CIREC MONTHLY NEWS

Chemical Industry Reporting for Russia, regional partners, and Central Europe

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Russia-Ukraine-Belarus-Kazakhstan-Uzbekistan-Azerbaijan Czech Republic-Hungary Poland-Romania-Serbia-Slovakia

Issue No: 387, 27 February 2023

Key points from this issue:

Central European petrochemical markets

- PKN Orlen increased ethylene production in in 2022 to 459,200 tons against 348,700 tons in 2021, whilst propylene rose from 349,400 tons to 416,700 tons
- MOL reduced ethylene production in 2022 to 639,000 tons at its combined sites at Tiszaujvaros and Bratislava from 840,000 tons in 2021, whilst propylene dropped from 431,000 tons to 330,000 tons
- For the Polimery Police project, the process of registration of propane and propylene in accordance with the EU requirements of REACH was completed on 7 February 2023
- BASF has announced plans to wind down several of its plants in Germany due to high energy costs in Europe and plans increased production in China

Central European polymer and organic chemical markets

- Styrene imports into the Czech Republic saw a large drop in 2022, falling from 57,195 tons in January to December 2021 to 14,094 tons
- Poland imported 95,681 tons of styrene in 2022 versus 117,656 tons in 2021
- Commissioning works and tests of the Polimery Police installations are now underway, causing a temporary increase in the noise level felt by residents
- Values for Polish trade in organic chemicals increased sharply in 2022, with revenues rising from €1.444 billion to €2.197 billion and imports costs rising from 3.715 billion to €5.031 billion
- TDI imports into Poland amounted to 62,470 tons in the period January to December 2022 against 74,944 tons in the same period in 2021

Russian chemical production

- Russian production of chemicals and chemical products decreased overall by 3.8% in 2022 compared to 2021, which ends more than a decade of annual increases from the sector
- Russian propylene production amounted to 2.767 million tons in 2022 against 3.036 million tons in 2021
- Russian production of synthetic rubber dropped to 1.718 million tons in 2021 to 1.510 million tons in 2022
- Russia produced 4.411 million tons of methanol in 2022 against 4.434 million tons in the same period in 2021. Shchekinoazot was the main producer behind the increase

Eurasian chemical trade

- Uzbekistan exported 21,267 tons of polyethylene in 2022 for $267.5 million
- Chinese imports of synthetic rubber from Russia increased from $252.911 million in 2021 to $606.835 million in 2022
- Methanol exports from Azerbaijan totalled 504,000 tons in Jan-Dec 22 for $131.932 million
- In mid-February this year Ukrgasvydobuvannya signed an agreement worth around €5 million with the Polish company Solvachem for the supply of 12,000 tons of methanol for delivery in 2023

CENTRAL and SOUTH EAST EUROPE

Central European petrochemicals

Polish Imports of Crude Oil (million tons)				
	2019	*2020*	*2021*	*2022*
Total	26.260	25.373	23.285	25.130
Russia	16.029	16.398	13.723	11.721

Polish Imports of Crude Oil 2022		
Country	*Vol (million tons)*	*€ per ton*
Saudi Arabia	7.086	712
Nigeria	0.250	792
Norway	2.767	714
Russia	11.721	530
US	1.103	751
UK	1.502	742
Others	0.701	0
Total	25.130	630

Polish imports of crude oil 2022

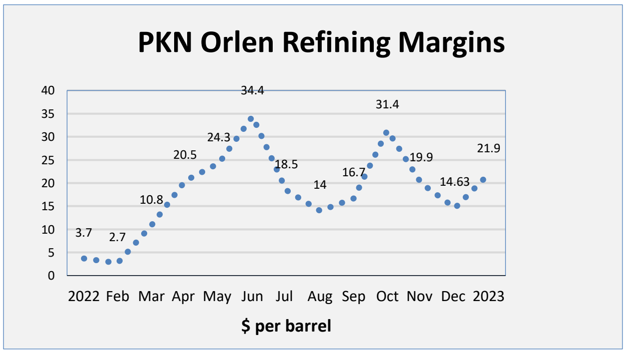
Russia suspended crude deliveries to Poland on 25 February via the Druzhba pipeline, although PKN Orlen has stressed that this will have no effect on fuel or petrochemical feedstocks. In recent years PKN Orlen has been gradually purchasing less crude each year from Russia. In 2022 the process accelerated due to events in Ukraine and sanctions, thus dropping to11.721 million tons in 2022 from the total inward shipments of 25.130 million tons.

By contrast imports dropped in 2021 from 13.723 million tons from Russia to a total of 23.285 million tons. An important point for 2022 volumes is that imports dropped sharply in the second half of the year and particularly in November and December when purchases from Russia amounted to around 10% of imports.

Saudi Arabia is expected to supply more crude to Poland this year after shipping 7.086 million tons in 2022. Other sources last year included Norway, the US and the UK. The advantage of buying from Russia by pipeline stems not only from logistical ease against tanker delivery via Gdansk, but also there is a huge difference in price from non-Russian suppliers.

PKN Orlen 2022

Sales revenues of the Orlen Group for the 12 months of 2022 totalled zl 278.509 billion (€59.405 billion) against zl 131,341 million (€28.693 billion) in 2021. The increase of sales revenues was affected mainly by the 43% increase in crude oil prices which led to increases in fuel prices by 53%, diesel oil by 81%, and light heating oil by 76%. Other commodities affected in the refining division included aviation fuel by 80% and heavy heating oil by 25%, whilst in the petrochemical division ethylene prices by 28% and also propylene by 28%.

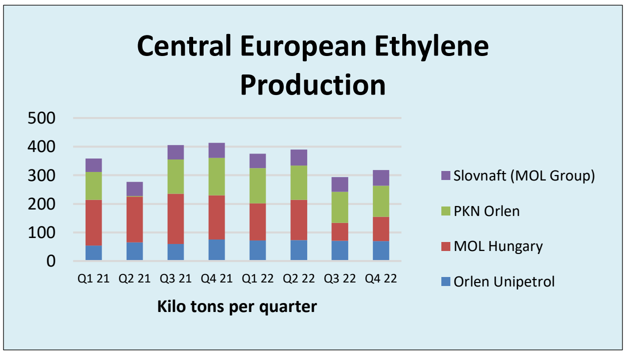


Since the beginning of the war last year the Group observed an increase in refining margins caused mainly by the insufficient supply of fuels in relation to the demand. Thus the refining sector was a major contributor to group profits in 2022 with refining margins sustained at record levels which have carried on into 2023.

Sales revenues of the Orlen Group in the fourth quarter of 2022 amounted to zl 102,262 million (€21.6 billion) and were higher by zl 61,348 million (€12.998 billion) than in the same quarter 2021. The increase in sales revenues was helped by a 29% rise in sales volume in tons (increase mainly in the refining, upstream and gas segment, with a decrease in petrochemicals and retail) and also natural gas volume sales as part of the new gas segment volumes sales.

Operating costs for the Orlen Group increased in the fourth quarter by zl 51,409 million (€10.851 million) to zl 90,090 million (€19.095). The increase resulted from the higher cost of raw materials and energy consumption through higher crude oil prices, natural gas and electricity. It also included the costs of the companies of the former Lotos Group and former PGNiG Group where consolidation costs were involved. After the deduction of tax charges in the amount of zl 3,670 million, the net profit of the Orlen Group amounted to zl 16.280 billion (€3.436 billion) in the fourth quarter.

For the whole of 2022, the Orlen Group's operating costs increased by zl 119.205 million (€25.230 billion) to zl 241,116 million (€51.206 million), partly as a result of inclusion of costs of the companies of the former Lotos Group and former PGNiG Group. Another important factor was an increase in the prices of basic raw materials and energy as a result of the ongoing Russian-Ukrainian war.



Overall for 2022 the Orlen Group's net profits amounted to €7.563 billion versus €2.444 billion in 2021, whilst for petrochemicals the net profit dropped from €736.720 million to €477.830 million.

Central European ethylene production

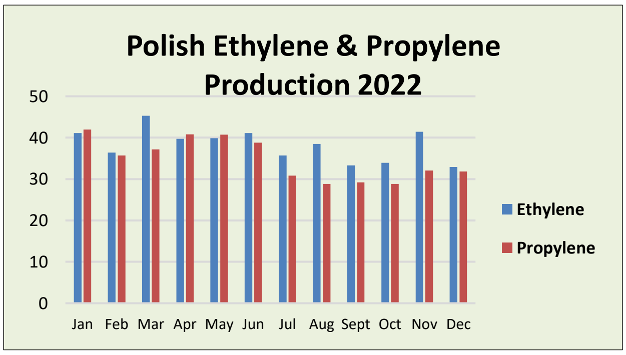
Ethylene production in the four countries that comprise the Visegrad Group region revived in the fourth quarter after the drop in the third quarter in 2022.

PKN Orlen Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Ethylene	459.2	348.7
Propylene	416.7	349.4
Butadiene	59.5	43.1
Toluene	13.7	11.3
Phenol	42.8	45.6
Polyethylene	318.2	240.3
Polypropylene	321.8	301.7

Production for the four countries totalled 318,100 tons in the period October to December 2022 against 293,600 tons in the period July to September. The second quarter in 2021 saw extended maintenance by PKN Orlen which resulted in a regional total production of 276,200 tons.

PKN Orlen-petrochemical production Jan-Dec 2022

PKN Orlen increased ethylene production in in 2022 to 459,200 tons against 348,700 tons in 2021, whilst propylene rose from 349,400 tons to 416,700 tons.



The increase in olefin production enabled an increased in polymer production at Plock, including a rise in polyethylene output to 318,200 tons from 240,300 tons in January to December 2021 and for polypropylene from 301,700 tons to 321,800 tons.

Petrochemical margins for PKN Orlen remain relatively high despite the weaker performance in the third quarter. Positive margins helped to offset the high energy costs in 2022 which affected European petrochemical producers. Although costs have since softened, they remain one of the main concerns in 2023.

Orlen Group Petrochemical Sales (€ billion)		
	Jan-Dec 22	**Jan-Dec 21**
Sales revenues	6,336.5	3,835.2
External revenues	5,139.8	3,362.3
Inter-segment revenues	1,196.8	472.9
Total operating expenses	-5,861.1	-3,506.6
acting profit/(loss) under LIFO	708.8	902.0
Profit/(Loss) from operations under LIFO	474.6	692.2
Profit/(Loss) from operations	474.0	732.9
Sales (thousand tons)	1,052.7	1,030.3

Orlen Group petrochemical division 2022

In the petrochemical sector revenues increased from €3.835 billion in 2021 to €6.337 billion in 2022 whilst costs rose from €3.507 billion to €5.861 billion. Profits from the petrochemical division dropped from €732.9 million in 2021 to €474.0 million.

Orlen Group Q4 2022

Orlen's total sales in the petrochemical division amounted to 1.1 million tons in the fourth quarter in 2022, reflecting a 12% decline versus 2021. The main cause of lower production was the impact of maintenance shutdowns on fertiliser output, combined the impact of lower demand for PVC and olefins.

Orlen Group Chemical Sales (unit-kilo tons)		
Product Group	***Jan-Dec 22***	***Jan-Dec 21***
Monomers	895	768
Polymers	500	593
Aromatics	394	333
Fertilisers	924	1,170
Plastics	355	335
PTA	572	561

The sluggish market led to a shutdown of the Metathesis plant at Plock whilst in Lithuania Orlen Lietuva produced only 9,000 tons of propylene in the fourth quarter raising total production to 55,000 tons for the full year.

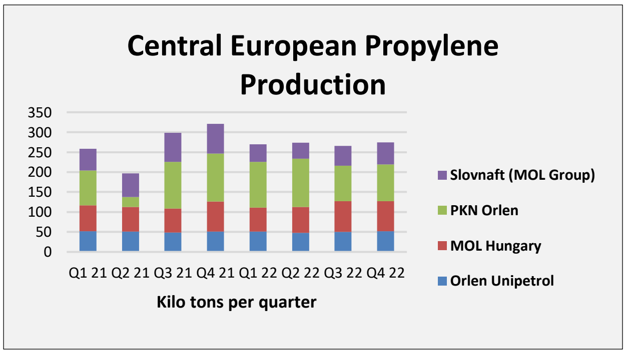
The PVC plant at Wloclawek underwent a shutdown in the third quarter but was then faced by lower demand in the fourth quarter, although overall for 2022 production increased to 276,100 tons from 224,500 tons in 2021. In the Czech Republic olefins production for Orlen Unipetrol at Litvinov was affected last year by work undertaken at the PE2/PE3 installations.

MOL's Olefin & Polyolefin Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Ethylene	639	840
Propylene	330	431
Butadiene	70	96
Raffinate	109	144

MOL-petrochemical production Jan-Dec 2022

MOL reduced ethylene production in 2022 to 639,000 tons at its combined sites at Tiszaujvaros and Bratislava from 840,000 tons in 2021, whilst propylene dropped from 431,000 tons to 330,000 tons. MOLs propylene export price rose to €1334 per ton in 2022 against €1009 per ton in 2021.

Exports to Slovakia are the main focus of Hungarian outward shipments of propylene, where volumes dropped from 74,400 tons in the first three quarters in 2021 to 50,500 tons in the same period in 2022. Propylene production by Slovnaft is not sufficient to maintain high utilisation rates for polypropylene and additional supplies need to be purchased.



Central European propylene production

Propylene production in the Visegrad Group region improved in the fourth quarter after dropping in the period July to September. Despite the cracker shutdown at PKN Orlen in 2021 the production of propylene at the Metathesis plant at Plock helped reduce the impact of lower production of by-product propylene. Feedstock stability and energy costs will continue to represent the primary concerns at least for the first half of 2023.

Polish Imports of Propylene (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Lithuania	0.000	6.415
Bulgaria	7.922	0
Croatia	8.579	0
Germany	63.477	104.579
Russia	21.625	48.858
Ukraine	17.018	74.847
Hungary	3.918	0
Others	6.499	1.737
Total	129.039	236.437

Polish propylene imports Jan-Dec 2022

Imports of propylene into Poland dropped in 2022 to 129,039 tons against 236,437 tons in 2021. The fall was due mostly to the higher production undertaken at Plock. Average prices increased from €914.2 per ton in January to December 2021 to €1243.5 per tons in 2022. Although propylene monomer has not been sanctioned by the EU to date, Russia stopped exporting to Poland in the latter part of 2022.

To compensate for the drop in imports from Russia and Ukraine (where production was suspended at Karpatneftekhim following the Russian invasion), Poland started to receive deliveries from Bulgaria, Croatia and Hungary. Propylene from Bulgaria came from the Bourgas refinery which is owned by Lukoil and has somehow avoided the effects of sanctions, even if it is a Russian company. Shipments from Croatia and Hungary in the second half of 2022 were coordinated by MOL. Propylene production at INA's Rijeka refinery in Croatia, which is a sub-division of MOL, started in late 2020 with a capacity of 84,000

Polish Monomer Import Costs (€ per ton)		
Product	***Jan-Dec 2022***	***Jan-Dec 2021***
Propylene	1243.5	914.2
Butadiene	1188.2	921.4

tpa. INA's propylene exports to Poland were undertaken at more favourable prices than from other sources.

Polimery Police-99.01% completed by end of January

Commissioning works and tests of the Polimery Police installations are now underway, causing a temporary increase in the noise level felt by residents. After the tests and start-ups are fully completed, the installation at the production stage will not emit noise exceeding the standards allowed for this type of production plant. The overall material progress of Grupa Azoty's flagship investment in Police exceeded 99.01% at the end of January and is already in the final stage of construction.

The process of registration of propane and propylene in accordance with the EU requirements of the European Chemicals Agency (REACH) was completed on 7 February 2023.

Propylene registration was necessary due to the production and use for the production of polymer. Propane registration facilitates the diversification in supplies from all global sources. The unloading of propane into tanks in the new gas terminal is seen as a symbolic beginning of the completion of the new chemical complex.

Grupa Azoty Polyolefins has concluded a propane purchase agreement with Trafigura Pte worth $250 million. This agreement secures over 50% of the company's demand for propane in the period December 2022 to December 2024. Along with the PP installation, the gas terminal will be launched. The first delivery from the US to the Police gas terminal arrived in December. The Guadalupe Explorer tanker delivered its 22,000 tons of propane to the port of Świnoujście in northern Poland with the first cargo for Polimery Police.

Czech Petrochemical Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Ethylene	23.198	3.220
Propylene	35.883	44.085
Butadiene	67.014	75.646

Other recent developments that could help Polimery Police involves the creation of the West Pomeranian Hydrogen Valley in November last year. Grupa Azoty, the largest producer of hydrogen in Poland, is strongly involved in the project.

Czech Imports of Propylene (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Germany	19.124	17.181
Bulgaria	2.633	0.000
Poland	5.976	11.056
Romania	5.253	1.035
Russia	1.220	3.418
Slovakia	0.993	4.738
Ukraine	0.524	3.388
Others	0.161	3.269
Total	35.883	44.085

Czech monomer trade, Jan-Dec 2022

Propylene imports into the Czech Republic dropped from 44,085 tons in January to December 2021 to 35,883 tons in 2022. Germany was the leading supplier of propylene to the Czech market in 2022, supplying 19.124 tons for €27.680 million.

Other suppliers included Romania which shipped 5,253 tons from the Petromidia refinery for €7.528 million, followed by Poland shipping 5,976 tons for €7.188 million. Imports from Slovakia dropped last year from 4,738 tons to 524 tons.

Czech Petrochemical Exports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Ethylene	12.560	22.662
Propylene	3.070	4.019
Butadiene	1.631	2.453

Costs of propylene imports rose to €53.543 million against €43.708 million, with average prices rising from €1168 per ton in 2021 to €1517 in 2022. Propylene is used in the Czech Republic by Synthomer at Sokolov where acrylates are produced.

Ethylene exports from the Czech Republic amounted to 12,580 tons in 2022 against 22,692 tons in

2021 whilst ethylene imports rose from 3,220 tons to 23,198 tons. Germany supplied 23,062 tons to the Czech Republic in January to December 2022, supplied from the Boehlen plant to Litvinov.

Czech imports of butadiene dropped from 75,646 tons in 2021 to 67,014 tons in 2022. Germany shipped 64,051 tons to the Czech market in January to December 2021, dropping to 52,992 tons in the same period in 2022.

Central European styrene trade

Poland imported 95,681 tons of styrene in 2022 versus 117,656 tons in 2021. The Netherlands reduced shipments from 82,379 tons to 54,152 tons whilst imports from Germany rose from 8,387 tons to 19,458 tons. Costs averaged €1548 per ton in 2022 against €1094 per ton in 2021.

Polish Styrene Imports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belgium	8.334	8.138
Czech Republic	10.858	2.514
Finland	0.693	1.148
Netherlands	54.152	82.379
Germany	19.458	8.387
Others	2.188	15.090
Total	95.681	117.656

The main importer of styrene monomer into Poland is Synthos for polystyrene and synthetic rubber production at Oswiecim. Synthos was fined in November 2022 by the European Commission for cartel arrangements for styrene purchases between 2016 and 2018.

Czech Styrene Imports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belgium	1.694	16.780
Germany	0.180	3.060
Netherlands	9.441	35.290
Poland	1.724	2.918
Others	0.069	0.183
Total	13.407	58.053

Styrene imports into the Czech Republic saw a large drop in 2022, falling from 57,195 tons in January to December 2021 to 14,094 tons. At the same exports of styrene monomer from the Czech Republic increased from 1,019 tons in 2021 to 10,645 tons in January to December 2022.

The emergence of exports since August 2022 is largely connected with lower rubber production at Kralupy. In September Synthos stated that it was reducing its production of ESBR at Kralupy and Oswiecim due to high energy costs.

Hungarian styrene imports (unit-kilo tons)		
Country	***Jan-Nov 22***	***Jan-Nov 21***
Germany	4.234	1.286
Italy	78.490	88.890
Netherlands	2.285	2.847
Others	0.000	0.162
Total	85.009	93.184

In Hungary imports of styrene monomer totalled 85,009 tons in the period January to November 2022 against 93,184 tons in the same period in 2021. Italy supplied 78,490 tons this year which is directed by Versalis to its polystyrene plant in Hungary, down from 88,890 tons in January to November 2021.

Central European polyolefins

Polimery Police-polypropylene

A pre-marketing project was launched on the PPL (Polypropylene Logistics Platform) sub-project in January in readiness for the new plant at Polimery Police. The supply of polypropylene, as part of the pre-marketing project, will enable practical verification of the effect of training and accelerate the transition to the operational phase.

Polish PP Supply/Demand Balance (unit-kilo tons)	
	Jan-Dec 22
Production	321.8
Exports	281.8
Imports	918.8
Market Balance	958.8

In the ongoing trial and testing phase, the first goods purchased from an external supplier for the purpose of the pre-marketing project were accepted into the storage silos. At the end of January this year, 100% of the acceptance of construction and assembly works in process systems and non-process auxiliary installations had been carried out. The Polimery Police plant was rated at 99.01% completed by the end of January 2023. The total budget of the Police project is rated at about $1.8 billion with all construction activities close to completion.

Polish PP Exports (unit-kilo tons)		
Type	***Jan-Dec 22***	***Jan-Dec 21***
PP homo	184.902	202.114
Polyisobutylene	0.363	0.506
Propylene copolymers	91.734	77.390
Other	4.802	3.369
Total	281.800	283.380
Av €/ton	1739.879	1010.340

Polish PP Imports (unit-kilo tons)		
Type	***Jan-Dec 22***	***Jan-Dec 21***
PP homo	609.740	727.232
Polyisobutylene	3.509	4.266
Propylene copolymers	293.379	328.525
Other	21.255	24.529
Total	918.765	1084.552
Av €/ton	1750.355	1576.154

The plant should enable the diversification of Grupa Azoty's business activities, as well as have a positive impact on the Polish's position in the plastics segment. The new chemical complex will significantly improve the balance of polypropylene in which Poland currently import-dependent. In 2022 Poland imported a total of 918,765 tons of polypropylene, comprised mostly of homo grade and copolymers. The capacity of the new plant comprises 437,000 tpa, which will add to the existing 480,000 tpa plant at Plock which is owned by Basell Orlen Polyolefins. The Plock plant was expanded by around 20% in the past couple of years following the start-up of the metathesis propylene plant operated by PKN Orlen.

Polish polyolefin trade Jan-Dec 2022

Exports of polypropylene homo grade from Poland amounted to 165,909 tons in 2022 for €233.331 million. The largest destination for Polish exports was Germany, taking 37,359 tons for €61.544 million.

Poland imported 609,740 tons of polypropylene homo grade in 2022 for a total value of €1027.504 million. Homo grade PP imports into Poland dropped from 727,232 tons in January to December 2021 partly due to higher production at Plock.

PKN Orlen Polyolefin Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Polyethylene	318.2	240.3
Polypropylene	321.8	301.7

Polish PE imports (unit-kilo tons)		
Type	***Jan-Dec 22***	***Jan-Dec 21***
LDPE	351.894	380.387
LLDPE	238.186	255.430
HDPE	455.577	480.639
EVA	17.758	22.145
EAC	194.548	213.176
Other	56.328	55.062
Total	1314.290	1406.839
Av €/ton	1786.544	1528.837

Russia provided 51,179 tons of homo grade for €75.955 million in 2022, which was exceeded by Germany with 142,855 tons for €253,368 million. Imports from Russia were last undertaken in July following the imposition of EU sanctions. In 2021 Poland imported 155,805 tons of polypropylene homo grade from Russia for a total grade €198.656 million. Shipments from Russia accounted for 21% of total Polish imports in 2021 but dropped to 8.5% in 2022.

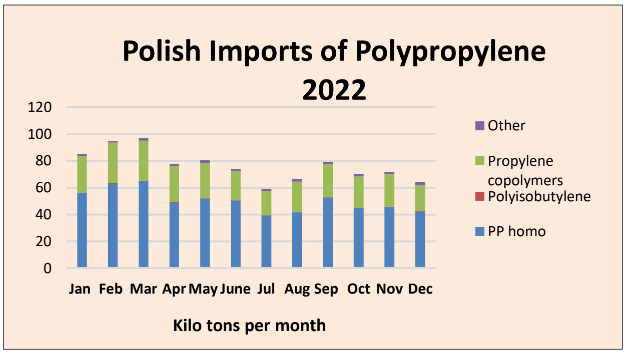
Copolymer imports into Poland fell from 328,625 tons in 2021 to 293,379 tons, although price rises meant that costs dropped only slightly from €558.119 million to €557.463 million. Germany was the largest supplier of propylene copolymers to the Polish market in 2022 transporting 82,907 tons for €156.748 million.

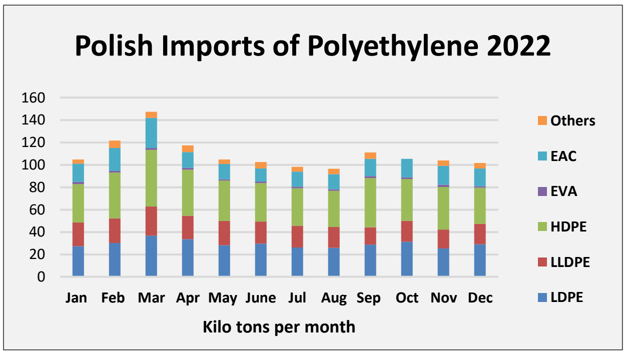
In the polyethylene sector imports into Poland totalled 1.314 million tons in 2022 against 1.407 million tons in 2021. Import costs increased from €2.153 billion to €2.348 billion, with average prices rising from €1528.837 per ton to €1786.544 per ton in 2022.

Polish PE Exports (unit-kilo tons)		
Type	***Jan-Dec 22***	***Jan-Dec 21***
LDPE	63.736	67.804
LLDPE	21.614	16.940
HDPE	227.637	171.933
EVA	3.669	2.706
EAC	22.886	19.060
Other	4.459	2.577
Total	341.571	281.020
€ per ton	1633.129	1279.774

Imports of LLDPE dropped from 255,430 tons in 2021 to 238,186 tons which were sourced mostly from West Europe, including France, the Netherlands and Germany. LDPE imports totalled 351,894 tons in 2022 for €635.006 million. HDPE imports amounted to 455,577 tons in 2022 versus 480,639 tons in 2021, with total costs rising from €665.228 million to €762.775 million in 2022.

Total polyethylene exports from Poland in 2022 amounted to 341,571 tons versus 281,020 tons in 2021, with average prices per ton rising from €1279.8 to €1633.1.





In terms of the supply/demand balance Poland's consumption of polyethylene amounted to 1.291 million tons in 2022 versus 1.350 million tons in 2021. In addition to comprising the largest category of polyethylene imports, HDPE was also Poland's largest export grade. Exports amounted to 227,634 tons in 2022 versus 230,426 tons in 2021. Export revenues rose from €216.006 million to €352.559 million for HDPE.

Orlen Polyolefin Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Polyethylene	318.2	240.3
Polypropylene	321.8	301.7

The Orlen Group in Poland increased production of polyethylene from 240,300 tons in 2021 to 318,200 tons in 2022, and polypropylene from 301,700 tons to 321,800 tons.

Czech Polyethylene Exports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
LDPE	30.275	37.113
LLDPE	4.005	3.701
HDPE	356.819	326.346
EVA	3.393	5.825
Other	14.260	10.863
Total	408.751	383.847
Av price €	1639.2	1442.8

Czech polyethylene trade Jan-Dec 2022

Czech exports of polyethylene increased from 383,847 tons in 2021 to 408,751 tons in 2022 with average prices rising from €1443 per ton to €1639. HDPE exports represent the largest category increasing from 326,346 tons to 356,819 tons.

Export revenues rose from €553.805 million in January to December 2021 to €670.028 million in the same period in 2022, with HDPE revenues rising from €453.295 million to €552.1 million.

Czech Polyethylene Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
LDPE	120.570	126.579
LLDPE	22.027	23.820
HDPE	115.369	138.989
EVA	9.848	7.774
Other	39.778	44.375
Total	307.592	341.537
Av price €	1907.8	1638.4

Polyethylene and polypropylene values started to see some stability towards the end of 2022 with greater stability in the feedstock situation. Weakening demand fundamentals in the Central European region also exerted a bearish pressure on prices.

Imports of polyethylene dropped from 341,537 tons to 307,592 tons, with average prices rising from €1636 per ton to €1908 per ton. HDPE imports dropped from 138,989 tons to 307,592 tons, whilst LDPE imports dropping from 126,579 tons to 120,570 tons. Import costs of polyethylene increased from €559.860 million in 2021 to €586.815 million.

Czech Polypropylene Exports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
PP	253.671	274.513
Propylene Copolymers	51.865	51.449
Other	2.640	1.828
Total	308.176	327.790
Av price €	1727.09	1477.22

Polypropylene exports from Orlen Unipetrol dropped from 327,790 tons in 2021 to 308,176 tons in January to December in 2022 whilst values rose from $401.509 million to $456.298 million. The largest market for Czech polypropylene exports in 2022 was Poland, taking 68,162 tons in January to December for €111.650 million.

Polypropylene imports into the Czech Republic dropped from 621,387 tons in 2021 to 541,927 tons in 2022, with average prices rising from €1394 per ton to €1741 per ton. Copolymer imports dropped from

Czech Polypropylene Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
PP	288.258	320.578
Propylene Copolymers	236.596	283.712
Other	17.073	17.097
Total	541.927	621.387
Av price €	1740.8	1393.6

283,712 tons to 236,596 tons whilst homo polymer imports dropped from 320,578 tons to 288,258 tons. Total costs for polypropylene imports totalled €945.487 in 2022 against €865.983 million in 2021.

MOL polyolefin production and sales 2022

MOL's production of polyolefins dropped in 2022 due to extended maintenance at Tiszaujvaros where in particular HDPE production fell from 401,000 tons in 2021 to 286,000 tons in 2022. LDPE and polypropylene, produced both at Tiszaujvaros and Slovakia, saw respective falls from 262,000 tons to 216,000 tons and from 546,000 tons to 444,000 tons.

MOL's Polyolefin Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
LDPE	216	262
HDPE	286	401
PP	444	546
PE Totals	502	663

Overall polyolefin sales for MOL from plants both in Hungary and Slovakia dropped from 1.167 million tons in 2021 to 994,000 tons in 2022. For each of the four quarters last year sales fell below levels achieved in the comparative quarters in 2021. The second quarter saw the lowest volume of sales due to extended maintenance at Tiszaujvaros.

Hungarian polyethylene exports (unit-kilo tons)		
Product	***Jan-Nov 22***	***Jan-Nov 21***
LLDPE	4.824	5.047
LDPE	80.409	99.780
HDPE	211.228	267.910
EAO	0.327	0.089
EVA	0.108	0.284
Other	18.616	9.545
Total	315.512	382.655

Impact of lower polyolefin production on Hungarian exports 2022

Hungarian exports of HDPE dropped from 382,655 tons in the first eleven months in 2021 to 315,512 tons in the same period in 2022. LDPE exports declined from 99,780 tons to 80,409 tons. Polyethylene exports last year were affected by MOLs lengthy maintenance undertaken in Q2 and Q3 2022.

Hungarian polyethylene Imports (unit-kilo tons)		
Product	***Jan-Nov 22***	***Jan-Nov 21***
LLDPE	22.283	18.184
LDPE	51.774	52.951
HDPE	93.673	93.963
EAO	10.319	12.758
EVA	5.660	4.918
Other	20.343	18.681
Total	204.053	201.455

HDPE exports dropped from 267,910 tons in January to November 2021 to 211,228 tons in the same period in 2022. MOL reduced HDPE production at Tiszaujvaros in 2022 to 286,000 tons from 401,000 tons in 2021. As a result of lower volumes export revenues from polyethylene dropped from €544.386 million in January to November in 2021 to €496.177 in the first eleven months last year. HDPE revenues in particular dropped from €372.886 million to €335.716 million.

Import costs for polyethylene into Hungary increased last year from €313.457 million in 2021 to €384.313 million even though volumes rose only slightly from 201,455 tons to 204,053 tons. Although HDPE imports dropped slightly from 93,963 tons to 93,673 tons import costs rose from €134.084 million.

Hungarian polypropylene Imports (unit-kilo tons)		
Product	***Jan-Nov 22***	***Jan-Nov 21***
PP homo	107.018	110.486
Propylene copolymers	49.669	64.598
Others	26.881	41.759
Total	183.568	216.843

Hungarian polypropylene trade Jan-Nov 2022

Propylene copolymer exports from Hungary dropped from 80,634 tons to 65,914 tons but homo grade PP increased from 76,410 tons to 80,887 tons. Propylene copolymer imports into Hungary dropped from 64,596 tons in the first eleven months in 2021 to 49,669 tons in 2022, with costs dropping from €103.774 million to €98.387 million. Overall import costs for polypropylene rose to €360.013 million from €346.396 million. Polypropylene exports from Hungary totalled 219,803 tons in January to November 2022 up from 201,531 tons in the same period in 2021, with revenues rising from €321.704 million to €363.900 million. Homo grade polypropylene revenues increased from €150.683 million to €189.736 million and copolymer exports dropped from €164.349 million to €159.195 million.

Central European Rubber Markets

Further EU sanctions on Russian synthetic rubber

It remains unclear precisely how imports of synthetic rubber from Russia are affected as part of the tenth EU package of sanctions passed on 24 February. Poland had proposed that all rubber products from Russia should be banned, whilst Italy opposed this ban due to its dependency on certain grades. Synthos was reported to be lobbying the EU for a complete ban on the import of all rubber materials from Russia to Europe.

Main types of Synthetic Rubber Sanctioned by EU in 2022	
400211	Styrene-butadiene rubber latex
400220	Butadiene rubber
400231	Butyl rubber
400239	Halogenated butyl rubber
400241	Chloroprene rubber
400251	Nitrile-butadiene rubber

Last year the EU banned the import of tyres from Russia and the export of some materials for the tyre industry to the country. This proposal from Synthos faced some opposition from Italy, Germany, Hungary, Romania and Czech Republic, which have traditionally relied on Russian rubber for tyre production. A quota was proposed of 560,000 tpa of Russian rubber, a rather strange figure as this would exceed total imports in normal trading years and would thus render the sanction useless. It has been stressed by some EU countries that the main principles of sanctions against Russia are based on moral grounds rather than economic grounds.

Total consumption of synthetic rubber in the European Union is estimated to comprise about 1.6 million tpa, of which more than half of this volume is imported (0.9 million tpa). In 2021 the export of synthetic rubber from Russia to the EU amounted to 382,754 tons for revenues of $67.230 million, or more than half of European imports. In 2022 imports comprised around 30% and is already forecast to be much lower in 2023.

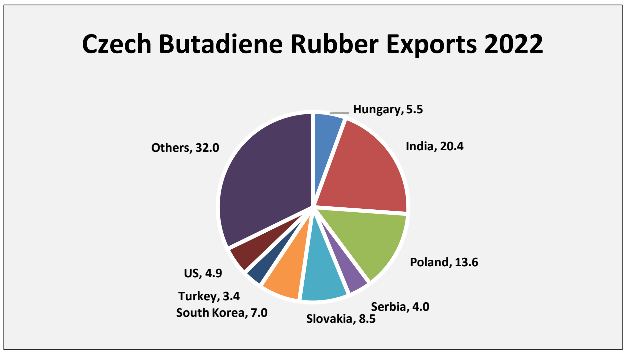
Czech Trade in Butadiene Rubber (unit-kilo tons)		
	Jan-Dec 22	***Jan-Dec 21***
Exports	104.227	103.258
Imports	28.871	33.423
Czech Trade in Butadiene Rubber (€ million)		
	Jan-Dec 22	***Jan-Dec 21***
Exports	228.572	163.710
Imports	73.195	55.627

The main products sanctioned by the EU last year from 10 July onwards included halogenated butyl rubber and butadiene rubber. Butadiene rubber exports from Russia to the EU amounted to $165.4 million in 2021, with the largest recipient countries including Poland, Hungary, Romania and Slovakia. After sanctions were introduced declined in the second half of the year to less than 2,000 tons in December.

The same trend applies to halogenated butyl rubber where before the war, Russia supplied about 65,000 tpa to 27 EU countries. It is this latter product which has created the biggest supply challenges as there are few available global producers. Butadiene rubber by contrast is produced at several locations in Europe, including Kralupy in the Czech Republic which gives the country a strong surplus.

Czech butadiene rubber trade 2022

The Czech Republic imported a total of 28,871 tons of butadiene rubber in the period January to December 2022 for a total of €73.195 million, of which Russia supplied 10,715 tons for €21.140 million.



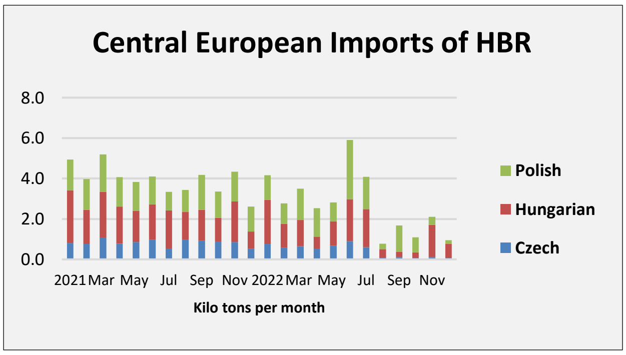
The Czech Republic is much larger exporter of butadiene rubber, shipping 104,227 tons in 2022 for revenues of €228.572 million, up from 103,28 tons in January to December 2021 for €163.710 million. The largest destination for Czech exports of butadiene rubber is India to where 21,036 tons was shipped in 2022 against 20,675 tons in the same period in 2021.

Hungary imported a total of 120,642 tons of synthetic rubber in the first eleven months in 2022 against 132,685 tons in the same period in 2021, whilst import costs from €247.390 million to €292.912 million.

Butadiene rubber imports into Hungary in the first eleven months in 2022 rose to 42,604 tons versus 35,741 tons with import costs rising from €58.703 million to €94.404 million. Imports of halogenated butyl rubber fell by volume from 19,666 tons to 13,433 tons and costs fell from €40.205 million to €38.121 million. Imports feel last year due to the sanctions imposed on Russia which were imposed on 8 April for closure by 10 July, but the EU made some amendments that allowed pre-arranged contracts to be completed by the end of the year.

Hungarian synthetic rubber imports (unit-kilo tons)		
Product	***Jan-Nov 22***	***Jan-Nov 21***
Butadiene Rubber	42.604	35.741
HBR	13.433	19.686
Other	64.005	77.258
Total	120.042	132.685
Hungarian synthetic rubber imports (€ million)		
Product	***Jan-Nov 22***	***Jan-Nov 21***
Butadiene Rubber	94.404	58.703
HBR	38.121	40.205
Other	160.387	148.482
Total	292.912	247.390

Whilst Poland and Hungary have traditionally purchased large volumes of halogenated butyl rubber (HBRs) from Nizhnekamskneftekhim it has also exported large volumes. Hungary exported 8,083 tons of HBRs in the first three quarters in 2022 for €22.890 million, thus accounting for 73% of the imported volumes. Hungarian exports were previously shipped to Germany, Italy, China, the US, etc but these trading links have now been broken. Although Nizhnekamskneftekhim as the sole Russian producer of HBRs is selling less product to the EU, the tyre industry in Europe has largely adapted to these changes in the supply/chain.



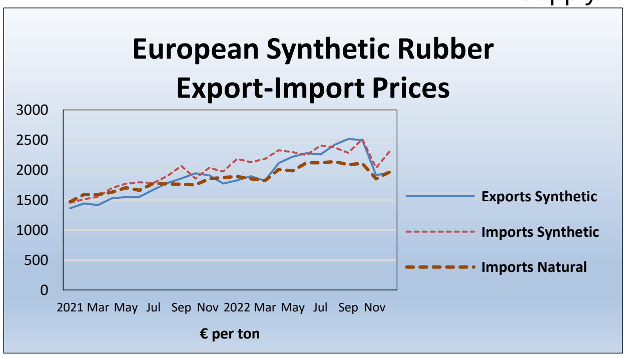
Adapting to non-Russian synthetic rubber

Polish tyre production dropped slightly in 2022 in terms of tonnage, but generally managed to cope with the effects of sanctions on imports of synthetic rubber from Russia.

Tyre manufacturers from Europe have been striving to reduce the risks associated with Russian components in their supply chains. Some European tire factories were forced to close last year even for a couple of days due to the fact that carbon black ceased to flow from Russia and Ukraine, thanks to which tires last longer. Before the war, Russia accounted for about one-third (500,000 tpa) of carbon black used in the EU. This has since fallen to around 20,000 tons per month or equivalent to 240,000 tpa.

Polish Tyre Production (unit-kilo tons)		
Category	***Jan-Dec 22***	***Jan-Dec 21***
Car Tyres	275.7	279.7
Bus & truck Tyres	202.7	201.1
Tractor tyres	10.0	13.4
Total	488.4	494.2

Supply chains in Europe have now largely stabilized as many tyre manufacturers have reduced the risks associated with their Russian suppliers and created alternative sources of supply in case of further failures. All tyre manufacturers are prepared for increased risk to the supply chain associated with their Russian suppliers. The view is though that there will be enough capacity in the world and even in Europe, even if a complete ban on Russian rubber is introduced. It is clear though that this may involve higher prices.



Central European synthetic rubber prices

Prices for synthetic rubber have come under pressure or at least stopped rising despite the introduction of EU sanctions on Russia which has traditionally been an important supplier to Central Europe. Those products affected mostly include butadiene rubber and particularly halogenated butyl rubber (HBR) where Russia has dominated most of the market share in Central Europe over the past decade. Poland had previously depended almost exclusively on Nizhnekamskneftekhim for supplies of HBR, purchasing 12,578 tons in 2022 from a total 13,541 tons.

After a gradual rise in synthetic rubber prices for the Central European region from the start of 2021 prices in the fourth quarter started seeing noticeable declines, partly due to feedstock factors and partly due to demand patterns. Synthetic rubber prices dipped in December as butadiene continued to fall in price, particularly affecting styrene butadiene rubber. Nitrile butadiene rubber was the only commodity where prices remained stable. Although synthetic rubber prices had risen above natural rubber prices for large parts of 2022, towards the end of the year the reverse trend was developing with natural rubber prices starting to rise.

Synthos Production in Poland (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Polystyrene	68.3	71.5
EPS	100.1	107.0
Synthetic Rubber	258.7	275.2

Synthos production at Oswiecim 2022

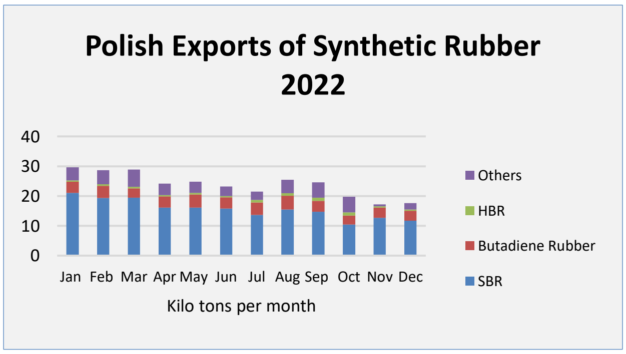
Synthos is planning to restart production of butadiene rubber at its facility in Schkopau, Germany in March, with an ambition to partially replace the Russian product. Synthos produces only certain grades of rubber, while tyre manufacturing involves more grades, many of which are produced mainly in Russia and will be difficult to replace.

Polish Synthetic Rubber Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
ESBR	13.371	21.442
Block SBR	39.289	61.612
S-SBR	15.447	16.098
Butadiene Rubber	57.699	45.084
Butyl Rubber	3.459	3.254
HBR	13.541	16.927
NBR	12.733	15.788
Isoprene Rubber	30.045	38.077
EPDM	44.931	38.077
Others	57.923	106.979
Total	288.439	363.337

Polish synthetic rubber trade, Jan-Dec 2022

Imports of synthetic rubber into Poland amounted to 288,439 tons in 2022 against 363,337 tons in 2021. Butadiene rubber imports rose from 45,084 tons to 57,699 tons and EPDM increased imports from 38,077 tons to 44,931 tons. Import costs for synthetic rubber increased from €686.709 million in 2021 to €703.821 million in January to December 2022, including an increase in butadiene rubber costs from €65.383 million to €124.892 million and EPDM costs increased from €68.244 million to €98.348 million.

Imports of synthetic rubber from Russia dropped sharply in the second half of 2022 due to sanctions, with halogenated butyl rubber most affected. Imports of synthetic rubber from Russia into Poland dropped from 133,341 tons in 2021 to 92,653 tons in 2022 most of which was shipped in the first seven months.

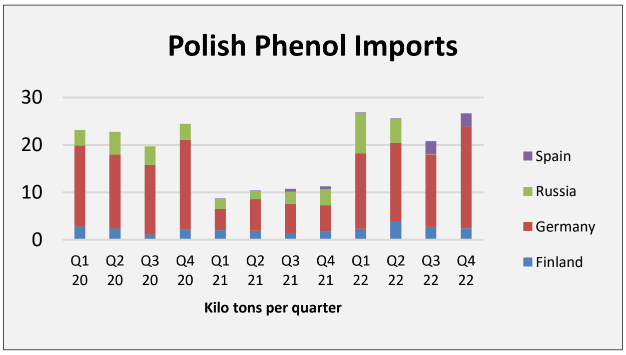


Synthetic rubber exports from Poland totalled 285,301 tons in the period January to December 2022 for revenues of €578.286 million. Volumes in 2022 dropped from 335,845 tons in 2021 for €521.184 million with prices rising from €1552 per ton to €2026 per ton in 2022.

ESBR exports from Poland amounted to 125,253 tons in 2022 dropping from 144,103 tons in January to December 2021. Average prices for ESBR increased in 2022 to €1982 per ton against €1496 per ton in 2021. The largest destination for Polish EBSR exports is India which rose from 31,284 tons to 36,300 tons followed by Brazil which dropped from 18,536 tons to 13,425 tons whilst China reduced inward shipments from 10,426 tons to 1,666 tons.

Central European aromatics

Polish Imports of Aromatics (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Ethylbenzene	109.895	136.362
Paraxylene	34.150	95.720
Caprolactam	10,262	11,796
Phenol	103.786	42.163
Phthalic Anhydride	30.763	35.651
PTA	1.864	65.334
Styrene	95.675	104.469
TDI	74.909	81.162
Toluene	22.800	23.075



Polish aromatic imports Jan-Dec 2022

In the aromatics sector phenol imports into Poland recorded a large increase in 2022 to 103,786 tons, of which 13,651 tons came from Russia. Supplies from Russia were sanctioned by the EU and from August no deliveries were made to Poland. In the period August to December Imports from Spain started to fill the gap left by Russian exporters.

On a quarterly basis phenol imports amounted to 26,666 tons in the fourth quarter in 2022 against 20,767 tons in the third quarter and 25,575 tons in the second quarter. Germany is the main supplier of phenol to the Polish market, shipping 21,482 tons in the fourth quarter.

In other product areas, styrene imports amounted to 95,675 tons in the period January to December 2022 versus 104,469 tons in 2021 whilst ethylbenzene imports dropped from 136,362 tons to 109,895 tons. Nearly all of the ethylbenzene imports come from the Czech Republic.

Paraxylene imports into Poland totalled 34,150 tons last year, down from 95,720 tons in January to December 2021. Russia's last shipment of paraxylene to Poland took place in April, amounting to 3,251 tons and taking the total for the year to 6,905 tons. Imports from Russia were replaced last year by inward shipments from Turkey, which amounted to 7,552 tons. Overall, for the period January to December 2022 imports of paraxylene from France into Poland totalled 16,584 tons.

Czech Aromatic Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Benzene	72.591	78.603
Toluene	6.667	7.109
Styrene	14.093	58.057

Czech Aromatic Exports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Benzene	30.256	47.831
Toluene	5.385	8.521
Ethylbenzene	109.889	130.265

Czech aromatic trade Jan-Dec 2022

Czech exports of ethylbenzene declined in 2022 to 109,889 tons from 130,265 tons in 2021. All the ethylbenzene was shipped from Kralupy to Oswiecim in Poland, all within the structures of the Synthos Group. Benzene imports are required to cover ethylbenzene production and amounted to 72,591 tons in January to December 2022. Imports were largely shipped from Poland.

Spolana Caprolactam Exports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belgium	5.905	5.479
Germany	7.878	14.672
Italy	15.728	16.402
Slovenia	3.506	3.846
Switzerland	2.684	1.975
Others	0.304	0.281
Total	36.432	42.655
€ per ton	2545.0	1853.1

Central European caprolactam trade

Caprolactam was previously exported commodity from Poland but due to increased processing has now become a marginal net importer. In 2022 imports of caprolactam totalled 10,262 tons for €27.687 million, nearly all of which came from Germany. By volume imports dropped from 11,796 tons in 2021, although from lower costs of €19.708 million.

Spolana exported 36,432 tons of caprolactam from the Czech Republic in 2022 against 42,655 tons in 2021. Average prices rose from €1853.1 per ton to €2545.0 per ton. Italy was the largest destination for Spokane's exports in 2022, with volumes to Germany reduced from 12,627 tons in January to October 2021 to 7,509 tons.

Spolana sulphuric acid modernisation

Spolana at Neratovice aims to reduce energy consumption in caprolactam production through the modernisation of its sulphuric acid unit. Around Kc 1 billion (€42 million) is being invested in the modernisation which is being carried out by the Indian group Nuberg.

Polish Aromatic Import Costs (€ per ton)		
Product	***Jan-Dec 2022***	***Jan-Dec 2021***
Toluene	1127.2	651.0
Paraxylene	1004.2	759.1
Styrene	1547.9	1094.2
Ethylbenzene	1216.2	976.3

The main benefit of the three-year project is to increase operational reliability and operational safety while reducing the consumption of electricity and natural gas. The modernisation will be gradual, as it can only be implemented during planned production shutdowns. Besides traditional applications for sulphuric acid, concentrated sulphuric acid is further used to produce caprolactam.

Polish Benzene Exports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Volume	Ktons	Ktons
Czech Republic	54.464	67.615
Germany	108.733	69.666
Others	5.947	5.137
Total	169.144	142.418
Values	***€ million***	***€ million***
Czech Republic	53.831	56.25
Germany	104.211	56.086
Others	13.950	4.28948
Total	171.992	116.625

Polish aromatic exports Jan-Dec 2022

Poland is a major exporter of benzene shipping 169,144 tons in 2022 against 142,418 tons in January-December 2021. Germany and the Czech Republic were the two largest destinations for Polish exports in 2022. Export revenues increased from €116.625 million in 2021 to €171.992 million.

Polish PTA sales and production Jan-Dec 2022

Orlen sold a total of 572,000 tons of PTA both on the domestic market and for exports in the period January to December 2022, unchanged against the same period in 2021. Total sales revenues rose from zl 1483 million (€321.0 million) to zl 2667 million (€569.9 million) with average prices rising overall from €561 per ton to €996 per ton. Export revenues amounted to €390.137 million in 2022, equating to €992 per ton.

Polish PTA Exports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belarus	4.511	12.504
Belgium	14.351	0.000
Germany	315.885	350.928
Lithuania	37.291	25.469
Switzerland	7.684	4.690
Turkey	5.984	0.000
Others	7.208	3.334
Total	392.913	396.925
Av Price €	992.937	630.858

PTA exports from Poland amounted to 392,913 tons in 2022 against 396,925 tons in 2021. Average prices for Polish PTA exports amounted to €992.9 per ton in 2022 against €630 in the same period in 2021.

Germany remained the main customer for Polish PTA, taking 315,885 tons in January to December 2022 against 350,928 tons in the same period in 2021. Lithuania was the second largest destination for PTA export shipments, taking 37,291 tons versus 25,469 tons.

PTA imports into Poland dropped in 2022 to 1,864 tons versus 65,334 tons in 2021. This was due to higher production at Wloclawek.

Polish Organic Chemical Trade		
Exports	***Jan-Dec 22***	***Jan-Dec 21***
Vol (kilo tons)	1648.3	1719.4
Value (€ million)	2197.1	1443.9
Imports	***Jan-Dec 22***	***Jan-Dec 21***
Vol (kilo tons)	3034.2	2876.3
Value (€ million)	5031.0	3714.8

Central European Organic Chemicals

Polish organic chemical trade Jan-Dec 2022

Values for Polish trade in organic chemicals increased sharply in 2022, with revenues rising from €1.444 billion to €2.197 billion and imports costs rising from 3.715 billion to €5.031 billion. Volumes for exports showed a slight decline whilst imports increased marginally.

The largest increase in imports of organic chemicals last year was for methanol where volumes rose to 943,134 tons in 2022 from 696,110 tons in the same period in 2021. This significant rise was attributed directly to the war in Ukraine which has meant that Poland has been used as a transit route for Russian origin methanol for delivery to South East Europe.

Polish Organic Chemical Imports (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Acetic Acid	45.065	44.755
Acetone	6.873	10.058
Adipic Acid	11.660	10.681
Butadiene	89.507	119.326
DEG	29.643	27.056
DINP/DOP	21.155	22.761
Ethyl Acetate	14.303	21.059
Ethylene Glycol	59.014	50.945
Ethylene Oxide	12.809	26.534
Isopropanol	11.625	11.213
Maleic Anhydride	12.576	14.825
Methanol	943.134	696.110
Propylene	129.039	237.738
Propylene Glycol	20.433	25.064
Propylene Oxide	2.058	4.191
VAM	17.332	19.314

Aside methanol, most imported organic chemicals in the table opposite are consumed inside Poland. Export revenues comprise less than 50% of import costs with few product areas where Poland maintains a net export position. PTA was one where export shipments totalled 392,913 tons in 2022 against 396,925 tons in 2021. Germany is the traditional buyer of PTA from Poland.

Polish solvent imports, Jan-Dec 2022

Isopropanol imports into Poland rose from 11,213 tons in January-December 2021 to 11,625 tons in 2022, with Germany providing the largest volume of 5,106 tons. Russia supplied 671 tons in the first four months in 2022, but similarly to some other products trading has been phased out.

Acetic acid imports into Poland amounted to 45,451 tons in 2022 versus 44,697 tons in 2021. Import sources for 2022 included the UK with 14,906 tons for €17.196 million, the US with 12,113 tons for €14.621 million, and Germany with 6,785 tons for €8.077 million.

Polish Imports of Acetic Acid (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Austria	1.547	1.577
China	6.617	2.993
Germany	6.785	2.422
Norway	0.951	0.842
Serbia	0.000	12.552
UK	14.906	9.003
US	12.113	13.306
Others	2.534	2.002
Total	45.451	44.697

Ethyl acetate imports into Poland declined from 21,059 tons in January to December 2021 to 14,303 tons in 2022. Supplies were diversified between Belgium, Germany, UK and the Netherlands. Vinyl acetate imports dropped from 19,314 tons in January to December 2021 to 17,332 tons in 2022 for costs of €36.537 million.

Polish solvent exports, Jan-Dec 2022

Solvent exports from Poland are concentrated mostly on acetone and normal butyl acetate. Acetone exports in 2022 amounted to 18,328 tons against 20,813 tons in 2021. Exports in 2022 were spread largely though Europe, including the Czech Republic, Germany, Hungary, Italy and Romania. N-butyl acetate export increased from 13,363 tons in January to December 2021 to 16,958 tons in the same period in 2022. Germany was the largest destination for Polish butyl acetate exports last year, amounting to 8,999 tons in January to December followed by Italy with 3,763 tons.

Hungarian organic chemical trade 2022

Hungary exports a range of organic chemicals including propylene, isocyanates, maleic anhydride, etc, whilst imports include styrene, methanol, acrylonitrile, etc.

Acrylonitrile imports into Hungary increased in the first eleven months to 36,611 tons against 31,508 tons in the same period in 2021.

Costs increased to €80.803 million from €50.605 million. The largest supplier of acrylonitrile to Hungary last year was the Netherlands, accounting for 22,953 tons for €55.452 million.

Hungarian aniline imports (unit-kilo tons)		
Country	***Jan-Nov 22***	***Jan-Nov 21***
Belgium	13.910	4.7756
China	0.101	72.574
Czech Republic	79.900	85.014
Others	6.078	3.545
Total	99.988	165.889
€ per ton	1777.7	980.6

Aniline imports into Hungary dropped in January to November 2022 to 99,988 tons from 165,889 tons in the same period in 2021. Imports of aniline from China amounted to 72,574 tons in the first eleven months in 2021 but long-haul imports have stopped since the start-up of BorsodChem's new aniline plant at Berente.

Imports from BorsodChem Ostrava plant continue to be imported for MDI production in Hungary, amounting to 79,900 tons in the first eleven months in 2022.

Hungarian maleic anhydride exports Jan-Nov 2022

Maleic anhydride export prices from Hungary averaged €2.288 per ton in the first eleven months in 2022 against €1.565 for the same period in 2021. Revenues from sales of 17,760 tons in January to November 2022 totalled €40.651 million versus 14,136 tons in the same period in 2021 for €23.148 million.

Hungarian imports of acrylonitrile (unit-kilo tons)		
Country	***Jan-Nov 22***	***Jan-Nov 21***
Belarus	0.000	2.724
Germany	4.055	0.000
France	6.384	6.028
Netherlands	22.953	21.091
Russia	1.985	1.665
Others	1.234	0.000
Total	36.611	31.508
€ per ton	2195.4	1554.7

Poland was the largest consumer of Hungarian maleic anhydride which is produced by MOL at Szazhalombatta. Continuing high costs of freight and overall logistics problems gave rise to both import and export constraints. The European market continued to experience logistics problems caused by the pandemic.

Polish chemical and polymer imports from Russia

Overall, for 2022 Polish imports of chemicals and polymers were not significantly different from 2020. However, there was a change in most product areas after July-August last year following the introduction of official sanctions by the EU. This was combined with self-sanctioning by companies together with resulting logistical issues.

Polish imports of chemicals & polymers from Russia (unit-tons)			
Product	***Jan-Dec 22***	***Jan-Dec 21***	***Jan-Dec 20***
Methanol	737.930	467.624	551.932
PP-homo	51.579	155.805	55.253
Propylene	21.675	48.512	21.449
Paraxylene	6.905	40.085	8.902
Isoprene rubber	28.995	37.821	34.651
HDPE	16.968	32.442	7.648
Butadiene rubber	21.657	18.254	19.005
Halogenated butyl rubber	12.578	14.474	10.992
LDPE	6.998	14.466	5.236
Phthalic anhydride	4.936	12.280	7.459
Phenol	13.651	9.746	15.468

Some products showed lower imports last year due to increased production in Poland such as paraxylene and propylene.

Methanol shipments from Russia were one of the few product areas that actually increased in the second half of 2022, with Poland increasing its role as a trading link to South East Europe.

However, methanol fell under EU sanctions from 8 January and thus direct purchases from Russia will be no longer possible. Poland's imports of methanol from Russia amounted to 737,930 tons in 2022 versus 467,624 tons in 2021. Any contract agreements concluded prior to 7 October 2022 can be completed up to 18 June 2023.

Central European Isocyanates

Czech MDI Imports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
China	2.968	2.519
Belgium	11.826	11.136
Germany	7.822	13.797
Hungary	8.265	6.738
Netherlands	3.610	2.546
Others	0.908	2.212
Total	35.399	38.949
Av price per ton €	2727.3	2388.0

Central European isocyanates, Jan-Dec 2022

MDI imports into the Czech Republic totalled 35,399 tons in 2022 against 38,949 tons in 2021. Total costs for MDI imports dropped from €85.456 million in January to December 2021 to €81.587 million in the same period in 2022, with average prices rising from €2388 per ton to €2727.

TDI imports into Poland amounted to 62,470 tons in the period January to December 2022 against 74,944 tons in the same period in 2021. Average prices increased from €2733 per ton to €2998, with total import costs rising from €204.798 million to €220.564 million. Weak demand restricted prices from rising to higher levels in 2022.

Polish TDI Imports (€ million)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belgium	4.860	2.907
Germany	54.800	53.816
Hungary	111.383	93.252
Netherlands	17.504	25.357
Saudi Arabia	8.157	8.547
South Korea	13.478	0.000
Others	10.381	20.918
Total	220.564	204.798
Ktons	73.571	74.944
Av price per ton €	2998	2733

Hungary remained the largest supplier to the Polish market, shipping 37,084 tons versus 34,544 tons in January to December 2021 whilst Germany reduced shipments from 19,844 tons to 18,953 tons. South Korea started supplying TDI to Poland in 2022, shipping 4,798 tons for €13.478 million. Other important European markets for Hungarian TDI exports include Romania and Germany. Although European demand is faced by recessionary trends and slowly declining feedstock costs global capacity constraints may help to sustain prices.

MDI imports into Poland dropped from 167,837 tons in 2021 to 146,413 tons in 2021. Import sources were diversified largely between Germany, the Netherlands, Hungary and Belgium. The fall in import volumes was also recorded in lower costs dropping to €384.277 million against €402.386 million, although average prices rose from €2397 per ton to €2625 per ton in 2022. In terms of price direction MDI numbers started softening towards the end of the third quarter, dropping from the peak of €2755.8 per ton in May to €2468.4 per ton in September.

Polish MDI Imports (€ million)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Germany	93.964	117.185
Netherlands	65.447	57.192
Hungary	96.801	113.793
Belgium	75.884	70.487
Saudi Arabia	6.922	9.279
Others	45.259	34.450
Total	384.277	402.386
Ktons	146.413	167.837
Av price per ton €	2625	2397

Feedstock costs are falling also but demand is key concern. The European isocyanates and polyols markets are under pressure from a weak downstream demand outlook across the construction, automotive and comfort sectors, but could see some upswing following the earthquake in Turkey and Syria.

Hungarian MDI exports dropped slightly in the first eleven months in 2022 to 176,669 tons against 179,142 tons in the same period in 2021. Revenues rose due to increased prices, rising from €2389 per ton in 2021 to €2583 in 2022. The largest destination for Hungarian MDI was Poland where volumes amounted to 30,438 tons against 35,245 tons in January to November 2021. Exports to the US increased in 2022 to 23,562 tons against 14,090 tons in the same eleven months in 2021. Other important destinations for Hungarian MDI exports include Germany and Romania. Shipments to Germany in January to November 2022 amounted to 21,115 tons against 22,621 tons in 2021 and shipments to Romania amounted to 19,260 tons versus 20,839 tons.

TDI exports from Hungary amounted to 216,686 tons in the first eleven months in 2022, yielding €613.821 million with average prices amounting to €2833 per ton. Exports to Turkey amounted to 30,971 tons. Italy was the second largest export destination for Hungarian MDI shipments in January to November 2022, taking 30,928 tons for €84.893 million. Polish imports from Hungary amounted to €86.364 million, although volumes were lower than to Italy amounting to 28,621 tons. Belgium took 19,773 tons in January to November whilst Romania purchased 13,234 tons.

Polish Methanol Exports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Austria	72.520	33.360
Czech	77.836	66.135
Germany	112.887	87.810
Romania	54.885	0.000
Slovakia	51.202	3.833
Ukraine	21.886	0.429
Hungary	50.061	0.308
Others	16.203	0.593
Total	457.481	192.468

Central European Methanol

Central European methanol trade Jan-Dec 2022

Exports of methanol from Poland totalled 457,481 tons in 2022 against 192,468 tons in 2021. Exports to Germany increased from 87,810 tons to 112,887 tons, whilst substantial increases were reported for shipments to Central and South East Europe. Ukraine has also started to purchase methanol from Poland with 21,886 tons purchased in the period June to December last year. Even if the price is higher than Russian sources Ukraine will prefer to buy from the other suppliers. Whilst Polish traders are well placed to continue acting as a conduit to South East

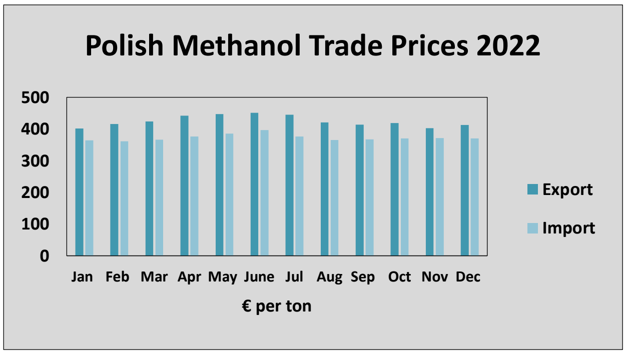
Europe for methanol shipments, sources of methanol supply into Poland should become more diverse this year due to sanctions on Russian shipments.

Imports of methanol into Poland totalled 943,134 tons in 2022 versus 696,110 tons in 2021. Costs totalled €178.813 million in January to October. The average price for Polish imports comprised €369.8 per ton last year against €343.0 in the whole of 2021.

Polish Methanol Imports (unit-kilo tons)		
Country	**Jan-Dec 22**	**Jan-Dec 21**
Azerbaijan	1.138	0.000
Belarus	0.044	2.620
Finland	50.816	58.013
Lithuania	0.974	7.514
Germany	100.931	84.014
Netherlands	0.650	25.739
Norway	30.160	38.024
Russia	741.926	468.194
Others	16.495	11.991
Total	943.134	696.110
Av Price Per	369.785	343.000

From 8 January this year EU sanctions have applied to methanol from Russia although any contracts concluded prior to 7 October 2022 have been given up to 18 June for completion.

Russia increased exports to Poland in 2022 to 741,926 tons from 468,194 tons. Norway reduced shipments from 38,024 tons to 30,160 tons. Germany increased exports to Poland in 2022 to 100,931 tons from 84,014 tons in the same period last year. The highest price paid for imports and price charged for exports occurred in June at €397 and €451 per ton respectively. The largest residue between the import and export prices occurred in July at €75 per ton.



Czech imports of methanol amounted to 78,773 tons in 2022 against 90,764 tons in 2021. Russia accounted for 27,641 tons in January-December 2022 against 48,810 tons in the same period in 2021, followed by Poland which increased from 28,655 tons to 41,514 tons. Prices per ton for methanol imports into the Czech Republic increased from €368 in 2021 to €463 in 2022.

Czech methanol Imports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Germany	7.210	11.189
Russia	27.641	48.810
Poland	41.514	28.655
Others	2.409	2.110
Total	78.773	90.764
Av price per ton €	462.731	368.149

Hungarian imports of methanol totalled 64,589 tons in the first eleven months for a total cost of €30.488 million. Prices averaged €472 per ton in the first eleven months against €328 per ton in the same period in 2021, when volumes were much higher at 103,168 tons for costs of €34.535 million. Imports from Russia fell from 39,195 tons in the first eleven months in 2021 to 10,763 tons in the same period this year.

Hungarian methanol imports (unit-kilo tons)		
Country	***Jan-Nov 22***	***Jan-Nov 21***
Austria	1.498	3.195
Germany	9.495	2.041
Netherlands	7.274	1.902
Poland	17.622	0.403
Russia	10.763	43.420
Slovenia	3.044	0.625
Slovakia	13.436	33.313
Others	1.458	18.269
Total	64.589	103.168

The drop in exports from Russia was due to war in Ukraine and the difficulties in shipping product by rail. The disruption to rail shipments has also affected imports from Slovakia where volumes declined from 33,313 tons to 13,436 tons and the opening of a new window to the north from Poland where imports increased from just 309 tons in January to November 2021 to 17,622 tons.

Despite the logistical problems for South East Europe resulting from the situation in Ukraine, regional methanol capacity at Kikinda in Serbia and Lendava in Slovenia has not been able to make anything from this opportunity. The Kikinda methanol plant has not worked over the past year whilst production out of Lendava has been minimal.

Central European chemical production & energy

BASF-plant closures at Ludwigshafen

BASF has announced plans to wind down several of its plants in Germany due to high energy costs in Europe and plans increased production in China. BASF stated that it would close one of its two ammonia plants at its home site in Ludwigshafen as well as the units producing caprolactam and TDI. The plans, which are expected to lower the group's annual costs by €200 million by the end of 2026, will also lead to reduced production of adipic acid. The additional cuts announced in February could lead to a net loss of up to 2,600 jobs, mainly in Germany. BASF said that the plans would lead to a significant reduction in its demand for natural gas, reducing its CO2 emissions by 900,000 tpa which amounts to around 4% of what it emits globally.

Total methanol Leuna

Total Energies has started the e-CO2Met project in Leuna where methanol is to be produced from low-carbon hydrogen and separated carbon dioxide. Total Energies already produces around 700,000 tpa of methanol based on fossil raw materials at the Mitteldeutschland refinery at Leuna, making it the largest methanol producer in Europe. The aim now is to produce climate-neutral methanol locally. With the innovative production of synthetic methanol, crude oil and natural gas can be replaced in the chemical industry and the required raw materials can be produced in a climate-neutral manner.

Chemical production east Germany

Energy costs and natural gas availability continue to impact chemical companies operating in eastern Germany, and particularly the central chemical triangle of Böhlen, Leuna and Schkopau. Trinseo has indicated that it is considering stopping the 300,000 tpa styrene production at its Böhlen site would affect other companies such as Dow's integrated cracker operation at Böhlen. DOMO Chemicals at Leuna which produces phenol and caprolactam, has been forced to take cost-cutting measures in order to keep operating.

Regarding new investments at Leuna, Polyplastics has begun construction of a €200 million production plant for its Topas cyclo-olefin copolymers (COC). The planned capacity of 20,000 tpa is expected to more than double the company's current production capacity. The plant is scheduled to come on stream in the third quarter of 2024. With the additional production capacity, the company intends to meet the increasing global demand for COC products.

Polish Chemical Production (unit-kilo tons)

Product	***Jan-Dec 22***	***Jan-Dec 21***
Caustic Soda Liquid	409.6	366.0
Caustic Soda Solid	60.7	83.4
Caprolactam	133.0	162.0
Acetic Acid	2.3	4.5
PVC	276.1	224.5
Ammonia (Gaseous)	2097.0	2598.0
Ammonia (Liquid)	101.5	108.5
Pesticides	63.3	63.0
Nitric Acid	2030.8	2478.0
Nitrogen Fertilisers	1774.0	2104.0
Phosphate Fertilisers	334.1	476.7
Potassium Fertilisers	319.5	346.8

Ciech-coal & decarbonisation

The Ciech Group is undertaking a decarbonisation plan within the framework of the ESG strategy objectives. By 2026 it intends to reduce carbon dioxide emissions by approximately 33% (compared to 2019), and in 2033 to stop using coal in energy production processes. At present, however, the production of chemical products using coal is cheaper than using natural gas which complicates the strategy in the short term. Coal-fired combined heat and power plants are currently operating at the Inowrocław and Janikowo soda ash plants. Ciech's aim is to gradually move away coal in favour of obtaining energy from natural gas, thermal waste processing or nuclear energy (through SMRs).

The launch of a new installation supplying heat to the plant in Inowrocław will allow to reduce coal consumption, and thus to reduce CO2 emissions by about 300,000 tpa. The installation is expected to be commissioned in 2026. A similar solution is already in place in the German soda factory belonging to the Ciech group, where heat from the thermal waste treatment installation goes to Ciech Soda Deutschland.

Grupa Azoty-new nitric acid plant

Grupa Azoty has launched a new concentrated nitric acid unit with a production capacity of 40,000 tpa, doubling the production capacity. The value of the investment amounted to zl 57.1 million. This is the second production line for concentrated acid with a concentration above 98% at Tarnow, increasing the capacity to 80,000 tpa. Grupa Azoty is the only producer of concentrated nitric acid in Poland.

RUSSIA

Russian chemical production Jan-Dec 2022

Russian production of chemicals and chemical products decreased overall by 3.8% in 2022 compared to 2021 according to government statistics, although in reality the fall may be closer to 8% or even 10% for mainstream organic chemicals. Either way, the decline in chemical production signifies the first drop after more than a decade of annual increases from the sector. The impact of sanctions has been noticeable on the supply of components for chemical production and higher added value chemicals, whilst affecting the geography of trade.

Russian Base Oil Production (unit-million tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Crude oil	276	286.0
Coke	25.4	28.0
Gasoline	42.3	40.8
Diesel	84.7	80.3
Naphtha	11.5	13.2
Mazut	43.1	46.3
Propane & butane	16.2	15.7

Official Russian statistics also state that GDP dropped by 2.1% in 2022 versus 2021, but it appears that the macro figure does not reflect the drop in living standards in the past year. Energy costs have risen for large parts of the population, probably much more than in Western countries based on per capita GDP.

In the feedstock sector Russian crude and naphtha production both fell in 2022 whilst small increases were recorded for propane and butane, diesel and gasoline. Most chemical products witnessed a decline in production and consumption 2022. Some organic chemical products have seen growth in domestic consumption due to the exits of Western products, but for the most part demand was stagnant.

Russian Petrochemical Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 22***
Ethylene	4,370.4	4,407.1
Propylene	2,771.8	3,035.6
Benzene	1,301.0	1,320.0
Styrene	708.0	722.5
Phenol	227.7	260.8

Russian chemical producers see their long-term future dependent on lifting of sanctions and a return to normal trade and commercial contacts. The chemical industry has been one of the better sectors to benefit from Russia's isolation from Western markets, whilst at the same time recording production declines in most product areas.

Russian petrochemical production Jan-Dec 2022

Russian ethylene production decreased slightly in 2022 to 4.370 million tons from 4.407 million tons in 2021, whilst propylene dropped from 3.036 million tons to 2.772 million tons. Demand for olefins for the production of derivatives started to see the signs of pressure from the third quarter onwards, as the impact of sanctions feed through to the market.

Russian Polymer Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 22***
Plastics in Bulk	10,248.0	11,085.0
Polyethylene	3,483.0	3,512.0
Polystyrene	579.0	591.0
PVC	970.0	1,095.8
Polyamide	163.0	198.0
Synthetic Rubber	1,511.0	1,718.0
Synthetic Fibres	186.9	202.0

Russian polymer production Jan-Dec 2022

The production of bulk plastics in Russia in 2022 decreased compared to 2021 by 7.3%, amounting to 10.248 million tons. The production of paint and varnish materials based on polymers last year dropped by 3.4% to 1.4 million tons.

Synthetic rubber was significantly affected in 2022 from the closure of European market, particularly for categories such as butadiene rubber and butyl rubbers. Hence, production fell from 1.718 million tons from January to December 2021 to 1.511 million tons. Tyre production dropped by 21.4% in 2022 versus 2021 amounting to a total of 51.8 million tyres.

Russian Plastics Production (unit-million tons)		
Product	***Jan-Dec 22***	***Jan-Dec 21***
Pipes, tubes and hoses and their fittings	1062	117.3
Plates, sheets, film and strips of polymer	1533	102.1
Other plates, sheets, film plastic porous	464	89.9
Other plates, sheets, plastic non-porous	488	104.2

Polyethylene production in Russia followed ethylene production trends closely and was slightly lower from 3.512 million tons in January to December 2021 against 3.483 million tons in the same period in 2022. Domestic consumption of polyethylene was helped mainly through the increase in production of pipes, primarily aimed at gas and water transportation. The production of chemical fibres dropped by 10.6% for the same period amounted to 200,000 tons. The production of synthetic fibres in 2022 amounted to 188,000 tons which was 7.7% down. The production of artificial fibres amounted to 12,700 tons which was down by 39.1% over 2021.

The production of fertilisers amounted to 23.5 million tons in 2022, which is 11.3% less than in 2021. During the year, 7.3 million tons of potash fertilisers were produced which was down by 32%, whilst phosphate fertilisers rose by 1.1% to 4.4 million tons and nitrogen fertilisers rose 3.5% to 11.8 million tons. In December 2022, output amounted to 870,000 tons, decreasing by 12.4% compared to December 2021 and by 0.8% compared to November 2022.

Russian natural gas production 2022

Natural gas production in Russia fell by 11.8% in 2022 to 672.570 billion cubic metres. This was mainly due to reduced production by Gazprom, which reduced supplies to Europe to historic lows. By the end of 2023, Gazprom's production will fall by another 30-40 billion cubic metres, which will fall mainly on the Nadym-Pur-Taza and, possibly, Bovanenkovo fields. The Power of Siberia-2 project is of great importance for Russian exports to China, as this may be the only option to monetize free production capacity by 2030. But here the decision depends more on Chinas options than Russia.

Russian methanol and ammonia trade 2022

Rail transportation of methanol at the end of 2022 increased by 10% compared to 2021 and amounted to 2.1 million tons. Last year's methanol exports increased by rail due largely to the combined expansion of Shchekinoazot, which was delivering to Poland, and the complications of Russian trade which reduced seaborne exports through the Hamina-Kotka terminal in Finland.

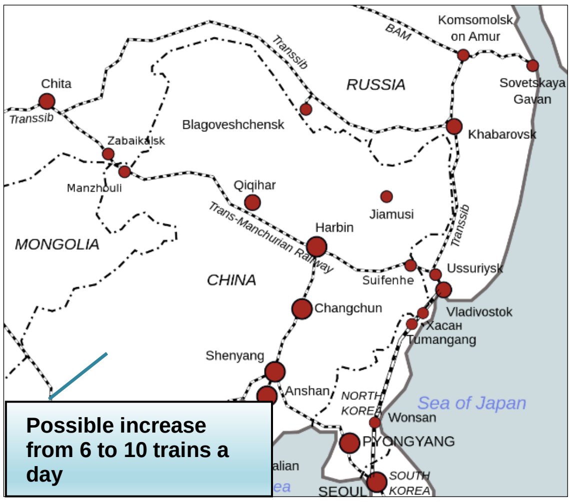
Methanol shipments to China and Turkey were the main features of trade patterns in 2022, supplied respectively through the Nakhodka-Vostochny terminal in the Far East and the Kavkaz and Temyruk ports in the south of Russia.

In comparison to increased methanol exports last year ammonia exports dropped by around 60%. The main drop was due to the closure of the Togliatti-Odesa pipeline which Togliattiazot has traditionally used for exports. Partly in compensation for the loss of exports through Odesa exports increased by 22% to Uzbekistan and Kazakhstan.

Russian Base Chemical Production (unit-kilo tons)		
Product	***Jan-Dec 22***	***Jan-Dec 22***
Caustic Soda	1,253.9	1,280.0
Soda Ash	3,498.0	3,429.0
Ammonia	17,000.0	19,900.0
Nitrogen Fertilisers	11,808.0	11,358.0
Phosphate Fertilisers	4,271.0	4,282.0
Potash Fertilisers	7,273.0	10,678.0

Russia expands logistics ties with China

Due to the disconnection of Russian exporters from the main European markets for industrial products Russian Railways has been forced to rebuild its routes from West to East. In 2022, Russian Railways (RZD) broke its own record for transportation to the East, increasing freight by 28% over 2021 to 119 million tons overall.



In value terms total Chinese imports from Russia totalled $114.149 billion in 2022 against $79.609 billion in 2021, whilst exports to Russia increased from $67.507 billion to $76.123 billion.

In the chemical industry Russian exports to China increased sharply, particularly for methanol, synthetic rubber and polyethylene. Prices and margins achieved by Russian exporters in China were much lower than possible in Europe. This year chemical exporters will face an increase in tariffs from Russian Railways of around 10% which will further erode margins for sales to China. Moreover, in order to significantly increase trade with China and Asia Russian Railways will need to expand both the Trans-Siberian Railway and the Baikal-Amur Mainline. In the near future, Russian Railways expects to increase the transfer of container trains through Zabaikalsk from currently six to ten trains per day. Other routes are also under consideration.

Russian petrochemical markets

Russian Ethylene Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Angarsk Polymer Plant	210.5	210.1
Kazanorgsintez	623.0	574.1
Stavrolen	324.9	314.0
Nizhnekamskneftekhim	656.4	608.7
Novokuibyshevsk Petrochemical	41.2	47.7
Gazprom n Salavat	328.2	317.3
SIBUR-Kstovo	356.4	377.0
SIBUR-Khimprom	56.1	54.8
Tomskneftekhim	268.4	295.9
Ufaorgsintez	96.8	96.1
ZapSibNeftekhim	1408.7	1511.4
Total	4370.3	4407.1

Russian ethylene production, Jan-Dec 2022
Russian ethylene production totalled 4.370 million tons in 2022 against 4.407 million tons in the same period in 2021. ZapSibNeftekhim at Tobolsk produced 1.409 million tons in January to December 2022 down from 1.511 million tons in 2021.

Other plants compensated for the lower production at Tobolsk. In Tatarstan Nizhnekamskneftekhim produced 656,400 tons of ethylene against 608,700 tons in 2021, whilst Kazanorgsintez increased from 574,100 tons to 623,000 tons.

Other important ethylene producers included SIBUR-Kstovo which produced 356,400 tons versus 377,000 tons. In Bashkortostan Gazprom neftekhim Salavat increased production from 317,300 tons to 328,200 tons, whilst Ufaorgsintez increased production from 96,100 tons to 96,800 tons. Stavrolen at Budyennovsk raised ethylene production to 324,900 tons against 314,000 tons in 2021.

In Siberia the Angarsk Polymer Plant produced 210,500 tons of ethylene in 2022 versus 210,100 tons in the same period in 2021, whilst Tomskneftekhim reduced production from 295,900 tons to 268,400 tons.

Lower production was recorded by Tomskneftekhim last year due to planned outage in September from which the plant has switched to an increased overhaul interval from a two-year to a four-year cycle.

SIBUR-Neftekhim, ethylene oxide
SIBUR-Neftekhim hopes to receive state support to help with expanding capacities for the production of ethylene oxide and glycols at Dzerzhinsk in the Nizhniy Novgorod region. The company is reconstructing the production of ethylene oxide and glycols in order to increase its capacity to 1,067 tons per day. The includes an increase in capacity for commercial ethylene oxide by 29% to 168,000 tpa. The production capacity of SIBUR-Neftekhim, as of July 2021, amounted to 130,000 tpa of ethylene oxide, 320,500 tpa of glycols, in addition to 35,500 tpa of acrylic acid.

SIBUR new feedstock pipeline for ZapSibNeftekhim
SIBUR has outlined plans to construct a new feedstock pipeline for petrochemical production at ZapSibNeftekhim. The new pipeline will run between the Nizhnevartovsk and Yuzhno-Balyksky gas processing plants in order to ensure the supply of gas raw materials to the Tobolsk complex. The laying of the product pipeline is divided into two sections, firstly of 34.5 km and secondly 34.7 km. The design capacity is 2.66 million tpa of raw materials.

SIBUR to purchase Solvay's stake in RusVinyl at Kstovo
SIBUR has concluded an agreement to purchase Solvay's 50% stake in the jv RusVinyl at Kstovo, which is a major ethylene consumer for the SIBUR-Kstovo cracker. The transaction is conditional on agreement on the final terms and obtaining the necessary approvals, but the change of shareholder structure will not affect the operating activities of RusVinyl. Technologically, the plant is connected with the Kstovo industrial site of SIBUR. Ethylene supplied from SIBUR-Kstovo is the main raw material for PVC production at RusVinyl.

The transition of RusVinyl to the perimeter of SIBUR opens up additional opportunities for the company in terms of further development and improving the efficiency of the interconnected production facilities of the Nizhny Novgorod cluster. The share of RusVinyl in the volume of both production and sales of PVC in Russia is about 35%. At the same time, the capacity of the enterprise of 330,000 tpa makes it the country's largest producer of material in demand in the segments of housing and communal services, construction, etc. Of the 330,000 tpa, 30,000 tpa comprises 30,000 tpa. Solvay owns a stake in RusVinyl through Solvin Holding Nederland B.V. Other capacities include 225,000 tpa of caustic soda.

Russian Propylene Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Angarsk Polymer Plant	113.9	116.4
Kazanorgsintez	50.5	47.5
Lukoil-NNOS	273.4	264.1
Stavrolen	144.1	124.9
Nizhnekamskneftekhim	323.4	304.6
Novokuibyshevsk	30.6	60.0
Omsk Kaucuk	53.4	35.1
Polyom	180.5	192.4
Gazprom Neftekhim Salavat	147.1	126.6
SIBUR Kstovo	154.2	180.3
SIBUR-Khimprom	82.0	67.1
Tomskneftekhim	140.1	160.4
SIBUR Tobolsk	15.3	3.0
Ufaorgsintez	147.8	168.2
ZapSibNeftekhim	910.4	1185.0
Total	2766.6	3035.6

Russian propylene production Jan-Dec 2022

Russian propylene production amounted to 2.767 million tons in 2022 against 3.036 million tons in 2021. The combined ZapSibNeftekhim and SIBUR Tobolsk plants reduced production from 1.188 million tons in 2021 to 925,700 tons in 2022, the decline occurring due to extended maintenance. In Tatarstan. Nizhnekamskneftekhim produced 323,400 tons of propylene in 2022 whilst Kazanorgsintez increased production from 47,500 tons to 50,500 tons.

In Bashkortostan Gazprom neftekhim Salavat produced 126,600 tons of propylene versus 147,100 tons whilst Ufaorgsintez reduced production from 168,200 tons to 147,800 tons. In the Nizhny Novgorod region SIBUR-Kstovo reduced production of propylene from 180,300 tons to 154,200 tons in 2022. Lukoil-NNOS at Kstovo increased production from 263,100 tons to 273,400 tons.

Russian Propylene Exports (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Lukoil-NNOS	65.9	95.2
SIBUR-Kstovo	10.6	17.9
Angarsk Polymer Plant	17.3	4.2
Stavrolen	21.7	39.1
Total	115.4	156.4

Russian propylene sales Jan-Dec 2022

Propylene exports from Russia amounted to 115,400 tons in 2022 against 156,400 tons in 2021. Lukoil-NNOS reduced export shipments from 95,200 tons to 65,900 tons whilst SIBUR-Kstovo shipped 10,600 tons against 17,900 tons in January-December 2021. Exports to Europe dropped in the second half of 2022, and by the end of the year China was the only destination for Russian shipments.

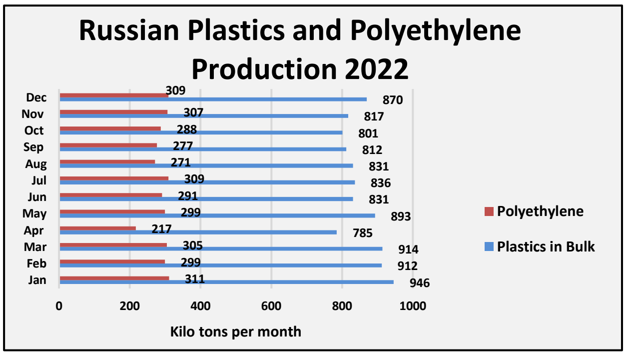
Russian Propylene Domestic Sales (unit-kilo tons)		
Company	***Jan-Dec 22***	***Jan-Dec 21***
Angarsk Polymer Plant	28.6	37.7
SIBUR-Kstovo	123.1	137.0
Lukoil-NNOS	179.8	164.9
Stavrolen	29.3	4.4
Others	34.8	11.1
Total	394.6	355.1

Russian sales of propylene on the domestic merchant market amounted 394,600 tons in 2022 against 373,106 tons in 2021. The largest propylene supplier to the domestic market was Lukoil-NNOS, shipping 179,800 tons against 164,900 tons in January to December 2021. In 2022 ZapSibNeftekhim purchased 99,203 tons of propylene on the merchant market against 68,289 tons in 2021. SIBUR Kstovo reduced domestic sales in 2022 to 123,100 tons versus 137,000 tons in 2021, the decline due to lower production.

Russian Propylene Domestic Purchases (unit-kilo tons)		
Consumer	***Jan-Dec 22***	***Jan-Dec 21***
Saratovorgsintez	171.349	151.835
Volzhskiy Orgsintez	11.929	11.861
Akrilat	20.402	18.087
SIBUR-Khimprom	39.855	52.094
Omsk-Kaucuk	10.681	19.045
Tomskneftekhim	2.538	3.285
ZapSibNeftekhim	99.203	68.289
Ufaorgsintez	3.925	9.196
Khimprom Kemerovo	7.177	6.933
Plant of Synthetic Alcohol	7.882	8.181
Others	7.6	10.123
Total	392.903	373.106

Russia's largest merchant consumer Saratovorgsintez increased purchases of merchant propylene from 117,000 tons last year when the acrylonitrile plant underwent an extended shutdown to 138,400 tons, and SIBUR-Khimprom at Perm reduced purchases from 43,500 tons to 31,800 tons. The Plant of Synthetic Alcohol at Orsk reduced purchases to 7,882 tons in 2022, all used in the production of isopropanol.

Russian bulk polymers



Russian polyethylene production Jan-Dec 2022

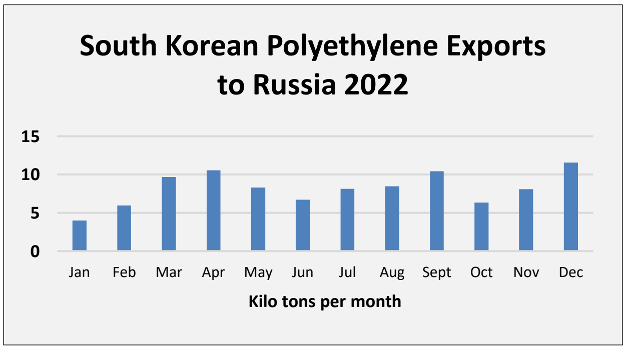
Russian polyethylene production totalled 3.483 million tons in 2022 against 3.512 million tons in 2021. Total plastics production dropped from 11.085 million tons to 10.248 million tons, impacted by the fall in industrial production.

Even though Russian polyethylene export activity to the EU countries was strong until July last year overall production was lower due to plant outages, particularly ZapSibNeftekhim at Tobolsk. Domestic consumption of polyethylene was helped mainly through the increase in production of pipes, primarily aimed at gas and water transportation.

South Korean Polyethylene Exports to Russia		
	Jan-Dec 22	***Jan-Dec 21***
Kilo tons	120.7	98.2
$ million	196.8	151.2

Russian polyethylene trade Jan-Dec 2022

Imports of polyethylene from South Korea into Russia increased in 2022 to 120,700 tons versus 98,200 tons in 2021. Costs of imports increased from $151.2 million versus $196.8 million. Imports from South Korea last year were helped partially due to lower shipments from Europe.



South Korea was the largest supplier of LLDPE to Russia in 2021, providing 39.4% of the total 61,000 tons of imported product. Other suppliers included Finland with 24% and the US with 15%, but volumes from both of those sources declined in 2022.

Exports of HDPE from Russia to China amounted to $227.6 million in 2022 against $329.760 million in 2021, with Russia's share amounting to 3.3% of Chinese imports down from 4.8%. The problem for Russian exporters in 2022 was that China's HDPE and LLDPE markets underwent lowest levels of growth for at least two decades. Thus, any gains for Russian polyethylene producers from extra sales to the EU (before the sanctions took effect in 2022) were offset by the drop in purchases from China.

ZapSibNeftekhim increases production of polyethylene pipe grade

Through the introduction of new catalysts ZapSibNeftekhim will be able to increase the production of high-tech grades of polyethylene by around 60% to 232,000 tpa. SIBUR also launched the production of a new brand of black pipe polyethylene in 2022.

SIBUR states that its exports of polyethylene to the Far East rose sharply last year but the statistical evidence from China for HDPE shows a decline in purchases from Russia in 2022. Polyethylene and polypropylene accounted for around 26% and 12% of SIBUR's respective revenues in 2022 but no other data is provided. As the Asian or specifically Chinese market comes under heavy supply pressure SIBUR has started looking at other regional markets such as Latin America for opportunities in polyethylene trade.

Chinese Polyethylene Exports to Russia		
	Jan-Dec 22	***Jan-Dec 21***
Kilo tons	91.169	25.4
$ million	149.171	39.288

China was able to increase polyethylene exports to Russia in 2022. This partly replaced some of the imports of polyethylene copolymers from Europe after the introduction of sanctions.

Russian polyethylene pipe production 2022

The pipe polymer market in 2022 amounted to 810,000 tons which was up from 685,000 tons in 2021. Around two thirds of the total volume of pipe polymers is occupied by polyethylene grades PE100. In 2022, 548,000 tons of this polymer were processed which was up 30% over 2021 from 422,000 tons. Another 20% growth is forecast for 2023, raising the total amount to 650,000 tpa. One Moscow based company Ariel Plastkomplekt plans to launch the production of fittings for polyethylene pipelines at its new enterprise adding to the existing manufacturing base. Numerous new players are being attracted to polyethylene processing in Russia in attempts to exploit the vacuum left by foreign suppliers.

Nizhnekamskneftekhim to produce components for polymer production

All Russian petrochemical producers are seeking alternative components, catalysts, and other high value products in order to maintain production levels. SIBUR and Nizhnekamskneftekhim have jointly developed a catalyst zirconium tetraisobutyrate (TIBC) which is used in the production of linear alpha-olefins, and thus should replace Western imports. The use of TIBC and hexene enables the production of special grades of polymer that have improved properties and are in demand, including in the production of medical products, packaging materials, gas and water supply systems. Quality provides the main challenge for any new products, whether it is realistic to expect similar Western standards in such a short space of time.

The largest producer of PE100 in Russia is SIBUR through its Tatar subsidiary Kazanorgsintez. PE100 is also produced by Gazprom neftekhim Salavat and Stavrolen (part of the Lukoil Group). The share of imports of PE100 in 2022 was estimated to comprise less than 10% of total consumption.

Polymer pipes are the only exception that showed growth last year. According to our data, the growth in the production of polymer pipes in physical terms over the past year amounted to a little more than 16%.

Russian polypropylene trade Jan-Dec 2022

Russian imports of propylene copolymers from South Korea dropped in 2022 to 30,262 tons from 33,077 tons in the same period in 2021. This is attributed to partly lower demand inside the Russian market and also a reorientation of Russian polypropylene producers towards the domestic market.

South Korean Exports of Propylene Copolymers to Russia

	Jan-Dec 22	*Jan-Dec 21*
Ktons	30.652	41.016
$ million	51.119	68.882

Polypropylene trade with between Russia and China in 2022 was relatively balanced with exports from Russia to China amounted to $82.279 million and imports from China amounting to $113.970 million.

Russian producers are trying to compensate for sanctions and reduce dependency on other polypropylene imports for a wide range of industries and applications such as automotive, food packaging, etc.

The emergence of Azerbaijan as a copolymer supplier in 2021 for Russian consumers has helped to reduce the impact of lost EU suppliers. Azerbaijan can produce up to 30,000 tpa of copolymers whilst Russian imports totalled 117,000 tons in 2021 of which EU suppliers provided around 33%.

SIBUR established the domestic market as its chief priority for 2022 but as sanctions on sales to EU take effect the group is looking to develop new external markets. The group hopes to increase exports to the countries of East Asia and South East Asia but needs to create transit points and distribution centres.

SIBUR to purchase Solvay's stake in RusVinyl at Kstovo

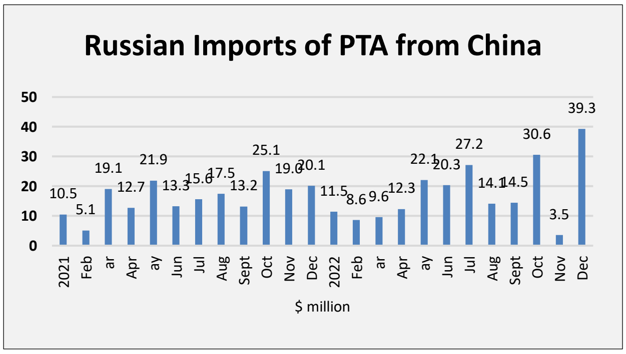
SIBUR has concluded an agreement to purchase Solvay's 50% stake in the jv RusVinyl at Kstovo, which is a major ethylene consumer for the SIBUR-Kstovo cracker. The share of RusVinyl in the volume of both production and sales of PVC in Russia is about 35%. At the same time, the capacity of the enterprise of 330,000 tpa makes it the country's largest producer of material in demand in the segments of housing and communal services, construction, etc.

Russian PX-PET Chain

Bashneft increases paraxylene capacity

Paraxylene was included on the list of EU sanctions, published on 8 April last year, although other products in the PX-PET chain have not been included in the official embargo. All of the paraxylene from Russia until now has been exported to Finland and Belarus, but Russian refineries have to find other markets or reduce utilisation rates. China is a huge importer of paraxylene, but logistics represents an issue for Russian exporters. Gazprom Neft at Omsk Is the only refiner that could export paraxylene at profit, assuming it could be shipped on the Trans-Siberian railway to the Russian Far East ports.

Bashneft (part of Rosneft) in 2023 has increased the production of paraxylene and orthoxylene at the Ufaneftekhim refinery after replacing the mineral adsorbent with a synthetic adsorbent of a new generation. Paraxylene capacity has been raised at Ufa from 165,000 tpa to 260,000 tpa. In 2016, Bashneft and SIBUR signed an agreement which entails that the Ufaneftekhim refinery supplies at least 120,000 tpa of paraxylene until 2036.



Ekopet PTA imports from China

PTA imports from China continue to provide the main basis for feedstock supplies for Ekopet at Kaliningrad. Imports amounted to $213.1 million in value in 2022 versus $193.1 million in 2020.

Regarding MEG supplies the Ekopet plant has been unable to receive MEG from SABIC since last spring, which until Russia invaded Ukraine had been the traditional supplier over the past few years. SIBUR-Neftekhim promptly replaced the Saudis by setting up monthly deliveries of up to 6,000 tons of the product.

Russian PET market and imports from China

Russia remains a net importer of PET, with China providing over 80% of imports. Russia imported 194,260 tons of PET from China in 2021 for $194.690 million, and whilst in 2022 volumes declined slightly values increased due to increased prices. Import values rose to $296.478 million with volumes rising to 242,500 tons. An important trend in the consumer market is the fall in incomes of the population which may affect consumption this year. The Russian PET market in 2022 experienced a trend where domestic companies were forced to develop than expected in order to replace international brands.

Titan-Polymer-BOPET plant

Titan-Polymer opened its BOPET plant near Pskov in the Moglino Special Economic Area in late December. The capacity of the new plant is 72,000 tpa including two lines. Up to 20,000 tpa of BOPET film are imported into Russia, mainly from Egypt, India, and Turkey.

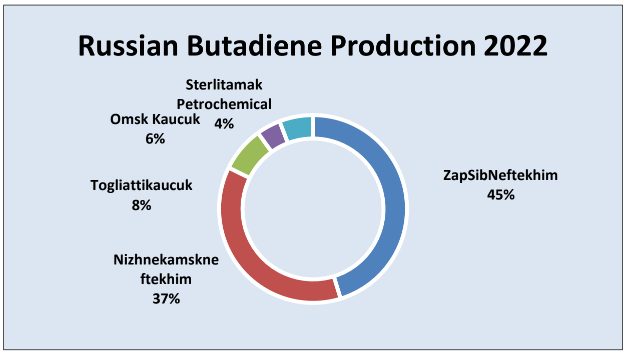
Two lines for the production of BOPET film of Titan-Polymer are capable of producing 72,000 tpa of products, which theoretically more than meets all of the country's needs and a surplus for export. Titan-Polymers product line includes six types of BOPET film with a thickness of eight to 50 micrometres (paper thickness, for example, is from 70 to 180 micrometres), including a transparent, metallized white film with a twist effect for packaging sweets and chocolate. Titan-Polymer will produce film from domestic and imported PET. Initially, the company expected that about a third of BOPET materials would be exported, primarily to Europe. However, due to sanctions the sales markets are being revised.

Russian synthetic rubber

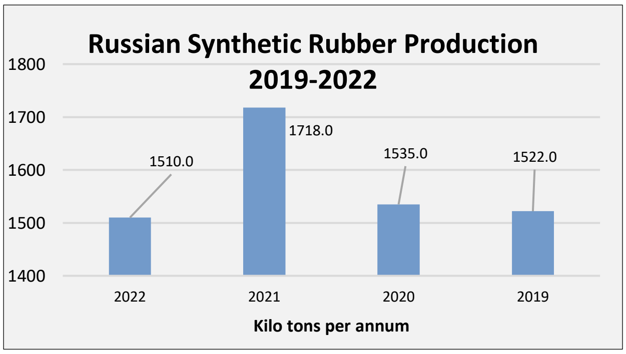
Russian C4 Purchases (unit-kilo tons)		
Consumer	***Jan-Dec 22***	***Jan-Dec 21***
Omsk Kaucuk	101.6	75.3
Nizhnekamskneftekhim	90.7	208.6
Togliattikaucuk	168.4	192.5
Sterlitamak Petrochemical Plant	11.8	19.6
Total	372.5	496.0

Russian rubber feedstocks Jan-Dec 2022

C4 purchases made by Russian synthetic rubber producers fell in 2022 to 372,500 tons against 496,000 tons in the same period in 2021. The largest fall in merchant purchases made last year took place at Nizhnekamskneftekhim, falling from 208,600 tons to 90,700 tons. The reduction was partly due to increased production of C4s by Nizhnekamskneftekhim and reduced synthetic rubber production.



Russian butadiene production totalled 144,500 tons in the fourth quarter against 152,900 tons in the third quarter. The largest producers ZapSibNeftekhim and Nizhnekamskneftekhim both showed lower production as 2022 progressed. ZapSibNeftekhim produces butadiene only for merchant market sales whilst Nizhnekamskneftekhim processes most of its butadiene into rubber SKD-N and SKD-L are butadiene rubbers based on neodymium and lithium catalysts.



Russian rubber production and consumption Jan-Dec 2022

Russian production of synthetic rubber dropped to 1.718 million tons in 2021 to 1.510 million tons in 2022. Production has declined particularly since the introduction of EU sanctions in July last year, with December production volumes reduced to 106,000 tons versus 170,000 tons in December 2021. Production in 2022 was only slightly down against volumes in 2020 and 2019 but these were two years where production was affected by external factors. The recovery in 2021 that resulted after 2020 and 2019 is not expected to repeat itself in 2023 where producers are largely excluded from European markets.

Russian exports of synthetic rubber

Chinese imports of synthetic rubber from Russia increased from $252.911 million in 2021 to $606.835 million in 2022.

Butadiene rubber, butyl rubber and halogenated butyl rubber are all products affected directly by sanctions, whilst isoprene rubber has thus far been excluded. The main problem facing isoprene rubber exports from Nizhnekamskneftekhim is logistics and the shipment of deliveries to European customers. Problems with alternative exports rest mainly on logistics. Even in cases where China is ready to buy, Russian producers cannot ship due to freight transportation limitations. As Russian exports of butadiene rubber and halogenated rubber to Central Europe are affected by logistics and sanctions, other regions such as China and Asia become more important for these products. Although not falling under EU sanctions, isoprene rubber exports to China from Nizhnekamskneftekhim have still risen sharply last year by values and volume. Exports of halogenated butyl rubber to China also rose in 2022 as Nizhnekamskneftekhim tried to compensate for the loss of European business with more sales in the East.

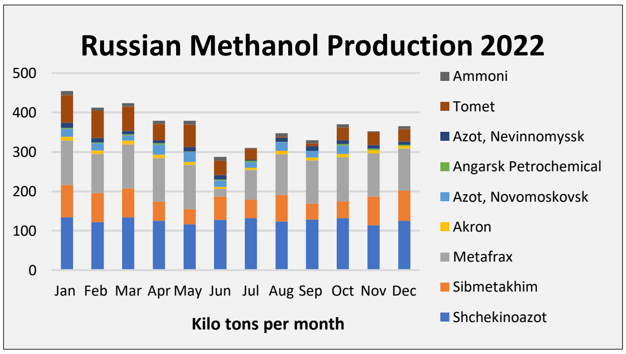
Russian Methanol Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Shchekinoazot	1512.827	1052.016
Gazprom Methanol	722.47	831.520
Metafrax Chemicals	1182.025	1210.800
Akron	95.175	105.355
Azot Novomoskovsk	191.67	245.195
Angarsk Petrochemical	31.456	32.123
Azot Nevinnomyssk	113.533	130.842
Tomet	469.56	705.218
Ammoni	92.378	121.229
Totals	4411.094	4434.298

Russian methanol market

Russian methanol production Jan-Dec 2022

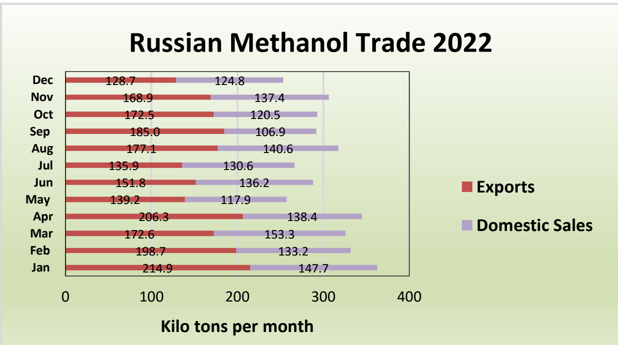
Russia produced 4.411 million tons of methanol in 2022 against 4.434 million tons in the same period in 2021. Only Shchekinoazot was able to record an increase in 2022, rising from 1.052 million tons to 1.513 million tons.

Metafrax Chemicals at Gubakha produced 1.182 million tons against 1.211 million tons in January-December 2021, whilst Gazprom Methanol at Tomsk reduced production from 831,520 tons to 722,470 tons.



Tomet reduced production from 546,600 tons to 404,900 tons in January to December 2022 whilst Azot at Novomoskovsk reduced production from 245,195 tons to 191,670 tons. Ammoni in Tatarstan reduced methanol production from 121,229 tons in 2021 to 92,378 tons in 2022.

Over the course of 2022 Russian methanol production edged lower as the year progressed. January recorded the highest output at 454,175 tons followed by 412,185 tons in February and 423,533 tons in March. For the remaining nine months production volumes were all under 400,000 tons per month with June recording the lowest volume at 287,516 tons.



Market overview & sanctions

Last year's overall trend for Russian domestic merchant sales for methanol and exports showed a gradual decline which was a direct result from the invasion of Ukraine and the economic consequences from embargoes, etc. The prospects for 2023 for Russian producers are dominated by the introduction of sanctions by the EU against Russian exports. The ninth package of EU sanctions stated that all transactions for contracts concluded prior and to 7 October 2022 need to be completed by 8 January 2023. Since then, an amendment has been added allowing contracts that were concluded prior to 7 October to completed up to 18 June this year. That extension seems to have revived some uncompleted contracts which were assumed to have missed the deadline.

On average around 70% of exports in the past few years have been directed monthly to the EU. It is not feasible to be able to replace this trade in the short term and probably even the medium term considering the geographical locations of the plants. New destinations for Russian exports last year have included China and Turkey, but volumes to both countries are limited by logistical hurdles. Most plants in Russia are located in the western parts of the country that make selling to China or the Far East difficult, both logistically and economically.

Russian methanol exports, Jan-Dec 2022

Russian producer exports of methanol rose from 1.899 million tons in 2021 to 2.069 million tons in January to December 2022. Tomet exported 121,500 tons of methanol in 2022 down from 257,800 tons in 2021. Metafrax Chemicals increased exports from 406,900 tons in January to December 2021 to 467,900 tons in 2022 whilst Gazprom Methanol reduced exports from 400,000 tons to 311,700 tons.

The largest Russian exporter in 2022 was Shchekinoazot shipping 1.084 million tons versus 734,000 tons in January to December 2021.

Russian Methanol Exports by Producer (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Azot Nevinnomyssk	4.5	5.1
Azot Novomoskovsk	72.8	85.8
Akron	4.9	9.1
Metafrax Chemicals	467.9	406.9
Gazprom Methanol	311.7	400.0
Tomet	121.5	257.8
Shchekinoazot	1084.2	734.0
Ammoni	1.5	0.1
Total	2069.0	1898.7

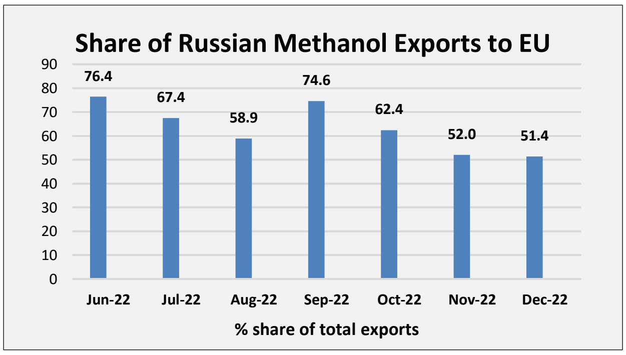
Russian Methanol Exports by Destination		
Country	***Jan-Dec 22***	***Jan-Dec 210***
Belarus	238.548	122.229
China	164.422	0.000
Finland	702.518	787.190
Kazakhstan	38.629	19.971
Latvia	62.173	9.883
Lithuania	60.299	83.555
Netherlands	145.072	157.112
Poland	450.659	328.832
Romania	26.488	79.646
Slovakia	49.035	202.910
Turkey	111.385	6.423
UK	8.398	11.702
Ukraine	11.916	66.894
Others	0.543	22.354
Total	2069.0	1898.700

Destination figures reflected huge changes in 2022, setting the basis for 2023. Finland accounted for 702,518 tons of Russian methanol exports against 787,190 tons in the same period in 2021. Poland increased deliveries from Russia from 328,832 tons to 450,659 tons whilst exports to the Netherlands rose from 157,112 tons to 145,072 tons. Direct exports to Hungary, Romania, Slovakia and Ukraine stopped earlier in 2022. Most of the methanol purchases made by those countries last year started in Poland.

Turkey and China represented new directions for Russian methanol exports, rising for Turkey from 6,423 tons in 2021 to 111,385 tons in 2022 and for China from no activity in 2021 to 164,422 tons in 2022. Russian sales to China came with a large discount, with average revenues yielding around $240 per ton.

Despite lower costs Russian producers face serious competition in East and South Asia where there is a presence of suppliers from the Middle East, and also US. Large volumes of supply of Middle Eastern methanol helps to keep spot prices in China at a relatively low level. At the same time, logistics costs to Asian markets for Russian producers are at least a quarter higher than the level of supply costs to Europe.

The share of the methanol exports to the EU remained significant last year measured against total exports, despite the situation in Ukraine. The EU region accounted for 51.4% of exports in December which was the lowest share last year but even this figure is high compared to forecast numbers in 2023. European markets provide the best profitability for Russian producers, the shortest lead-times, etc, but the actions of the Russian leadership have destroyed this successful market.



Polish traders became very active in 2022 in sourcing Russian methanol for redistribution in Central and South East Europe, but this supply chain is already undergoing significant change in 2023 as the result of sanctions.

Russian Methanol Supply/Demand Balance (unit-kilo tons)		
	Jan-Dec 22	***Jan-Dec 21***
Production	4411.4	4433.4
Exports	2069.0	1898.8
Domestic	1589.1	1666.9
Market Balance	753.3	867.7

Russian methanol exports 2022-2023

Exports have been forecast by Russian producers to fall by about 20% in 2023 after the introduction of sanctions from 8 January. This could potentially be much larger considering the loss of the European market. Estimates of up to 700,000 tons in 2023 could be shipped through the Far East against only 165,000 tons in 2022. Profitability is a problem though and for some producers the Far East does not represent a long-term option. Shchekinoazot is the methanol producer most vulnerable to restrictions on exports to the EU. Overall, the company exported 71.7% of its total production in 2022, with Poland receiving the largest amount of its exports by rail. Shchekinoazot does

use methanol for formaldehyde and resin derivative production, but this accounts for only a small share of its market sales.

Metafrax Chemicals exported 39% of its production in 2022. Although exports comprise an important part of the company's current sales distribution, internal processing is still more important long-term in addition to selling on the domestic merchant market. In the event of reduced exports or restrictions to exports Metafrax will most probably adjust its utilisation rate downwards. To what degree would depend primarily on formaldehyde production levels and how the domestic merchant market performs.

Russian Methanol Domestic Sales (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Azot Nevinnomyssk	16.510	25.349
Azot Novomoskovsk	124.066	155.455
Metafrax Chemicals	419.557	442.692
Gazprom Methanol	354.260	387.447
Tomet	322.500	393.929
Shchekinoazot	303.092	192.183
Ammoni (Mendeleevsk)	49.152	69.796
Total	1589.136	1666.851

Russian methanol domestic sales, Jan-Dec 2022

Merchant sales of methanol on the Russian domestic market amounted to 1.590 million tons in 2022 against 1.667 million tons in 2021. Tomet reduced sales from 393,929 tons to 322,500 tons whilst Gazprom Methanol reduced sales from 387,447 tons to 354,260 tons. Metafrax Chemicals reduced shipments to the domestic market from 442,692 tons in January to December 2021 to 419,557 tons in 2022.

As the largest merchant consumer Nizhnekamskneftekhim purchased 263,695 tons in 2022 against 315,303 tons in 2021 whilst Gazprom increased purchases from 206,040 tons to 238,776 tons. Nearly all of the methanol purchases made by Gazprom come from its subsidiary Gazprom Methanol.

Russian Methanol Purchases by Consumer (unit-kilo tons)		
Consumer	***Jan-Dec 22***	***Jan-Dec 21***
Nizhnekamskneftekhim	263.695	315.303
Togliattikaucuk	60.212	116.652
Uralorgsintez	60.516	60.946
SIBUR-Khimprom	1.923	21.680
SIBUR Tobolsk	47.018	45.089
Omsk Kaucuk	103.559	89.167
Novokuibyshevsk NPZ	33.815	38.704
Uralkhimplast	19.057	23.234
Slavneft-Yanos	13.547	16.371
Metadynea	63.280	98.382
Kronospan	92.346	116.390
Gazprom	238.776	206.040
Khimsintez	38.922	36.259
Volzhsky Orgsintez	56.318	21.286
Togliattiazot	126.927	87.561
Others	369.226	373.787
Total	1589.136	1666.851

Togliattikaucuk reduced methanol purchases from 116,652 tons in January to December 2021 to 60,212 tons, the drop being mainly due to lower MTBE production. In the sector for urea-formaldehyde resins Kronospan bought 92,346 tons of methanol in 2022 against 116,390 tons in January to December 2021 and Metadynea reduced purchases from 98,232 tons to 63,280 tons.

Uralkhimplast at Nizhniy Tagil reduced methanol purchases for resin production from 23,234 tons to 19,057 tons. Khimsintez increased purchases of methanol from 36,259 tons in 2022 to 38,922 tons in January to December 2022. Khimsintez is focused on the production of chemical products for technical purposes including formalin and synthetic resins.

Shchekinoazot increased domestic merchant sales of methanol to 303,092 tons in 2022 against 192,183 tons in 2021. Regarding methanol internal processing at Shchekinoazot new units for formaldehyde derivatives should have started construction by now but timing has been delayed due to market uncertainties. If exports fall for Shchekinoazot as forecast the company will most probably have to shut at least one of its three methanol plants.

Russian organic chemicals

Russian N-Butanol Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Angarsk Petrochemical company	32.3	26.3
Azot Nevinnomyssk	18.2	15.4
Gazprom neftekhim Salavat	72.7	54.2
SIBUR-Khimprom, Perm	30.8	28.7
Total	154.2	124.7
Russian Isobutanol Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Angarsk Petrochemical Company	22.2	17.3
Gazprom neftekhim Salavat	35.3	32.5
SIBUR-Khimprom, Perm	57.5	37.0
Total	115.0	86.8

Russian butanol production Jan-Dec 2022
Production of butanols increased last year due to the higher internal processing whilst the merchant market remained sluggish. Consumption of paints in Russia remains weak following the exodus of foreign producers.

Russian normal butanol production rose from 124,700 tons in 2021 to 154,200 tons in 2022. Gazprom neftekhim Salavat was the largest Russian producer, increasing production from 54,200 tons to 72,700 tons in January to December 2022.

Isobutanol production in Russia increased from 86,800 tons in 2021 to 115,000 tons in 2022. SIBUR-Khimprom increased production from 86,800 tons in 2021 to 115,000 tons.

Russian Plasticizer Trade 2022 (unit-kilo tons)		
Exports	***Jan-Dec 22***	***Jan-Dec 21***
DOTP	12.515	19.052
Imports		
DOP	2.129	2.178
DOTP	5.133	14.095
DINP	21.917	39.294
Total	29.179	55.567

SIBUR DOTP Exports (unit kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Belgium	0.468	3.074
Germany	0.566	1.324
Netherlands	3.542	4.423
Uzbekistan	4.384	2.234
Switzerland	0.375	1.060
France	0.000	1.531
Italy	0.185	0.938
Portugal	0.000	0.706
UK	0.306	0.777
US	0.120	0.628
Others	2.569	2.357
Total	12.515	19.052

Russian plasticizer market Jan-Dec 2022
DOTP and DOP import shipments into Russia continue to fall and only DINP remains above a thousand tons per month.

Imports of DINP amounted to 21,017 tons in January to December 2022 whilst DOTP imports dropped to 5,133 tons versus 14,095 and DOP dropped from 2,178 tons to 2,129 tons. Over half of the of the imports are being sourced from South Korea where previously they were supplied mostly from European companies. The main feature of the market in 2022 was the change in supply sources from Central and West European sellers to sources from Turkey, South Korea and China.

SIBUR's DOTP exports dropped from 19,052 tons in January to December 2021 to 12,515 tons in the same period in 2022. The largest EU destination was the Netherlands accounting for 3,542 tons, down from 4,423 tons in the previous year. Exports to Belgium dropped from 3,074 tons to 468 tons and to Germany from 1,324 tons to 566 tons. No deliveries to France were made in 2022 after shipments of 1,531 tons in 2022 whilst Italy reduced inward deliveries from 938 tons to 185 tons.

Whilst exports to EU markets dropped in 2022 shipments to Uzbekistan increased from 2,234 tons to 4,384 tons.

Russian Acetone Production (unit-kilo tons)		
Producer	***Jan-Dec 22***	***Jan-Dec 21***
Ufaorgsintez	33.5	46.3
Kazanorgsintez	42.4	49.3
Novokuibyshevsk Petrochemical	32.4	42.0
Omsk Kaucuk	27.4	30.5
Total	135.6	168.0

Russian acetone market Jan-Dec 2022
Russian acetone production amounted to 135,600 tons in 2022 against 168,000 tons in the same period in 2021. Omsk Kaucuk produced 27,400 tons of acetone against 23,500 tons whilst Kazanorgsintez reduced production from 49,300 tons to 42,400 tons. Novokuibyshevsk Petrochemical Combine reduced production from 42,000 tons to 32,400 tons.

Ukraine

Ukrainian Methanol Imports (unit-kilo tons)		
Country	***Jan-Dec 22***	***Jan-Dec 21***
Poland	21.886	0.429
Russia	11.916	66.894

Ukrainian methanol supply from Poland
Until the Russian invasion in 2022, Ukraine purchased nearly all of its methanol from Russia but has now resolved much of the supply issues and can now survive without Russian imports. In the first months of the war it was difficult for Ukrainian methanol consumers to establish direct deliveries from Europe, but volumes were small due to problems with a sufficient number of carriers that would meet European requirements and were ready to go to Ukraine.

By the end of 2022, however, Ukrgasvydobuvannya was able to establish stable relations with several carriers for methanol delivery to Ukraine. Contracts were concluded with Trans-Service-1 LLC, Speshl Mining Solutions LLC and Miko-Trans-1 LLC. Currently delivery from the European hub in Szczecin (Poland) costs about €4000 per car or €180 per ton (comprising €130 to the border and another €50 to Ukraine).

In mid-February this year Ukrgasvydobuvannya signed an agreement worth around €5 million with the Polish company Solvachem for the supply of 12,000 tons of methanol for delivery in 2023. According to the terms of the contract, the delivery price on FCA Szczecin terms is €427 per ton and is quarterly recalculated. Prices have started falling from the peak of €505 due to lower gas costs.

As a result, this made it possible to conclude a large contract with a direct supplier from Poland, according to which the main volume of supplies will take place during 2023. Taking into account the cost of delivery European methanol is now purchased even on better terms than Russian methanol was previously purchased.

At the same time, all deliveries invariably went from Russia along the direct railway route from the Tula region (Shchekinoazot) to Poltava. Methanol was delivered by rail from Tula to a distance of 700 km, costing only 30 euros per ton in 2021. Methanol is now shipped over 1720 km from Szczecin in Poland.

Ukrainian methanol supply from the US
Ukrainian gas company Ukrgazvydobuvannya has arranged with the US to receive 6,000 tons of methanol, which it uses for the extraction, treatment and transportation of natural gas. The first batch of methanol has already arrived at the company's warehouses. Methanol has been obtained in the framework of cooperation with the US Agency for International Development (USID).

Since the beginning of a full-scale war in Ukraine, there was a shortage of a large amount of materials and equipment for gas production. Thus, Ukrgazvydobuvannya has been negotiating with companies and organizations from around the world for assistance with their provision to maintain the stability of production processes. USAID representatives were among the first to respond to the request. The company estimates that production in 2023 will amount to around 19 billion cubic metres of gas.

Ukrainian fertiliser production 2022
Ukraine in 2022 reduced the production of nitrogen fertilisers by 4.6 times, to 1.13 million tons. In 2021, the production of this type of fertiliser in the country amounted to 5.2 million tons. At the same time, the country increased imports from 1.4 million to 4.3 million tons. Last year, only Rivneazot and Cherkassy Azot remained operational.

According to estimates the country's fertiliser market in 2022 decreased in the range of 40-60% from 4.75 million to 2-2.9 million tons. The company noted that logistics and supply chains were destroyed, export volumes decreased due to regulatory and other restrictions. Another reason for the fall in production was interruptions in electricity, high gas prices, a decrease in effective demand from farmers by at least 40%.

Central Asia

Uzbek polyethylene exports 2022
The Eurasian Customs Union, dominated by Russia, has imposed an anti-dumping duty on import of polyethylene from Uzbekistan. For a period of five years, an anti-dumping duty has been established on Uzbek HDPE. This should make it more difficult for Uzbek producers such as the Shurtan Gas Chemical Complex and Uz-Kor Gas Chemical to sell into the Russian and Kazakh markets. In 2022 Uzbekistan exported 36,200 tons of polyethylene to Russia and 20,500 tons to Kazakhstan. Turkey remains the main importer of polyethylene from Uzbekistan. In total Uzbekistan exported 21,267 tons of polyethylene in 2022 for $267.5 million.

Uzbekistan Polyethylene Exports (unit-kilo tons)	
Country	***Jan-Dec 22***
Turkey	95.4
China	54.1
Latvia	41.3
Russia	36.2
Kazakhstan	20.5
UK	6.1
Lithuania	4.2
Georgia	3.2
Portugal	1.7
Ukraine	1.9
Total	266.5

HDPE production in Uzbekistan is carried out by the companies Uz-Kor Gas Chemical and the Shurtan Gas Chemical Complex. Uz-Kor Gas Chemical was put into operation in 2016 and possess production capacities for ethylene at 400,000 tpa, HDPE at 387,000 tpa, propylene and polypropylene 83,000 tpa. The Shurtan gas chemical complex, commissioned in 2011, has a production capacity of 125,000 tpa. Both polyethylene plants belong to Uzbekneftegaz with a production capacity of 600,000 tpa including the Shurtan and Ustyurt gas chemical plants. Domestic demand has been increasing in Uzbekistan, rising by around 17% in 2022.

Until the recent launch of the Kazakh polypropylene plant near Atyrau Uzbekistan was the largest producer of polymers in Central Asia. It accounts for more than half of the total output in the region. At the same time, in the next decade, he wants to increase the production of polymers by more than 50%.

SOCAR methanol production & exports 2022

SOCAR produced 534,500 tons of methanol in 2022, 41,4% than in the same period in 2021. Exports amounted to 504,000 tons in 2022 for revenues of $131.932 million. Exports increased from 378,700 tons in 2021.

Azerbaijan Methanol Market (unit-kilo tons)		
	Jan-Dec 22	***Jan-Dec 21***
Production	534.5	378.7
Exports	504.4	325.5

Kazakh logistical issues for petrochemical sales

Kazakhstan Petrochemical Industries (KPI) plant hopes to achieve full production capacity 519,000 tpa of polypropylene by the end of 2023, the bulk of which will be shipped for export. More than 90% of shipments of polypropylene with KPIs will be shipped in containers, and to the domestic market in covered wagons. In addition, vehicles will be involved in transportation.

Tatneft buys Uzbek tyre plant

Tatneft has purchased 91.8% of the Angren Tyre Plant in Uzbekistan in the first part of 2023. Uzkhimprom signed an agreement with Tatneft to sell 100% of the assets of the plant in the Tashkent region, the only tyre manufacturer in Uzbekistan. The agreement on the sale of the plant for $80 million. In August 2018, Uzkhimprom completed the construction of the Angren tyre plant worth about $200 million. The production capacity is 3 million automobile tyres per annum, in addition to 200,000 agricultural tyres and 100,000 linear metres of conveyor belt.

Also, the Atyrau Refinery plans to increase the production and export of aromatic hydrocarbons in 2023. The plant plans to produce 208,300 tons of paraxylene and 35,700 tons of benzene this year. Besides aromatics last year Kazakhstan began supplying MTBE for export for the first time. In 2021, the Shymkent Petrochemical Company (SHNH) completed the construction of an enterprise in the south of Kazakhstan for the production of 57,000 tpa of MTBE and 81,000 tpa of powdered polypropylene. areas.

The bulk of the products are planned to be exported by rail, which will require the involvement of an additional fleet of covered wagons and fitting platforms. Despite the increase in the fleet of fitting platforms attracted for container transportation of petrochemical products, the demand for such cars in the country is still ahead of supply. Thus, the cost of attracting covered wagons in Kazakhstan increased due to the shortage of the fleet, which arose due to the slowdown in traffic. In 2023, rental rates will continue to grow, as the KPI plant will reach full capacity, and due to infrastructure constraints, it will be necessary to attract more cars to ensure uninterrupted supplies.

Aktau ammonia and urea project

Spanish company Tecnicas Reunidas has agreed to invest in the construction of an industrial complex for the production of ammonia and urea near Aktau in western Kazakhstan. KazAzot decided upon the project contractor for the design and construction of a new ammonia-urea complex with a total investment of about $1 billion. The new plant will be located in the special economic zone Seaport Aktau, where the priority activity is the production of chemical industry products. Under the terms of the contract worth €16.75 million Técnicas Reunidas will complete the basic project within 12 months. Currently KazAzot plant produces 400,000 tpa of ammonium nitrate. The total volume of products from the new plant, including urea and ammonium nitrate, will comprise 1.5 million tpa with a planned completion date in the fourth quarter in 2026.

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