	163	163
Polyethylene	300	200
Polypropylene	180	180
Polystyrene	200	93
Ethylene derivatives	110	100

Nizhnekamsneftekhim cracker tender-Linde

In early June at the St Petersburg International Economic Forum (SPIEF) Linde and Nizhnekamsneftekhim signed a contract for construction of the first stage of the new ethylene complex (EP-600). The contract includes the design, supply of equipment, provision of services and execution of works of the first 600,000 tpa unit. Construction of the first EP-600 is expected to be completed by 2021.

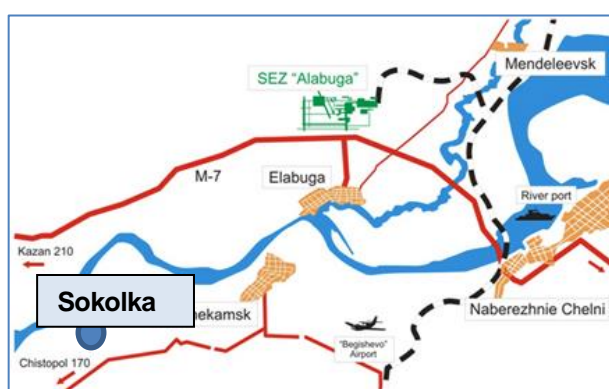
The tender for the construction was contended by four licensors including Toyo, CB & I of, Lummus, and Linde. The final stage of selection started in February 2017 in

which tenders for two plants of 600,000 tpa will be selected. The first stage and cracker of 600,000 tpa consists of plans to produce 300,000 tpa of polyethylene, 180,000 tpa of polypropylene and 200,000 tpa of polystyrene. The second stage of the project involves 93,000 tpa of MDI and 155,000 tpa of propylene derivatives. The contract with Linde, signed on 2 June has become part of the memorandum of strategic cooperation between the TAIK Group and Linde. The memorandum presupposes several contracts on gas separation and industrial gas and, most importantly, four stages of the ethylene complex. Linde has been contracted to take responsibility for delivery of technologies, design and corresponding purchases as a licensor. Around 85% of the funds will be borrowed against the support of Euler Hermes credit insurance agency. Around 15% of the price of the contract will be financed by Nizhnekamskneftekhim's own money.

Nizhnekamskneftekhim estimates that it currently faces ethylene supply shortages of around 600,000 tpa to meet internal demand for its own processing and for pipeline delivery to other plants such as Kazanorgsintez and Ufaorgsintez.

Nizhnekamskneftekhim-infrastructure improvements

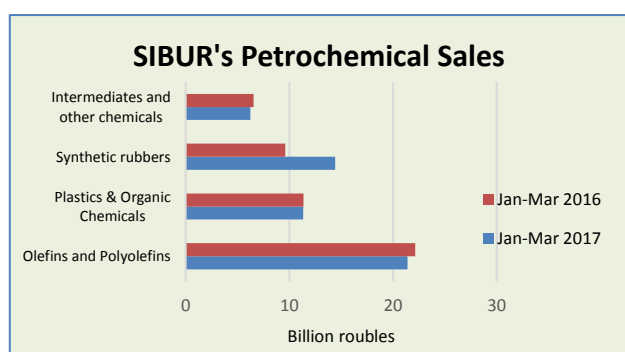
The offer of NKNH to include several large-scale infrastructural projects into the federal programme was the first step in this area. The first project is to construct a bridge through the Kama River near the Sokolka settlement in Tatarstan and a section of the M-7 federal highway.



The second one is linked with the expansion of the Kama Railway Hub's capacity, reconstruction of the bridge through the Zay River and expansion of Nizhnekamsk-Chitepo road's capacity. The third project is about reconstruction and construction of highways in Nizhnekamsk and Nizhnekamsk Municipal District, including reconstruction of roads leading to the industrial zone.

Apart from highways, railways also need to develop including Krugloye Pole, Agryz and Krugloye Pole–Biklyan. These railways are used by Nizhnekamskneftekhim to receive a considerable part of feedstock for its factories and send end products to different parts for large-scale reconstruction.

Russian feedstocks & petrochemicals



SIBUR Q1 2017

SIBUR increased its external sales by 5.8% in the first quarter to 107.3 billion roubles, the increase mainly due to an increase in revenue from total sales of synthetic rubber. Sales' revenues of plastics, rubber and intermediate products increased by 14.2% in the first quarter in 2017, amounting to 38.2 billion roubles. SIBUR sold 130,000 tons of synthetic rubber in the first quarter, 15.2% up on the same period in 2016. MTBE sales remained unchanged at 179,000 tons.

Revenues in the polyolefin division decreased by 3.3% for SIBUR in the first quarter, amounting to 21.4 billion roubles, whilst volumes rose 1.6% to 245,000 tons. The fuel-commodity divisional results were unchanged at 41.3 billion roubles, with LPG higher revenues offset by lower sales of naphtha. Total LPG

SIBUR's LPG Sales (billion roubles)		
	Q1 2017	Q1 2016
Domestic	6.236	4.135
Export	17,630	15.954

sales by SIBUR amounted to 1.07 million in the first quarter, 6.7% down on Q1 2016 although revenues rose both for domestic shipments and exports. The Federal Antimonopoly Service (FAS) of Russia started proceedings in May over SIBUR's LPG prices, but by June had dropped the case. SIBUR emphasizes that the company is working within the framework of anti-monopoly legislation and considers the current wholesale price of LPG at fair and appropriate market conditions.

SIBUR's total debt at the end of the first quarter amounted to 309.19 billion roubles, a decrease of 9.5%. Debt attracted for the project ZapSibNeftekhim totalled 150.43 billion roubles, a decrease of 5.8%. The net debt decreased by 10.4% to 251.98 billion roubles.

Russian ethylene production Jan-Apr 2017

Ethylene production in Russia dropped 13% in April against May to 234,400 tons. Novokuibyshevsk Petrochemical increased production by 22% to 5,900 tons, whilst planned downtime at Kazanorgsintez meant that monomer production dropped by 38% to 34,000 tons. In addition, due to repair work at Stavrolen, ethylene production was reduced by 30% to 19,500 tons. For the first four months in 2017, Russia produced 1.008 million tons of monomer, 9% more than in the same period of 2016.

Russian Ethylene Production (unit-kilo tons)		
Producer	Jan-Apr 17	Jan-Apr 16
Angarsk Polymer Plant	75.4	21.5
Kazanorgsintez	194.5	186.3
Stavrolen	99.4	100.8
Nizhnekamskneftekhim	213.4	209.6
Novokuibyshevsk Petrochemical	18.6	22.0
Gazprom n Salavat	120.7	104.5
SIBUR-Kstovo	135.8	133.3
SIBUR-Khimprom	16.4	19.1
Tomskneftekhim	92.1	87.3
Ufaorgsintez	42.1	44.8
Total	1008.3	929.4



Russian Propylene Domestic Sales (unit-kilo tons)		
Producer	Jan-May 17	Jan-May 16
Angarsk Polymer Plant	33.8	10.3
Omsk Kaucuk	1.1	0.8
SIBUR-Kstovo	34.9	48.6
LUKoil-NNOS	86.1	91.2
Tomskneftekhim	0.3	0.0
Gazprom n Salavat	0.0	0.5
Stavrolen	2.0	0.0
Total	160.5	151.8

higher than the same period of 2016.

Russian propylene production Jan-Apr 2017

Russian propylene production totalled 606,500 tons in the first four months in 2017 against 582,000 tons in the same period last year. Regarding recent trends, propylene production stayed the same in April as in March at 150,100 tons. Ufaorgsintez increased production by 29% to 15,100 tons, and at SIBUR-Khimprom by 20% to 7,100 tons. At the same time, due to repair work at Kazanorgsintez in April, monomer output was reduced 2.4 times to 1,400 tons, and Stavrolen by 29% to 8,200 tons.

Russian propylene sales Jan-May 2017

Propylene sales on the Russian domestic market totalled 160,500 tons in the first five months in 2017 against 151,800 tons in the same period last year. Angarsk Polymer increased shipments over last year due to its repairs necessary following the cracker accident in February 2016, whilst SIBUR-Kstovo reduced merchant sales whilst increasing exports at the same time. Saratovorgsintez remains the largest merchant buyer of propylene in Russia, using it for acrylonitrile production of which it exports a large percentage.

Russian shipments of propane-propylene fractions to domestic consumers amounted to 12,000 tons in May, unchanged from April. The Ryazan refinery increased its sales by 18%, to 8,300 tons, whilst Slavneft-Yanos reduced shipments by 7% to 2,600 tons. In addition, there were no railroad sales produced by the Ufa Refinery in May. In the first five months in 2017 sales of propane-propylene fractions fell 7% to 61,100 tons.

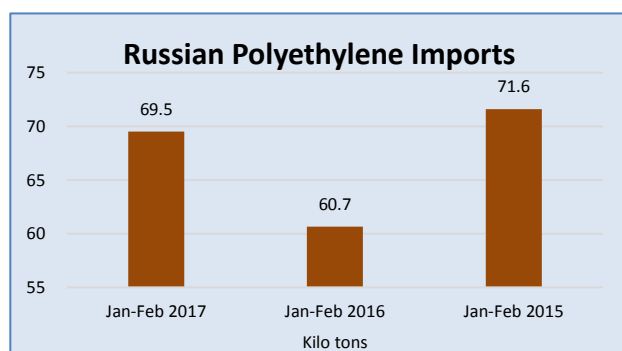
Russian styrene production Jan-Apr 2017

Styrene production rose 3% in April to 59,200 tons. Nizhnekamskneftekhim produced 23,200 tons, 4.5% less than in March. Gazprom neftekhim Salavat produced 16,600 tons of monomer (5.8% less than in March). SIBUR-Khimprom produced 10,100 tons (1.3% more than in March), Plastik 5,700 tons (-2%), and Angarsk Polymer 3,600 tons (+ 5.2%). From January to April 2017 styrene production amounted to 238,800 tons, which is slightly

Russian styrene sales Jan-May 2017

Russian producers of styrene increased sales by 8% in May to 10,860 tons. The main supplier of the monomer is Gazprom neftekhim Salavat, which in May shipped 5,740 tons of styrene (52.8% of the total volume), or 11% more than in April. SIBUR-Khimprom sold 2,970 tons of monomer on the domestic market, 1.3% less than in April. Angarsk Plant of Polymers increased sales by 76.9% to 1,790 tons, whilst Plastik reduced sales by 57.5% to 362 tons. In the first five months in 2017, sales on the domestic market totalled 43,650 tons which is 11% up on the same period in 2016.

Bulk Polymers



Russian polyethylene imports, Jan-Apr 2017

Polyethylene imports into Russia rose 3% in the first four months in 2017 to 160,000 tons against 109,400 tons in the same period in 2016. In April, imports amounted to 45,100 tons against 45,300 tons in March.

HDPE imports rose in April to 18,400 tons from 17,900 tons in March, including increased deliveries from Uzbekistan. This brought the Russian total to 61,000 tons in the first four months versus 40,000 tons in January to April

2016. LLDPE imports dropped to 45,600 tons in the first four months this year against 62,500 tons. The fall was due largely to the increase in production by Nizhnekamskneftekhim. LDPE imports dropped slightly from 30,300 tons.

Russian HDPE Production (unit-kilo tons)		
Producer	Jan-Apr 17	Jan-Apr 16
Kazanorgsintez	178.8	157.3
Stavrolen	91.5	89.3
Nizhnekamskneftekhim	10.7	47.8
Gazprom neftekhim Salavat	31.3	36.2
Total	312.3	330.6

Russian HDPE production, Jan-Apr 2017

HDPE production in Russia fell by 6% in the first four months in 2017 to 312,300 tons. Kazanorgsintez increased production of HDPE by 14% to 178,800 tons. Stavrolen increased its production by 2% to 91,500 tons, whilst Gazprom neftekhim Salavat reduced production of polyethylene by 14% to 31,300 tons. Nizhnekamskneftekhim has produced only 10,700 tons in the first four months, having switched to LLDPE production in January.

Russian Polypropylene Production (unit-kilo tons)		
Producer	Jan-Apr 17	Jan-Apr 16
Ufaorgsintez	30.2	40.9
Stavrolen	30.6	38.8
Moscow NPZ	21.8	43.2
Nizhnekamskneftekhim	72.7	72.5
Polyom	70.0	65.7
Tomskneftekhim	46.5	45.3
SIBUR Tobolsk	173.8	173.3
Total	445.6	435.9

Russian polypropylene, Jan-Apr 2017

In the first four months of 2017 Russian polypropylene production totalled 445,600 tons against 435,900 tons in the same period in 2016. SIBUR Tobolsk produced 173,800 tons in January to April this year against 173,300 tons in 2016. In the first four months, this year polypropylene imports into Russia totalled 45,800 tons, against 435,900 tons in the same period in 2016.

Russian PVC market, Jan-May 2017

In the first five months of 2017 Russian production of PVC increased by 24% to 386,500 tons. The rise is mainly due to Sayanskkhimplast which has worked this year without interruption. The company produced 109,400 tons in January to May 2017 against 35,300 tons in 2016. RusVinyl produced 130,400 tons, 2% down against last year. Paste production amounted to 2,200 tons in May. Bashkir Soda Company produced 108,300 tons in Q1 2017 against 105,900 tons whilst Kaustik reduced the production of PVC by 4.6% to 38,300 tons.

PVC imports into Russia totalled 23,600 tons in the first five months in 2017, 11% down on the same period in 2016 whilst exports rose 1% to 31,600 tons. China is the main source of imports for Russia,

shipping 11,200 tons in May against 6,700 tons in April. The main export destinations for Russian PVC include Belarus and Kazakhstan.

SIBUR Polyolefins (unit-kilo tons)		
Production	Jan-Mar 17	Jan-Mar 16
LDPE	67.9	65.2
Polypropylene	164.9	165.3
Purchases from third parties	135.3	124.3
Total	368.1	354.8
Total Sales	Jan-Mar 17	Jan-Mar 16
LDPE	60.4	66.3
Polypropylene	145.3	135.6
Total	205.7	202.0
Sales	Jan-Mar 17	Jan-Mar 16
Exports	57.5	63.6
Domestic Sales	81.9	82.6
Total	139.4	146.2

Sayanskkhimplast recovery in 2017

Sayanskkhimplast has increased its production of PVC to 1,000 tons per day this year following modernisation. In June, all production facilities following comprehensive tests were completed, resulting in capacities for PVC at 350,000 tpa, caustic soda at 216,000 tpa and 183,600 tons of chlorine. In the past fifteen years plants have been reconstructed allowing the introduction of a fully automated process control system and new technology.

In 2006, the company switched from mercury cell technology for chlorine and caustic soda to membrane. In addition, a new production facility for VCM of 200,000 tpa capacity was launched in 2011. The major challenge for Sayanskkhimplast is now to establish its own cracker avoid future problems with ethylene supply. This will only be possible when the gas pipeline system is constructed to Sayansk.

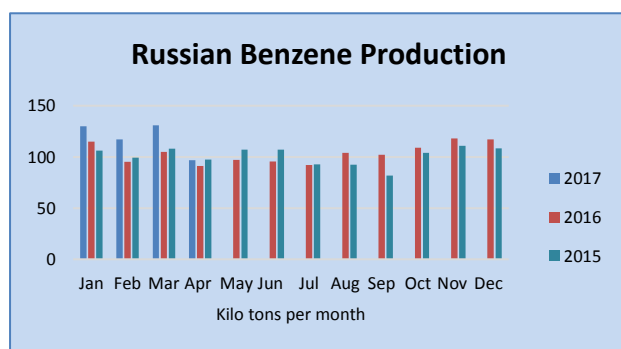
Russian polycarbonate Jan-Apr 2017

Kazanorgsintez produced 24,900 tons of polycarbonate in January to April 2017, including 6,230 tons in April and 6,660 tons in March. The largest volume of product was extrusion polycarbonate, comprising 20,700 tons, and the remainder was Injection moulding grades. Iranian supplier resumed deliveries to the Russian market in March after eight months of absence. Polycarbonate is delivered to Russia through the port of Astrakhan.

Aromatics

Russian benzene production, Jan-Apr 2017

Benzene production in Russia dropped 19% in April to 96,800 tons, due in part to maintenance at Uralorgsintez which reduced production 3.3-fold to 2,500 tons, whilst the Ryazan refinery dropped to only 32 tons against 3,700 tons in March. Also, Gazprom Neft at Omsk, due to the low demand of the enterprise for benzene, reduced production 3.7 times to 2,200 tons.



Overall Russian benzene production has risen this year, with the largest increases recorded by Angarsk Polymer Plant and Stavrolen. Gazprom neftekhim Salavat also increased production this year whilst Gazprom Neft at Omsk refinery reduced operating rates. Gazprom Neft is currently undergoing court action over the environmental performance of the Omsk refinery, particularly in relation to waste treatment, and has even

suggested it might have to close the plant although this is unlikely. Regarding projects, Nizhnekamskneftekhim has signed a contract to build the first stage of the new petrochemical complex at Nizhnekamsk where a new benzene facility of 248,000 tpa is included.

Russian benzene sales, Jan-May 2017

Benzene sales rose in total to 377,000 tons in the first five months in 2017, against 300,100 tons in the same period in 2016. Kuibyshevazot increased purchases from 46,600 tons in January to May 2016 to 68,700 tons in the same period in 2017, due largely to the replacement of phenol for caprolactam production.

Russian Benzene Consumers (unit-kilo tons)		
Consumer	Jan-May 17	Jan-May 16
Kuibyshevazot	68.7	46.6
Azot Kemerovo	41.6	40.7
Shchekinoazot	22.2	22.0
Kazanorgsintez	28.9	28.9
Zapsib	14.9	17.9
SIBUR-Khimprom	37.8	36.3
Promsintez	8.0	7.2
Uralorgsintez	3.8	0.0
Others	20.1	20.5
Exports	85.6	30.2
Total	377.0	300.1

reduced purchases by 36% to 360 tons.

Russian Orthoxylene Domestic Sales (unit-kilo tons)		
Producer	Jan-May 17	Jan-May 16
Gazprom Neft	29.4	25.0
Ufaneftekhimi	26.2	17.1
Kirishinefteorgsintez	12.1	14.7
Total	67.6	56.8

period last year.

Russian orthoxylene exports, Jan-Apr 2017

Orthoxylene exports amounted to 8,820 tons in April against 20,790 tons in March. Ufaneftekhimi exported 3,620 tons in April, followed by 2,630 tons from Gazprom Neft and 2,550 tons from Kirishinefteorgsintez.

Russian Toluene Domestic Sales (unit-kilo tons)		
Producer	Jan-May 17	Jan-May 16
Novopiletsk MK	0.1	0.1
Slavneft-Yanos	5.9	10.8
Severstal	1.9	3.0
LUKoil-Perm	3.0	10.5
Gazprom Neft	36.2	33.5
Zapsib	10.8	1.0
Kinef, Kirishi	11.7	15.6
Gazprom Neftekhimi Salavat	1.7	0.0
Others	2.8	0.0
Total	74.1	74.4

Overall for January to May 2017 Russian sales of toluene on the domestic market were very slightly down at 74,100 tons. In May, manufacturers of explosives reduced purchases of toluene compared to April by 36% to 1,130 tons whilst consumers that produce paint and varnish materials reduced purchases by 14% to 4,270 tons. Manufacturers of motor fuels and additives to them increased the purchase of toluene by 19% to 4,430 tons.

Russian phenol production, Jan-Apr 2017

Phenol production rose 20% in April over March to 21,000 tons. Kazanorgsintez produced 6,300 tons of phenol, 3% down, whilst Novokuibyshevsk petrochemical company increased by 56% to 8,300 tons. Ufaorgsintez increased the production of phenol by 10% to 6,400 tons.

Another aspect of sales this year has been the rise in export activity, increasing from 30,200 tons in January to May 2016 to 85,600 tons in the same period in 2017. Whereas last year most of the export conducted by coal base producers, this year volumes have been boosted by shipments from refineries and petrochemical plants. Despite the rise of export activity, imports continue to flow inwards from Kazakhstan. The Atyrau aromatics complex supplied 4,100 tons of benzene to the Russian market in the first five months in 2017.

Russian orthoxylene sales, Jan-May 2017

Russian refineries sold 17,650 tons of orthoxylene in May on the domestic market, which is 66% more than in April. Ufaneftekhimi shipped 8,330 tons (47% of all-Russian supplies), Gazprom Neft from the Omsk refinery 6,990 tons were shipped, and 2,340 tons from Kirishinefteorgsintez. Kamteks-Khimprom increased the purchase of orthoxylene by 92% in May to 10,830 tons whilst Gazprom neftekhimi Salavat At the same time, the Dmitrievsky chemical plant increased purchases by 33% to 640 tons.

In addition, Russian paint and varnish manufacturers increased the volume of purchased orthoxylene in May by 40%, to 3,260 tons whilst producers of fuel, agrochemicals, pharmaceutical and other products purchased 2,560 tons (15%). Sales on the domestic market totalled 67,830 tons in the first five months in 2017, 19% more than in the same

Most of the exports this year have been sent to Finland. In the first four months of 2017, the volume of Russian exports abroad amounted to 39,280 tons which was 20% more than in the same period last year.

Russian toluene sales, Jan-May 2017

Sales of toluene on the Russian domestic market amounted to 16,790 tons in May 3% more than in April. Gazprom Neft supplied 10,660 tons, Kirishinefteorgsintez 2,770 tons, Slavneft-Yaroslavnefteorgsintez 1,450 tons, Lukoil-Permnefteorgsintez 1,420 tons, West Siberian MK 250 tons, and Severstal 240 tons.

**Russian Market Phenol Sales by Supplier
(unit-kilo tons)**

Producer	Jan-May 17	Jan-May 16
Samaraorgsintez	22.6	23.4
Kazanorgsintez	5.0	4.3
Ufaorgsintez	25.5	27.1
Borealis	2.1	0.3
Total	55.2	55.2

Ufaorgsintez has restarted operation of its air separation plant after modernisation and to fully meet the needs of high-purity nitrogen. The capacity of the air separation plant for producing nitrogen was increased to 3,500 Nm³/hour, supplying the cumene plant under reconstruction. To remove impurities three treatment plants, in which the regeneration takes place with nitrogen will be installed on propylene feed line. Previously nitrogen was fed to the complex through the pipeline system.

Russian caprolactam market, Jan-Apr 2017

Russian caprolactam exports totalled 69,800 tons in the first four months in 2017 against 50,000 tons in the same period in 2016. Although Kuibyshevazot increased shipments slightly to 17,300 tons from 13,800 tons the major increase was recorded by Shchekinoazot which shipped 34,400 tons in the first four months, up from 17,100 tons in the same period in 2016.

**Russian Caprolactam Exports
(unit-kilo tons)**

Producer	Jan-Apr 17	Jan-Apr 16
Kuibyshevazot	17.7	13.8
SDS Azot	17.7	19.2
Shchekinoazot	34.4	17.1
Total	69.8	50.0

Azot at Kemerovo has received equipment worth over 80 million roubles from Kemerovohimmash intended for construction of a hydrogen pressure swing adsorption plant for manufacture of caprolactam. Shchekinoazot is close to completion of its investment programme for the past year on caprolactam plant

modernisation. However, in the production of cyclohexanone the company still faces bottlenecks that require additional work, ensuring an increase in the circulation of cyclohexane. Primarily, this reconstruction of internal devices stripper cyclohexane. To increase the capacity of caprolactam Shchekinoazot will undertake the reconstruction of hydroxylamine separation.

Synthetic Rubber**SIBUR-Synthetic Rubber Production
(unit-kilo tons)**

	Jan-Mar 17	Jan-Mar 16
Commodity Rubber	85.3	72.4
Speciality Rubber	26.9	27.0
Thermoplastic elastomers	18.0	21.2
SIBUR 3rd part purchases	0.0	0.0
Total	130.2	120.5

**SIBUR-Synthetic Rubber Domestic Sales
(unit-kilo tons)**

	Jan-Mar 17	Jan-Mar 16
Commodity Rubber	30.3	24.2
Speciality Rubber	3.0	2.4
Thermoplastic elastomers	8.9	9.2
Total	42.2	35.7

**SIBUR-Synthetic Rubber Export Sales
(unit-kilo tons)**

	Jan-Mar 17	Jan-Mar 16
Commodity Rubber	57.7	45.3
Speciality Rubber	23.4	23.0
Thermoplastic elastomers	12.3	9.0
Total	93.5	32.0

Russian C4 sales, Jan-May 2017

C4 sales on the Russian domestic market in the first five months totalled 171,800 tons which was 12% up on the same period in 2016. C4 imports continue to play a small part in Russian consumption, being sourced largely from Belarus and Azerbaijan. Butadiene imports are necessary for Russia, being bought by non-integrated rubber producers such as Omsk Kaucuk and Efremov Synthetic Rubber Plant.

SIBUR rubber plants Q1 2017

SIBUR increased production of synthetic rubber in the first quarter, whilst also increasing both export and domestic sales. Production increased in all categories of synthetic rubber although a decline was recorded in thermoplastic elastomers. Sales of thermoplastic elastomers on the domestic market dropped in the first quarter to 8,900 tons from 9,200 tons in the same period last year, whilst exports rose to 12,300 tons from 9,000 tons.

SIBUR-Saudi rubber project?

SIBUR is assessing prospects for a project with Saudi Arabia to produce synthetic rubber. Saudi investors have been in Russia to assess SIBUR's capability and for information regarding a project being constructed in India. A butyl rubber JV Reliance SIBUR Elastomers, in which SIBUR owns 25.1%, was formed in 2012. The

plant is currently in the construction stage consisting of 120,000 tpa.

Russian C4 Purchases (unit-kilo tons)

Consumer	Jan-May 17	Jan-May 16
Omsk Kaucuk	21.0	19.3
Nizhnekamskneftekhim	66.9	71.3
SIBUR Togliatti	83.9	69.4
Sterlitamak Petrochemical	0.0	1.1
Total	171.8	161.3

Source: Chem-Courier.ru

SIBUR Togliatti

SIBUR's Togliatti site took full advantage of the favourable market conditions in 2016, by increasing synthetic rubber production by 7% to 167,200 tons and placing the plant in second place in Russia. Voronezhskintezkaucuk produced 241,600 tons of synthetic rubber in 2016, 10% up on 2015. Over the past few years the synthetic rubber market has been in stagnation and surplus, thus driving profit margins downwards.

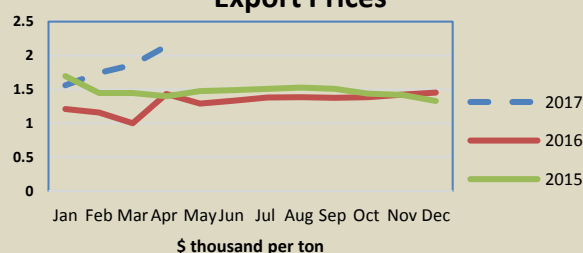
During this period SIBUR Togliatti undertook the modernisation and expansion of butyl rubber capacity increasing from 53,000 tpa to 75,000 tpa, and then isoprene monomer. In 2016 SIBUR Togliatti produced

61,000 tons of butyl rubber which is 8% higher than in 2015, whilst the production of butadiene-styrene rubbers increased by 13% and amounted to 47,600 tons. The production of raw materials for MTBE, isobutane-isobutylene fractions, increased by 21% and amounted to 130,000 tons. MTBE production rose 28% to 96,000 tons.

Russian Tyre Production (unit-mil pieces)

Tyre category	Jan-Mar 17	Jan-Mar 16
Car Tyres	10.3	9.4
Lorry tyres	1.6	1.4
Agricultural tyres	0.5	0.4
Total	50.2	46.2

SIBUR is not planning further investments in domestic synthetic rubber capacity, at least at present, but does intend to increase the supply of raw materials through the launch of ZapSibNeftekhim at Tobolsk. This will complete the production chain from raw materials through to commodity polymers, whilst at the same time facilitating the increase in C4 availability.

Russian Synthetic Rubber Average Export Prices**Russian synthetic rubber exports, Q1 2017**

Synthetic rubber exports from Russia rose slightly in the first four months to 356,800 tons against 351,000 tons in the same period in 2016, whilst revenues rose from \$420 million to \$651 million. Average prices per ton have risen this year

although recently have started to show signs of weakening.

In terms of export destinations, China was the largest market for Russian rubber exports in the first quarter this year accounting for 37,500 tons followed by Poland with 35,700 tons. Other important countries included

India with 22,700 tons, Hungary 21,900 tons and the USA 16,600 tons. Central and East Europe remains the largest geographical area for Russian synthetic rubber exports.

Russian Chemical Commodity Exports

Product	Jan-Apr 17	Jan-Apr 17	Jan-Apr 16	Jan-Apr 16
	Kilo tons	USD Mil	Kilo tons	USD Mil
Ammonia	917.8	217	1,190	321
Methanol	540.5	152	503	82
Nitrogen Fertilisers	4038.5	753	4,116	793
Potash	2823.0	518	3,587	805
Mixed Fertilisers	3510.2	901	3,141	994
Synthetic Rubber	356.8	651	351	420

Methanol & Ammonia**Russian methanol production**

Methanol production in the Russian Federation declined by 13% in April to 312,000 tons, caused by spot planned

repairs at several domestic enterprises. The only plant to report an increase in April was Shchekinoazot: rising 3% to 40,000 tons.

Novomoskovsk Azot, Sibmetakhim and Metafrax in April reduced methanol production volumes in March by almost 4% each, producing about 25,000 tons, 83,300 tons and 92,500 tons respectively. Tomet reduced its production figures almost twice in March to 40,300 tons, which was due to the step-by-step planned repair at the enterprise. Russian methanol exports have risen this year in part due to higher prices on global markets. The three largest exporters included Sibmetakhim, Metafrax and Shchekinoazot.

Russian Methanol Exports

Producer	Jan-Apr 17	Jan-Apr 16
Azot Novomoskovsk	51.8	69.9
Akron	6.5	0.0
Metafrax	127.8	120.4
Sibmetakhim	170.1	137.9
Tomet	71.8	59.4
Shchekinoazot	112.6	115.5
Total	540.5	503.1

Metafrax Q1 2017

Metafrax produced 280,000 tons of methanol in the first quarter, 90,000 tons of formaldehyde and 45,000 tons of urea-formaldehyde concentrate. Pentaerythritol production increased by 379 tons to 6,100 tons, whilst hexamine production rose 12% to 8,000 tons. Revenues of Metafrax from the sale of finished products totalled 4.853 billion roubles in the first quarter, 4% more than in the same period in 2016. Net profits dropped to 1.3 billion roubles from 1.4 billion roubles. Market instability for methanol has affected the company this year although capacity has been working at 100%.

Metafrax-Production (unit-kilo tons)

Product	Jan-Mar 17	Jan-Mar 16
Methanol	280.0	280.5
Formaldehyde	90.0	90.0
Urea-formaldehyde concentrate	45.0	48.0
Pentaerythritol	6.1	5.8
Hexamine	8.0	7.0

Metafrax investment targets

Metafrax's plans to increase the capacity of the methanol unit include establishing a new installation for the partial oxidation of natural gas with oxygen. This will help to create the feedstock necessary for increasing capacity to 3,375 tons per day. The new installation has been designed and installed by Casale. In the period 2015-2020 Metafrax plans to construct new facilities for urea, 562,000 tpa, ammonia, 293,000 tpa, and melamine 40,000 tpa. Metafrax is currently expanding the park for storage of finished goods at Metadynea with the aim of completing the project. Expanding volume products and urea resins for plywood production portfolio will be expanded and capacitive storage park impregnating resins.

The share of exports in total sales for Metafrax in the first quarter comprised 43.2% against 30.9% in Q1 2016. Investments made by Metafrax in January-March 2017 amounted to 2.105 billion roubles, 4 times higher than the level in 2016. Metafrax has completed the second phase of reconstruction of methanol production, which will eventually increase the capacity of the unit up to 1.23 million tpa. The company also continues its course of rolling stock fleet renewal having purchased 56 tanks for the carriage of methanol and formaldehyde in the first quarter.

Due to lower world prices for methanol in 2016 Metafrax recommended at the AGM not to pay dividends for 2016. On results of 2015 the shareholders also refused to pay dividends and left the entire profit of the company in the amount of 7.212 billion roubles. The fall in profits in 2016 was due to a 20% drop in world prices for methanol. At the end of 2016 prices began to stabilize, but have since fallen.

**Methanol project Arkhangelsk**

The possibility of constructing a methanol plant at Arkhangelsk in northern Russia has started to be revisited, having been shelved in the 1990s. Over the next few months studies will be made of the project cost calculations and possible risks. The access to a port terminal is a key feature to justify constructing a plant with a view towards delivering to the Rotterdam market for further distribution.

Around 40 billion roubles have been estimated as the base investment cost, but a gas pipeline has yet to be constructed and thus the location lacks the necessary infrastructure buildings and gas resources. These investments are considered practical and would require less time than construction of the methanol plant itself. Gazprom is currently examining prospects for constructing a gas pipeline to the region. As the Arkhangelsk region has a developed timber industry complex, it has the potential to revive the production of

chipboard. Also, the project will entail and upgrade the transport infrastructure, since it will be necessary to renovate and build a certain number of roads. Other products such as urea-formaldehyde resins could be produced onsite. In the 1990s, a plant of 680,000 tpa was planned for Arkhangelsk but was thwarted by the lack of finance, etc.



Timan-Pechora-methanol project

Timan-Pechora Gas Company (TPGK) is considering the possibility of constructing a methanol plant in the Inta area in the Komi Republic. Investments into the project are estimated at 30 billion roubles. The planned capacity of the plant is 1.3 million tpa, although construction is not likely to start for several years. The resource potential of all sections of more than 400 billion cubic metres of gas.

Shchekinoazot-methanol, ammonia & ether projects

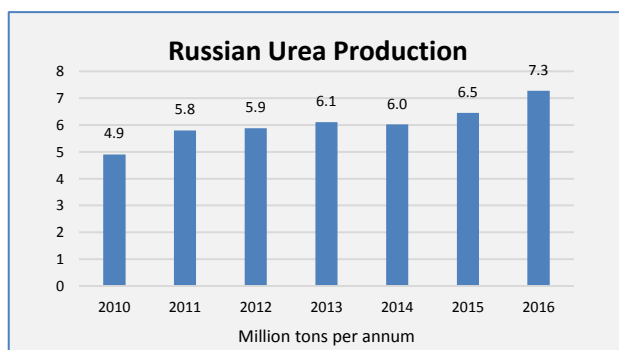
Shchekinoazot has completed storage facilities for its new ammonia project, 135,000 tpa, whilst the 450,000 tpa methanol project is progressing on schedule. The general designer of the two plants Orgkhim at Severodonetsk has finished the development of the bulk of the working documents, whilst the general contractor is Neftezhavodmontazh at Volgograd. Shchekinoazot has begun to

prepare the site for construction of the production of dimethyl ether perfume quality. The decision to implement the project was taken by Shchekinoazot in 2012, together with the German company PCC SE was created by a joint venture company DME Aerosol. ThyssenKrupp Uhde Engineering Services GmbH has been chosen as the licensor and developer of the project.

At the end of 2015 Novomoskovsk Institute of Nitrogen Industry completed the development of project documentation. According to her non-state examination was carried out, a positive conclusion. Investment in the 20,000 tpa plant for dimethyl ether was estimated previously at 1.33 billion roubles. Dimethyl ether is expected to supply manufacturers of cosmetic products in aerosol cans, manufacturers of polyurethane foam and polystyrene foam.

Akron-urea expansion

Akron continues to modernise urea production at Veliky Novgorod, increasing capacity to 3,000 tons per day from 2,800 tons per day. The company controls five units, the fifth being launched in 2012 with a capacity of 1,000 tons per day. In parallel, Akron is implementing a project on modernization of its fertiliser production facilities.



Fosagro new ammonia and urea plants

Fosagro could launch a new production unit for ammonia at the Cherepovets site in July 2017, followed by the urea plant in September. The new ammonia unit (capacity 760,000 tpa) undertook tests in late 2016 before commissioning, whilst the

last delivery of components and equipment for the urea were supplied before the end of the year. Capacity of the new unit for production of urea, which will be the third for the Cherepovets site, amount to 500,000 tpa. Construction work on the urea unit began in 2015.

Organic chemicals

Russian butanol production, Jan-Apr 2017

Russian butanol production dropped 2% in April against March to 23,130 tons. The share of n-butanol in butanols production in April 2017 was 60%, and isobutanol 40%. Gazprom neftekhim Salavat produced 9,250 tons in April (40% of the total Russian output), SIBUR-Khimprom 8,490 tons (37%), and Angarsk Petrochemical Company 5,320 tons (23%).

Russian Butanols Market Jan-Apr 2017

- Production up 17%
- Exports down 2.5 times
- Domestic merchant sales drop 10%

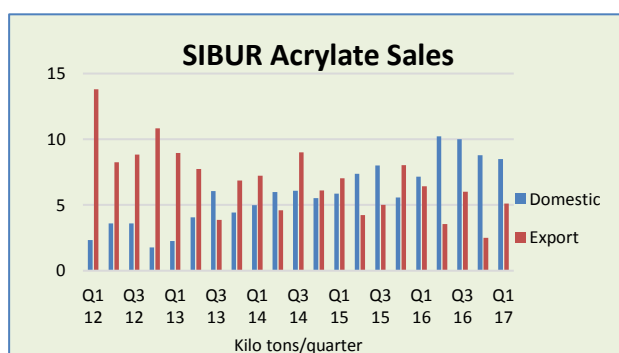
Production at Nevinnomyssk was stopped in April for routine maintenance. In the first four months in 2017, Russian production of butanols production amounted to 91,660 tons which was 17% more than the same period in 2016.

Russian N-butanol Exports (unit-kilo tons)		
Producer	Jan-Apr 17	Jan-Apr 16
Gazprom n Salavat	2.3	24.4
SIBUR-Khimprom	1.5	2.9
Angarsk Petrochemical	1.0	0.5
Azot Nevinnomyssk	0.7	0.2
Dmitrievsky Chemical Plant	0.2	0.8
Total	5.7	28.8
Russian Isobutanol Exports (unit-kilo tons)		
Producer	Jan-Apr 17	Jan-Apr 16
Gazprom n Salavat	3.3	2.1
SIBUR-Khimprom	4.5	6.7
Angarsk Petrochemical	0.1	0.0
Dmitrievsky Chemical Plant	0.1	0.0
Total	7.9	8.9

Nevinnomyssk with 170 tons and the Dmitrievsky Chemical Plant with 95 tons. Finland took 22% of Russian exports in April, surpassed by Ukraine with 34% and China 18%. Isobutanol was the only type of butanols shipped to Ukraine, whilst only n-butanol was shipped to Finland. In the first four months in 2017 exports of butanols from Russia dropped 2.5 times to 13,440 tons.

Russian Butanol Consumption (unit-kilo tons)		
Consumer	Jan-Apr 17	Jan-Apr 16
Akrlat	7.1	9.0
Dmitrievsky Chemical	3.8	6.4
Plant of Synthetic Alcohol	0.5	0.8
Volzhskiy Orgsintez	3.0	2.8
Roshalsky Plant of Plasticizers	0.2	0.0
Others	8.2	8.8
Total	22.7	27.0

SIBUR produces acrylates at the facilities of SIBUR-Neftekhim. The capacity of the plant is 40,000 tpa, production of which is mainly sold on the Russian market. Gazprom neftekhim Salavat started acrylate



Russian butanol exports, Jan-Apr 2017

Exports of butanols from Russia amounted to 5,420 tons in April against 3,040 tons in March against 15,400 tons in April 2016. The decline against the same month last year was due to the rise in internal processing.

The share of n-butanol in Russian exports in April 2017 was 38%, and isobutanol 62%. SIBUR-Khimprom shipped 2,220 tons of butanols (41% of exports) to foreign markets, and Gazprom neftekhim Salavat 1,820 tons (34%). Isobutanol was the only product category shipped from Salavat.

Angarsk Petrochemical exported butanols in April for the first time in 2017, shipping 1,110 tons of which 1,000 tons consisted of n-butanol for delivery to China. Other suppliers in April included Azot at

Russian butanol sales, Jan-Apr 2017

Akrlat at Dzerzhinsk bought 1,886 tons in April against 2,440 tons in March, whilst Dmitrievsky Chemical Plant increased purchases by 10% to 1,500 tons. In the first four months in 2017, merchant sales of butanols on the domestic market totalled 22,700 tons was 19% less than in the same period last year. In the first quarter this year Akrlat, which is part of SIBUR, increased exports of acrylates and at the same time reduced domestic sales against the same period in 2016.

production this year, based on its plants of acrylic acid with a capacity of 80,000 tpa, butyl acrylate 80,000 tpa and glacial acrylic acid capacity 35,000 tpa.

Butanol sales from Gazprom neftekhim Salavat and the Angarsk petrochemical company increased on the Russian market, helping to alleviate supply side pressure. At the same time, Gazprom neftekhim Salavat raised the selling prices of its products by 1,000 roubles.

Kamteks-Polyether Raw Material Purchases 2016		
Product	Volume (tons)	Source
Styrene	610,043	Gazprom n Salavat
DEG	317,500	Nizhnekamskneftekhim
Isophthalic acid	33,000	Metakhim
Dipropylene Glycol	20,960	Khimprom Kemerovo
Propylene Glycol	111,800	Khimprom Kemerovo

roubles per ton including VAT (isobutanol) respectively.

Regarding prices, in the May and June n-butanol was offered in the Volga region at 51,000 roubles per ton, including VAT, and isobutanol at 50,870 roubles per ton, including VAT. In the Siberian Federal District, Angarsk Petrochemical Company was offering butanols at 41,000 roubles per ton, including VAT (n-butanol) and 39,000

Perm Polyesters Production (unit-tons)

Product	2016	2015
Unsaturated polyester resins	2941.5	3574.6
Gelcoats	50.5	33.1
Accelerator cobalt naphthenate	27.1	22.8
Cyclohexanone peroxide	45.1	33.2

April against March to 3,880 tons. Export destinations included Turkey (30% of total), Poland (14%), Egypt (14%), Finland (12%), Tunisia (7%), UAE (6%) and Uzbekistan (5%). Kamteks-Khimprom exported 17,500 tons in the first four months in 2017, 10% less than the same period in 2016.

Production of phthalic anhydride amounted to 8,780 tons in April 11% less than in March. Kamteks-Khimprom reduced production by 12% to 7,700 tons whilst Gazprom neftekhim Salavat increased volumes by 12% to 1,080 tons. From January to April 2017, phthalic anhydride production in Russia totalled 36,030 tons which was 18% up on the same period last year.

**Russian plasticizer alcohols, Jan-Apr 2017**

In April, exports of dioctyl phthalate (DOP) from Russia amounted to 167 tons, including 146 tons exported to Uzbekistan by the Ural Plasticizer Plant. In the first four months in 2017 Russian exports of DOP totalled 628 tons against 128 tons in the same period in 2016.

Russian exports of phthalic anhydride dropped 16% in April against March to 3,880 tons. Export destinations included Turkey (30% of total), Poland (14%), Egypt (14%), Finland (12%), Tunisia (7%), UAE (6%) and Uzbekistan (5%). Kamteks-Khimprom exported 17,500 tons in the first four months in 2017, 10% less than the same period in 2016.

SIBUR-DOTP project at Perm

SIBUR Holding has allocated 6.9 billion roubles for the construction of the DOTP plasticizer plant at the site of SIBUR-Khimprom at Perm. The capacity size of the intended plant has been stated at 100,000 tpa which SIBUR aims to introduce by the second quarter in 2019. Full capacity operations could be achieved by 2020.

Russian Chemical Production (unit-kilo tons)

Product	Jan-Apr 17	Jan-Apr 16
Caustic Soda	405.9	366.2
Soda Ash	1,145.0	909.7
Ethylene	1,000.0	929.0
Propylene	485.0	498.7
Benzene	483.0	406.2
Xylenes	190.2	193.3
Styrene	174.5	245.4
Phenol	56.5	82.2
Ammonia	5,500.0	5,400.0
Nitrogen Fertilisers	3,292.0	3,381.0
Phosphate Fertilisers	1,091.0	1,224.0
Potash Fertilisers	2,749.0	2,474.0
Plastics in Bulk	2,554.0	2,613.0
Polyethylene	685.0	751.0
Polystyrene	173.2	183.2
PVC	314.7	270.9
Polypropylene	478.0	435.7
Polyamide	52.2	50.3
Synthetic Rubber	585.0	501.0
Synthetic Fibres	53.8	49.6

The company will be fully exempt from property tax of the Perm region and will benefit from reduced from 16.5% to 13.5% income tax rate. SIBUR-Khimprom produces butanols, styrene, ethylbenzene, propylene, and liquefied petroleum gases.

Other Products**Khimprom-calcium hydroxide**

Khimprom at Novocheboksarsk has signed an agreement with the Italian company Cimprogetti the supply of equipment to produce calcium hydroxide. The first batch of products are expected in 2018 with a capacity of 40,000 tpa. Part of the volume of calcium hydroxide will be sold on the domestic market, and some directed to the production of calcium hypochlorite. Shipment of equipment is expected to start in July of this year. The first batch of products, the company expects to release in late 2017 or early 2018.

Khimprom-new hydrogen peroxide project

Khimprom at Novocheboksarsk has received a construction permit to produce hydrogen peroxide based on anthraquinone technology. The new unit will have installed by Chematur Engineering AB, involving a capacity of 50,000 tpa based on 100% concentration. Investments in the project are estimated at nearly \$75 million. Currently Khimprom uses the two-stage

isopropyl technology to produce hydrogen peroxide. Capacity was increased from 64,000 tpa to 95,000 tpa in 2016.

Evrokhim-ChemChina, MDI-TDI?

Evrokhim and ChemChina Corporation have signed a memorandum of intent to establish a joint production of chemicals in Russia. The parties have agreed to form a working group to assess the prospects for cooperation. Evrokhim and ChemChina plan to explore the possibility of joint production of chemical products, including propylene oxide (propylene glycol and polyols) and both MDI and TDI. As a site for new construction Novomoskovsk is being considered.

Rosneft-ChemChina polymer coatings Primorsky Kray

Rosneft and ChemChina signed an agreement in June to develop the project of construction of polymer coatings plant in the Primorsky Kray. This follows an initial agreement in December 2016. The new document defines the conditions of the joint venture and further stages of the project on construction of the plant polymer coatings and specialised coating materials for ships. The new production facility will be in the territory of priority development (TOR) Bolshoy Kamen in the Primorsky Kray. The capacity of the plant is being designed to produce 50,000 tpa of paints and plastics. The joint venture could become the leader of the domestic market to produce special marine coatings. All the products you plan to use on a set of Bolshoy Kamen.

Palladio Group opens new plant at Obninsk

The Palladio Group from Serbia opened a new plant on 16 June at Obninsk for pharmaceutical packaging. Investments in the plant will eventually amount to €17 million. The area of the entire plant is 12.5 square metres and after the full launch, the enterprise will be able to provide about 200 jobs. Obninsk is in the Kaluga region where a pharmaceutical cluster has been established. This cluster includes 63 participants aiming to solve the problem of Russian dependence on imports of medicines.

Ukraine

Ukrainian Polymer Imports (unit-kilo tons)

Product	Jan-Apr 17	Jan-Apr 16
PVC	28.0	40.3
LDPE	20.4	22.8
LLDPE	19.0	18.4
HDPE	31.8	43.2
Ethylene Vinyl Acetate	5.4	2.5
PP	37.1	39.3

Ukrainian polyethylene imports, Jan-Apr 2017

Ukrainian imports of polyethylene fell by 12% in the first four months in 2017 to 76,800 tons, including 17,500 tons in April against 19,500 tons in March. HDPE imports declined to 7,700 tons from 9,000 tons in the first four months in 2016 whilst LDPE imports dropped 10% to 20,400 tons. LLDPE imports saw a rise from 19,000 tons. Imports of EVA totalled 5,400 tons against 3,000 tons in January to April 2016.

Most of the imports of polyethylene are sourced from European producers. Borealis appears to be suspended from selling in the Ukrainian market for the next few months at least, as it has angered the Ukrainian cabinet in selling plastics into the rebel controlled areas of Donetsk and Lugansk in the east.

Ukrainian polypropylene imports, Jan-Apr 2017

During the first four months, the total import volume of polypropylene on Ukrainian market fell by 6%

Ukrainian Polypropylene Imports (unit-kilo tons)

Category	Jan-Apr 17	Jan-Apr 16
Homo	28.6	30.5
Block	3.8	3.6
Random	4.0	4.5
Other	0.7	0.7
Total	37.1	39.3

to 37,100 tons from 39,300 tons in the same period last year. Homopolymer imports fell to 28,600 tons in January to April 2017 from 30,500 tons in 2016. In response to demand from pipe manufacturers block copolymers rose to 3,800 tons from 3,600 tons. Imports of stat-copolymers fell from 4,500 tons to 4,000 tons.

Ukraine reduced imports of suspension PVC by 30% in January-April 2017 to 28,000 tons. Local processors increased their purchases from the US, which were faced with export quotas from European suppliers. Sources included the US with 6,800 tons, four-fold higher, whilst European sources comprised 15,400 tons which is 40% higher than last year.

Karpatneftekhim relaunches ethylene production

Karpatneftekhim resumed production of ethylene on 11 June and started preparations to launch capacities on production of polyethylene and PVC. The first batch of commercial polyethylene and PVC were aimed

for production on 15 June. The company aims to bring the 250,000 tpa cracker to full capacity in July. For pyrolysis raw materials, the plant has arranged to use naphtha from Lukoil's Russian refineries. In June around 25,000 tons was shipped from the Volgograd refinery and another 33,500 tons from the Perm Refinery. The Kalush plant is expected to process between 50-70,000 tons for raw materials per month.

Ostchem resumes fertiliser production

Ostchem announced the resumption of the production of mineral fertilisers at Cherkassy and Severodonetsk in June, whilst Rivneazot remains idle. The restart of plants has been made possible after starting the enquiry on anti-dumping duties against Russian urea and urea-ammonium nitrate. Azot at Cherkassy will resume production of urea, ammonium nitrate and urea ammonium nitrate by 20 June

The restart has been made possible through the amendment of the Ukrainian tax code for naphtha and diesel oil for petrochemical production. Ukraine has established a separate division of the Energy Customs to control the circulation of raw materials, which will be delivered to Karpatneftekhim. Karpatneftekhim could buy up to 1,170,000 litres of light distillates per annum, to 985,000 litres of heavy distillates and up to 1,070,000 litres of liquefied petroleum gas. Preliminary agreements with supplies already have been made. Karpatneftekhim

includes capacities for ethylene production of 250,000 tpa, PVC 300,000 tpa, caustic soda 200,000 tpa, and polyethylene 100,000 tpa.

Central Asia/Caucasus

Kazakh polymer imports, Jan-Apr 2017

In the first four months of this year, imports of polypropylene rose into Kazakhstan by 49% to 5,100 tons from 3,400 tons. Imports amounted to 3,100 tons in February against 2,000 tons in January.

Kazakhstan produces polypropylene at Pavlodar, but does not produce polyethylene at present.

Product	Jan-Apr 17	Jan-Apr 16
HDPE	26.2	23.9
LDPE	7.2	7.3
LLDPE	1.8	1.3
PVC	13.6	7.3
Polypropylene	5.1	3.4

In the first four months of the year imports of polyethylene supply into Kazakhstan increased by 15% compared to the same period in 2016 and amounted to 35,200 tons. HDPE imports totalled 26,100 tons in January to April 2017, 17% up, whilst LDPE imports rose 8% to 7,200 tons. LLDPE imports totalled 1,800 tons versus 1,700 tons in the first four months in 2016.

PVC imports into Kazakhstan amounted to 13,600 tons in the first four months against 11,500 tons in the same period in 2016.

Atyrau gas & chemical complex-interest from UAE

United Chemical Company (Kazakhstan) signed a memorandum of cooperation with UAE's Mubadala in Astana, regarding investments in the gas-chemical complex at Atyrau. The possibility of joint polyethylene production in Kazakhstan was named as one of the prospective areas of cooperation between the two companies. The agreement provides for the preparation of the project model which could be acceptable for both sides technical and economic indicators.



The construction of the infrastructure for the gas-chemical complex at Atyrau is already completed, having been supported by the Kazakh government.

Initial investments of around \$2.5 billion have been estimated to cover project costs, which could be aided by loans from China. The project for the construction of an integrated petrochemical complex consists of two phases, the first of which involves the construction of a polypropylene plant with a capacity of 500,000 tpa and the second comprising a polyethylene plant of 800,000 tpa together with a butadiene unit. The construction of a polypropylene production could begin in the summer of 2017 whilst the polyethylene project

may not start until 2020.

Kazakh methanol project

China has agreed to provide Kazakhstan with a loan of \$1 billion for the project to build a large-scale complex for methanol and ammonia in the Atyrau region. The project to produce ammonia and methanol represents the anchor project, helping to create a raw material base to produce nitrogen and complex fertilisers. According to the presentation of the project, United Chemical Company plans to build plants in the territory of the Atyrau special economic zone for producing 200,000 tpa of methanol, and 500,000 tpa of ammonia.

SABIC-United Chemical Company

Kazakhstan and Saudi Arabia have agreed to study the possibility of implementing joint projects to produce polyethylene, polypropylene and methanol. The corresponding memorandum was signed between United Chemical Company and SABIC in June. These projects are planned to be implemented on the territory of the petrochemical zone in the Atyrau Oblast, where a special legal regime is envisaged including tax, customs and other benefits.

United Chemical Company has already been involved with Chinese investors for the construction of an aromatics complex at Atyrau, where the paraxylene and benzene plants are in operation.

The Kazakh-Chinese portfolio includes up to 51 projects totalling about \$28 billion in value. Of these, around 14 projects belong to the group of companies included in the group Samruk-Kazyna. The projects are mainly concentrated in the oil and gas, chemical, energy, mining, agriculture and engineering sectors.

Azerbaijan-ethylene, propylene and polyolefin projects

Azerbaijan is set to increase the capacity of propylene production by 2.5 times later in 2017 from 60,000 tpa to 150,000 tpa. The modernisation of the ethylene-polyethylene plant at Sumgait is being undertaken in several stages aimed for completion in mid-2019. Technip has thus far provided only an indicative timetable. Around €30 million was invested in 2016 into the ethylene modernisation and another €80 million should be required this year. Aside the revamping of old plants which are around thirty years old, SOCAR is working on the new SOCAR-Polymer project at Sumgait which will produce polyethylene and polypropylene.

Azerbaijan Chemical Exports (unit-kilo tons)		
Product	Jan-May 17	Jan-May 16
Polyethylene	35.6	40.4
Propylene	14.1	0.0
Isopropanol	4.3	6.1
C4s	10.1	6.7

SOCAR-methanol production

SOCAR Methanol produced 70,000 tons of methanol in the first five months in 2017, 99% of which was exported. Export deliveries of the plant's products are typically made to Turkey, West Europe and the Mediterranean. The successful operation of methanol plant became possible after the transfer of the company in

November 2016 to SOCAR. This allowed the plant, starting from January this year based on new management principles and structure, to restore the production process. The Azerbaijani methanol plant in the Garadag district of Baku was built by AzMeCo. The production capacity of the plant is 720,000 tpa of methanol. At the end of 2015, the plant ceased production activities. SOCAR purchased the plant from Agra credit, following a decision made by International Bank of Azerbaijan.

This year SOCAR plans to produce 250,000 tons of methanol, twice more than any of the previous years since the plant started operations. The longer-term aim is to raise production volumes up to 500,000 tpa. The domestic market in Azerbaijan is small and currently accounts for only around 5% of total sales although the market is expected to rise quickly in the next few years. Domestic consumption is driven by several companies that produce paints, varnishes, special substances used in drilling oil and gas wells, and in the process of transporting hydrocarbons.

Uzbekneftegaz GTL Project Main Capacities

- Diesel fuel, 743,500 tpa
- Jet fuel, 311,000 tpa
- Naphtha, 431,000 tpa

Uzbekneftegaz-Shurtan expansion

Uzbekneftegaz aims to expand the capacity of the Shurtan Gas Chemical Complex to create the country's first petrochemical cluster. The expansion of capacity of the complex will be integrated with the GTL-erected plant, which will create in Uzbekistan first petrochemical cluster. Uzbekneftegaz will introduce new projects over four years, worth \$30.4 billion. The target is to increase the capacity by 2021 four times up to 500,000 tpa, as well as

50,000 tpa of pyrolysis distillate. Financing of the project cost of about \$1 billion will be funded by loan from the Fund for Reconstruction and Development of Uzbekistan and own funds of Uzbekneftegaz. Currently under development the extended basic design (FEED-2) and start of construction is scheduled for the

second quarter of 2018. At the beginning of 2017 Uzbekistan GTL, a wholly-owned daughter of Uzbekneftegaz, began construction of GTL-plant worth \$3.7 billion.

Uzbekistan methanol to gasoline project

Uzbekistan aims to produce gasoline from methanol through the technology provided by ExxonMobil. The investment project is planned to be implemented on the territory of the Navoiyazot enterprise at Navoi.



The plant could be able to process up to 300,000 tpa and produce more than 100,000 tpa of high-quality gasoline that meets the Euro-5 standard. ExxonMobil's methanol production process (MTG) provides a selective conversion of methanol to commercial gasoline, which is virtually free of sulphur and low in benzene. Currently Navoiyazot is undertaking the construction project for a complex to produce PVC and caustic soda.

Uzbek tyre plant opens

Uzbekistan plans to launch the first phase of a tyre plant, worth \$214 million, in Angren, Tashkent

Region in August 2017. The tyre plant's first phase has production capacity of two million car tyres per annum. In 2018, the production of conveyor belts and agriculture tyres will start at the plant, and it will be producing up to three million car tyres per annum. Construction of the tyre plant started in the Angren Special Industrial Zone in 2015. The plant's design capacity is three million car tyres, 200,000 agriculture tyres and 100,000 linear metres of conveyor belts.

Kazakhstan-soda ash project

Kazakh company Araltuz and China's Qinghai Desheng Soda AshIndustrial signed an agreement to establish a joint venture to produce soda ash with a registered capital of over 17.5 billion Tenge. Investments in the construction of a plant to produce soda ash capacity of 300,000 tpa will exceed 87.5 billion Tenge. Consumption of soda ash in Kazakhstan is currently estimated at around 400,000 tpa, most of which is sourced from Russia.

Relevant Currencies

Czech crown. Kc. \$1= 20.852. €1 = 27.444: Hungarian Forint. Ft. \$1 = 229.253. €1 = 310.141: Polish zloty. zł. \$1=3.016. €1 =4.14 Ukrainian hryvnia. \$1 = 22.9 €1 = 24.9: Rus rouble. \$1 = 65.2 €1= 73.70

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