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Chemical Industry

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As of 2024 (starting from no. 110), the Sector Analyses publication will be published in English as well.



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Main sector indicators

“In 2023, the manufacture of chemicals and chemical products recorded a year-on-year decline of 2.7 percent, while the manufacture of rubber and plastic products recorded a decline of 3.6 percent.

The chemical sector, defined on the basis of the statistical classification of economic activities (NACE Rev. 2, i.e., the European Classification of Economic Activities 2007), in a broader sense includes the manufacture of chemicals and chemical products (division C20), the manufacture of rubber and plastic products (division C22), and the manufacture of basic pharmaceutical products and pharmaceutical preparations (division C21)¹. The manufacture of chemicals and chemical products includes the manufacture of basic chemicals, fertilizers and nitrogen compounds, plastics and synthetic rubber in primary forms; manufacture of pesticides and other agrochemical products; manufacture of paints, varnishes and similar coatings, printing inks and mastics; manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations; manufacture of other chemical products and manufacture of man-made fibers. On the other hand, the manufacture of rubber and plastic products includes the manufacture of rubber tires and tubes; manufacture of other rubber products; manufacture of plastic products; manufacture of plastic plates, sheets, tubes, and profiles; manufacture of plastic packing goods; manufacture of builders' ware of plastic and other plastic products. Among the existing products of the chemical industry and the plastic and rubber industry in Croatia, the manufacture of technical gases, polymers, rubber, and plastic products, cleaning preparations, and paints and varnishes is at the forefront.

Table 1
Main sector indicators, year-to-year rates of change in 2022 and 2023, in %

Source: The author's calculation according to data from the Croatian Bureau of Statistics.

	2022	2023
Manufacture of chemicals and chemical products – C20		
Production change	-21.4	-2.7
Employment	1.9	-1.8
Gross wages (nominal)	6.5	10.9
Manufacture of rubber and plastic products – C22		
Production change	3.7	-3.6
Employment	0.7	-3.0
Gross wages (nominal)	8.7	14.7

¹ Analysis of the pharmaceutical industry will be published in a special issue of *Sector Analyses*, which will be published in September.

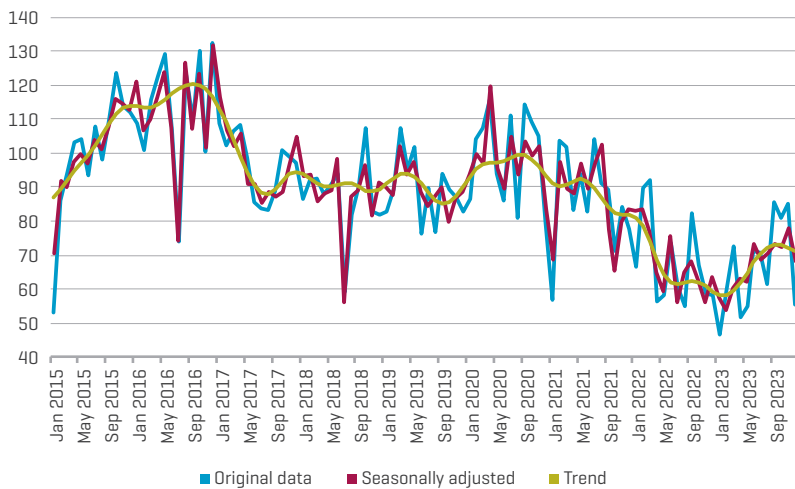
According to the latest available data from 2021, the share of the chemical sector in Croatia's gross domestic product (GDP) was 0.92 percent. At the same time, the manufacture of chemicals, chemical products, and man-made fibers accounted for 0.35 percent, while the manufacture of rubber and plastic products accounted for 0.57 percent of GDP that year.

At the same time, the share of the manufacture of chemicals, chemical products, and man-made fibers in the total gross value added (GVA) of the manufacturing industry was 3 percent, while the share of manufacture of rubber and plastic products was 4.9 percent. For comparison, a year earlier, 4 percent of the GVA of the entire manufacturing industry was achieved in the manufacture of chemicals and chemical products, while 4.8 percent was achieved in the manufacture of rubber and plastic products.

In the total employment of the manufacturing industry in 2023, the chemical industry sector participated with a share of 7 percent. If viewed separately, the manufacture of chemicals and chemical products in the total employment of the manufacturing sector in 2022 participated with 2.5 percent, while the manufacture of plastic and rubber products participated with 4.5 percent.

Figure 1
Manufacture of chemicals and chemical products, 2015 = 100, from January 2015 to December 2023

Source: The Institute of Economics, Zagreb, based on source data from the Croatian Bureau of Statistics.



In 2023, the total industry production achieved a year-on-year decline of 0.3 percent. For comparison, a year earlier, industry production recorded a year-on-year growth of 1.2 percent, and in 2021 a growth of 6.2 percent. Looking at the divisions of the European Classification of Economic Activities, the highest year-on-year growth in 2023 was recorded in the manufacture of electrical equipment (22.8 percent), followed by the manufacture of basic pharmaceutical products and pharmaceutical preparations with

year-on-year growth of 20.7 percent, the manufacture of other transport equipment with a growth of 13.2 percent, and the manufacture of motor vehicles, trailers and semi-trailers, which recorded a year-on-year growth of 6 percent. On the other hand, the largest year-on-year decline in production last year was recorded in the manufacture of textiles [-24.3 percent], in the manufacture of wood and products of wood and cork, except furniture; in the manufacture of articles of straw and plaiting materials [-14.5 percent], and in the manufacture of furniture [-14 percent].

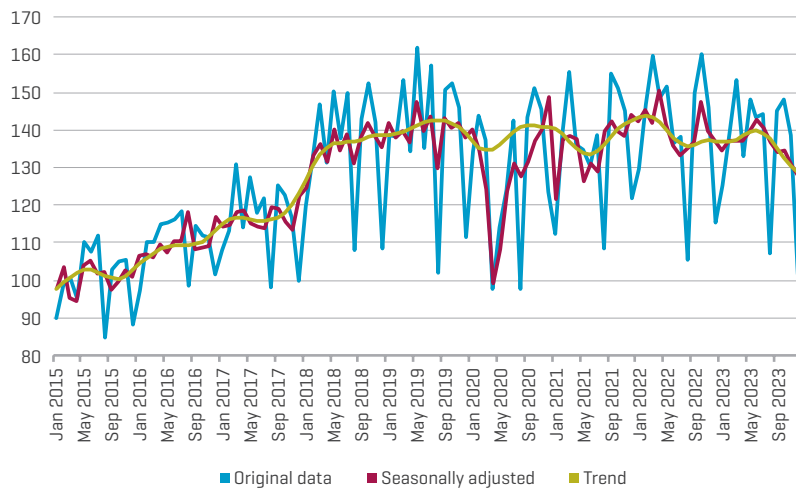
The manufacture of chemicals and chemical products recorded a year-on-year decline for the third year in a row. Thus, in 2023, it recorded a decline of 2.7 percent, in 2022 of 21.4 percent (Table 1), and in 2021 of 12.9 percent. For comparison, this industry achieved a year-on-year growth of 11.3 and 2.3 percent in 2020 and 2019. Although seasonally adjusted data show that manufacture of chemicals and chemical products in the last quarter of 2023 increased by 3 percent compared to the previous one, it is still too early to talk about a possible recovery of this industry.

The year-on-year decline in the manufacture of chemicals and chemical products had a negative impact on employment trends, but not on wages. Compared to 2022, in 2023, the average monthly nominal gross wages of employees in this industry nominally increased by 10.9 percent, while employment decreased by 1.8 percent, on average. When analyzing wage trends, one should also consider the fact that, according to data from the Croatian Bureau of Statistics, inflation of 8 percent was recorded at the level of the entire Croatian economy last year. The average gross wage paid in December 2023 in the manufacture of chemicals and chemical products was 1,467 euros, which was 9.4 percent below the average of the economy and 2 percent above the average of the entire manufacturing industry.

After achieving year-on-year growth for two years in a row, i.e., by 4.7 percent in 2021 and 3.7 percent in 2022, the manufacture of plastic and rubber products recorded a year-on-year decline of 3.6 percent in 2023. If we look at the seasonally adjusted data, according to which this industry recorded a 4.4 percent decrease in production in the last quarter of 2023 compared to the previous quarter, it can be assumed that the prospects for the recovery of this industry during this year will be limited (Figure 2).

Figure 2
Manufacture of rubber and plastic products, 2015 = 100, from January 2015 to December 2023

Source: The Institute of Economics, Zagreb, based on source data from the Croatian Bureau of Statistics.



The decline in the manufacture of rubber and plastic products during the past year had a negative impact on the employment trend, while wages recorded an increase. Thus, compared to 2022, in 2023, the average monthly gross wages in this industry recorded a nominal growth of 14.7 percent, while employment decreased by 3 percent. Despite wage increases, wages in the manufacture of rubber and plastic products remain among the lowest in the manufacturing industry. The average nominal gross wage paid in December 2023 in the manufacture of rubber and plastic products was 1,266 euros, which was 21.9 percent below the average of the economy and 12 percent below the average of the entire manufacturing industry. Lower wages were paid in only six industries, that is, in the manufacture of wearing apparel, the manufacture of leather and related products, the manufacture of textiles, the manufacture of wood and products of wood and cork, the manufacture of furniture, and other manufacturing industries.

While producer prices at the level of the overall manufacturing industry in December 2023 remained unchanged compared to December 2022, producer prices in the manufacture of chemicals and chemical products in the same period recorded a decline of 4.3 percent. At the same time, the prices of rubber and plastic products recorded a decline of 3.3 percent.

Contrary to the manufacturing industry, which recorded a year-on-year increase in labor productivity by 1.1 percent during the period from January to December 2023, the labor productivity of the manufacture of chemicals and chemical products achieved a decline by 1.4 percent. At the same time, the manufacture of rubber and plastic products recorded a slight decline in labor productivity by 0.4 percent. The decline in labor productivity in both industries can be attributed to a stronger decline in production compared to the decline in employment over the same period.

IN DECEMBER 2023, PRICES OF PRODUCERS OF CHEMICALS AND CHEMICAL PRODUCTS RECORDED A YEAR-ON-YEAR DECLINE OF 4.3 PERCENT, WHILE PRICES OF PRODUCERS OF RUBBER AND PLASTIC PRODUCTS RECORDED A DECLINE OF 3.3 PERCENT.

In the total export of the manufacturing industry realized from January to December 2023, the chemical sector² participated with 10.2 percent, whereby the manufacture of chemicals and chemical products participated with 6.5 percent, and manufacture of plastic and rubber products with 3.7 percent. At the same time, in the total import of the manufacturing industry, the chemical sector participated with 12.5 percent (the manufacture of chemicals and chemical products with 8.3 percent and manufacture of plastic and rubber products with 4.2 percent). Compared to the previous year, the export of the chemical sector in 2023 increased by 0.9 percent, while the import decreased by 5.1 percent. At the same time, the manufacture of chemicals and chemical products recorded an increase in exports of 4.2 percent, and a decrease in imports of 6.7 percent. Simultaneously, in the manufacture of semi-finished and finished rubber and plastic products, exports are decreasing faster than imports. Thus, in the period from January to December 2023, the export of the manufacture of plastic and rubber products decreased by 4.2 percent and the import by 1.8 percent year-on-year. Due to the dependence on imported raw materials, both industries constantly record a foreign trade deficit. The foreign trade deficit of the manufacture of chemicals and chemical products in 2023 was 1.5 billion euros, and that of rubber and plastic products was 711.9 million euros.

² The chemical sector includes the manufacture of chemicals and chemical products and the manufacture of rubber and plastic products.

Trends

Compared to 2019, the total production of chemicals and chemical products in 2023 was lower by 25.8 percent. Nevertheless, this industry simultaneously records an increase in employment (Figure 3). Thus, in December 2023, the manufacture of chemicals and chemical products employed 5,910 employees, which is 223 (or 5.6 percent) more employees compared to December 2019. This trend resulted in an increase in the share of the manufacture of chemicals and chemical products in the total employment of the manufacturing industry, i.e., from 2.4 percent in December 2019 to 2.5 percent in the same month of 2023. Additionally, it is important to note that even in comparison with January 2023, in January of this year, this industry recorded a decline in employment [41 fewer persons employed].

Figure 3
Persons employed in legal entities, manufacturing industry, manufacture of chemicals and chemical products, from January 2019 to January 2024

Source: Croatian Bureau of Statistics.

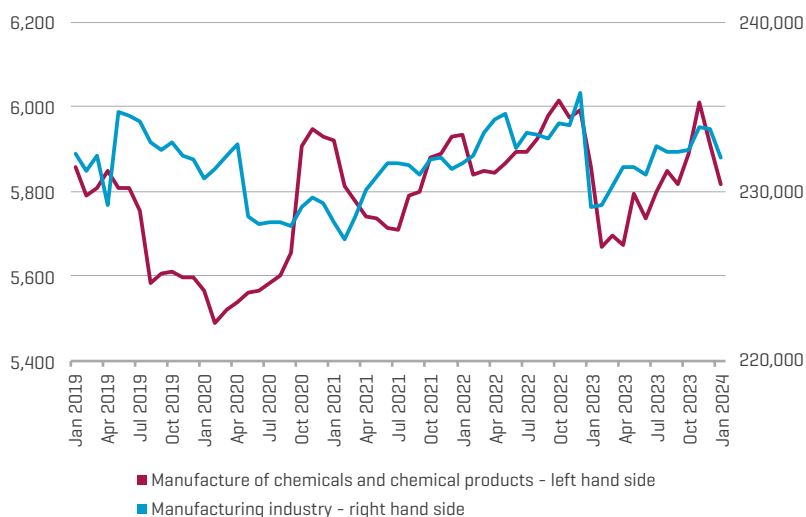


Table 2 shows data on average monthly gross wages paid in this industry from 2019 to 2023 (annual averages). The average gross wages paid in 2023 in the manufacture of chemicals and chemical products were nominally higher by 26.5 percent compared to the average in 2019. If you compare the ratio of wages paid in the manufacture of chemicals and chemical

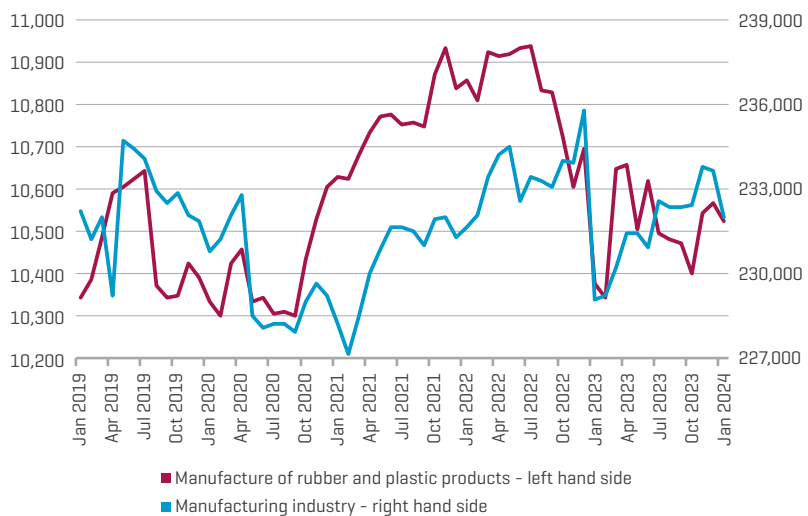
COMPARED TO 2019, THE MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS IN 2023 WAS LOWER BY 25.8 PERCENT.

products and wages paid at the level of the entire manufacturing industry during the period from 2019 to 2023, it is evident that, throughout the observed period, the wages paid in this industry were above the average of the manufacturing industry, but below the national average. Although the average gross wages paid in the manufacture of chemicals and chemical products in 2019 approached the average of the Croatian economy [98.9 percent of the national average], from 2020 the deviation from the national average is increasing again [from 97.3 in 2020 to 91.9 percent of the national average in 2023].

Although during the period from 2019 to 2023, the manufacture of plastic and rubber products also recorded a decline in production, it is nevertheless significantly weaker compared to the decline in the manufacture of chemicals and chemical products. Compared to 2019, the total manufacture of plastic and rubber products in 2023 was lower by 3.2 percent. After three years of consecutive year-on-year growth in the production of this industry (by 11.2 percent in 2020, 4.7 percent in 2021, and 3.7 percent in 2022), in 2023 it recorded a year-on-year decline of 3.6 percent.

Figure 4
Persons employed in legal entities, manufacturing industry, manufacture of rubber and plastic products, from January 2019 to January 2024

Source: Croatian Bureau of Statistics.



“The producer prices of chemicals and chemical products in 2023 were lower by 3.7 percent compared to the previous year, while the producer prices of rubber and plastic products were lower by 1.8 percent.

The manufacture of rubber and plastic products employed 10,522 employees in January 2024, which is 177 employees [1.7 percent] more than in the same month of 2019. Figure 4 shows two periods in the trend of the number of employees in this industry. The first period was marked by an increase in the number of employees, from 10,345 employees in January 2019 to 10,939 employees in July 2022. This is followed by a period of decrease in employment. While the manufacture of chemicals and chemical products recorded a slight increase in the share of the total employment of the manufacturing industry in the period from 2019 to 2023, the share of the manufacture of plastic and rubber products remains unchanged at the level of 4.5 percent.

Average gross wages paid in 2023 in the manufacture of plastic and rubber products were nominally 36.4 percent higher than the 2019 average. This is a consequence of the continuous growth of the average monthly gross wages of this industry throughout the observed period. The average monthly gross wage paid in this industry during the entire period from 2019 to 2023 was below the average wage in the manufacturing industry and economic average. Compared to the average of the manufacturing industry, the average monthly gross wages paid in the manufacture of plastic and rubber products ranged from 87.4 percent [2018] to 88.3 percent [2023], while compared to the average monthly gross wage in Croatia, they ranged from 79.6 percent [2020] to 80.2 percent [2022 and 2023].

Table 2
Average monthly gross wage per employee in legal entities in Croatia, manufacturing industry, manufacture of chemicals and chemical products, and manufacture of rubber and plastic products, 2019–2023

Average monthly gross wage	2019	2020	2021	2022	2023
Republic of Croatia (in euros)	1,164	1,223	1,274	1,380	1,584
Manufacturing industry (in euros)	1,058	1,115	1,161	1,264	1,439
Croatia = 100	90.9	91.1	91.1	91.6	90.8
Manufacture of chemicals and chemical products (in euros)	1,150	1,190	1,232	1,312	1,455
Manufacturing industry = 100	108.7	106.8	106.2	103.8	101.1
Croatia = 100	98.9	97.3	96.7	95.1	91.9
Manufacture of rubber and plastic products (in euros)	931	974	1,018	1,107	1,270
Manufacturing industry = 100	88.0	87.4	87.7	87.6	88.3
Croatia = 100	80.0	79.6	79.9	80.2	80.2

Source: Croatian Bureau of Statistics.

COMPARED TO 2019, THE MANUFACTURE OF PLASTIC AND RUBBER PRODUCTS IN 2023 WAS LOWER BY 3.2 PERCENT.

After the producer prices of chemicals and chemical products in 2021 and 2022 recovered from the decline recorded in the pandemic year 2020 [-1.1 percent], in 2023, their year-on-year decline of 3.7 percent followed [Table 3].

Similarly, the producer prices of rubber and plastic products in 2023 were lower by 1.8 percent compared to the previous year. The year-on-year decline in the producer prices of rubber and plastic products was also recorded in 2020 [-1.3 percent], while in 2021 and 2022 the prices achieved year-on-year growth of 2.7 percent and 7.7 percent, respectively [Table 3].

Table 3
Annual industrial producer price indices on the domestic market, manufacturing industry, manufacture of chemicals and chemical products and manufacture of rubber and plastic products, 2019–2023

Industrial producer price indices	2019	2020	2021	2022	2023
Manufacturing industry	100.3	96.9	105.2	114.7	102.9
Manufacture of chemicals and chemical products	100.8	98.1	112.1	106.0	96.3
Manufacture of rubber and plastic products	100.1	98.7	102.7	107.7	98.2

Source: The author’s calculation according to data from the Croatian Bureau of Statistics.

“In 2023, the export of the manufacture of chemicals and chemical products was higher by 47.2 percent compared to 2019, while the import was higher by 44.6 percent.

Table 4 shows the trend of foreign trade exchange of the chemical sector during the period from 2019 to 2023. The export of the manufacture of chemicals and chemical products in 2023 was higher by 47.2 percent compared to 2019, while the import was higher by 44.6 percent. Due to a stronger increase in exports compared to imports during the observed period, the export-import coverage ratio of this industry increased slightly, i.e., by 0.8 percentage points [from 43.5 to 44.3 percent]. During the observed period, the manufacture of chemicals and chemical products achieved the highest export value in 2023 [1.3 billion euros], while the highest import value was achieved a year earlier [3 billion euros]. At the

“The export-import coverage ratio of manufacture of plastic and rubber products increased from 48.4 percent in 2019 to 50.3 percent in 2023.

same time, this industry recorded the lowest value of both exports and imports in the pandemic year of 2020, i.e., 817.3 million euros of exports and 1.95 billion euros of imports. In the period from 2019 to 2023, the manufacture of rubber and plastic products recorded a cumulative growth of exports by 47 percent and imports by 41.3 percent. Due to the stronger growth of exports than imports, there was an improvement in the foreign trade balance and an increase in the export-import coverage ratio of this branch. Thus, the export-import coverage ratio of rubber and plastic products increased from 48.4 percent in 2019 to 50.3 percent in 2023. The increase in the export-import coverage ratio of the manufacture of rubber and plastic products is an indicator of the gradual reduction of dependence on imported raw materials, as well as its redirection to placement on the foreign market.

Table 4
Foreign trade exchange, manufacturing industry, manufacture of chemicals and chemical products and manufacture of rubber and plastic products, 2019–2023

	2019	2020	2021	2022	2023	2023 2019
Manufacture of chemicals and chemical products						
Export (in millions of euros)	855.6	817.3	1,063.70	1,209.26	1,259.58	147.2
Manufacturing industry (in %)	6.2	6.4	6.9	6.4	6.5	0.3 p.p.
Import (in millions of euros)	1,965.2	1,951.4	2,437.8	3,046.6	2,842.3	144.6
Manufacturing industry (in %)	8.8	9.4	9.8	9.2	8.3	-0.5 p.p.
Export-import coverage ratio	43.5	41.9	43.6	39.7	44.3	0.8 p.p.
Manufacture of plastic and rubber products						
Export (in millions of euros)	490.7	489.5	621.8	753.231	721.308	147.0
Manufacturing industry (in %)	3.6	3.8	4	4.0	3.7	0.1 p.p.
Import (in millions of euros)	1,014.6	996.9	1,251.1	1,458.9	1,433.2	141.3
Manufacturing industry (in %)	4.6	4.8	5.1	4.4	4.2	-0.4 p.p.
Export-import coverage ratio	48.4	49.1	49.7	51.6	50.3	1.9 p.p.

Note: p.p. indicates a percentage point.

Source: The author's calculation according to data from the Croatian Bureau of Statistics.

Leading companies

The operations of the leading companies in the manufacture of chemicals and chemical products during 2022 were marked by a growth in total revenue, an increase in profits, and a decrease in employment (Table 5). The total revenue of the ten leading companies in this sector in 2022 was higher by 4.5 percent compared to 2021, while the profit increased by 93.4 percent. Ten leading manufacturers of chemicals and chemical products in 2022 employed 75 fewer employees than a year earlier (a decline by 1.9 percent).

According to data from Poslovna Hrvatska for the year 2022, ten leading manufacturers of chemicals and chemical products accounted for 66.4 percent of the total revenue of this industry. According to the same source, in 2022, 409 business entities were active in the C20 "Manufacture of chemicals and chemical products" activity, while the total revenue of the activity amounted to 944.5 million euros.

Table 5
The average values of the selected performance indicators of the ten leading companies in manufacture of chemicals and chemical products, 2022 and 2021

	2021	2022	2022/2021
Total revenue (in millions of euros)	600.2	627.0	104.5
Profit before tax (in millions of euros)	23.0	44.5	193.4
Number of persons employed	3,912	3,837	98.1
Gross margin (in %)	3.8	7.1	3.3 p.p.
Return on asset (in %)	9.6	14.9	5.3 p.p.
Labor productivity (revenue in thousands of euros per person employed)	153.43	163.4	106.5
Asset turnover ratio	1.45	1.52	104.8
Current ratio	1.77	1.80	101.8
Debt ratio	0.38	0.36	94.4

Notes: p.p. indicates a percentage point. Covers leading companies: Petrokemija d.d., Saponia d.d., Adriatica Dunav d.o.o., Hempel d.o.o., Scott Bader d.o.o., Messer Croatia Plin d.o.o., Ireks Aroma d.o.o., Meteor grupa – Labud d.o.o., Chromos-Svjetlost d.o.o., and LUSH manufaktura d.o.o.

Source: Poslovna Hrvatska.

The significant year-on-year increase in cumulative profit at the level of the ten leading companies in the manufacture of chemicals and chemical products in 2022 is the result of the positive performance of all ten

THE TOTAL REVENUE OF THE TEN LEADING COMPANIES IN THE MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS IN 2022 WAS HIGHER BY 4.5 PERCENT COMPARED TO 2021.

companies, where the contribution of Petrokemija d.d. and Adriatica Dunav d.o.o. should be highlighted. In contrast to 2021, when Petrokemija d.d. realized a loss of 748.9 thousand euros, in 2022, a gross profit of 10.6 million euros was realized. Adriatica Dunav d.o.o., after achieving a positive business result of only 1,400 euros in 2021, closed 2022 with a significantly higher level of gross profit, in the amount of 3.0 million euros. The growth in revenue of ten leading companies in the manufacture of chemicals and chemical products, accompanied by a decrease in employment, resulted in an increase in labor productivity by 6.5 percent.

The current ratio for the ten leading manufacturers of chemicals and chemical products was 1.8 in 2022, which is almost at the level of 2021, which was 1.77 [Table 5]. This value of the current ratio indicates that the leading companies in this industry do not have difficulties in maintaining liquidity. The value of the debt ratio of the leading ten companies in the chemical industry decreased from 0.38 in 2021 to 0.36 in 2022, indicating that the observed companies are not facing problems of excessive indebtedness.

Table 6
Ten leading companies in the manufacture of chemicals and chemical products – selected financial indicators, 2022

	Total revenue	Debt ratio	Current ratio	Gross margin [%]
Petrokemija d.d.	261.9	0.51	10.6	0.80
Saponia d.d.	93.5	0.25	3.6	2.04
Adriatica Dunav d.o.o.	44.4	0.58	4.8	2.80
Hempel d.o.o.	42.7	0.50	5.7	1.57
Scott Bader d.o.o.	40.8	0.49	0.5	1.39
Messer Croatia Plin d.o.o.	36.6	0.11	6.7	5.92
Ireks Aroma d.o.o.	28.6	0.10	2.0	6.77
Meteor grupa – Labud d.o.o.	28.6	0.63	5.0	0.87
Chromos-Svjetlost d.o.o.	27.1	0.03	2.8	30.46
LUSH manufaktura d.o.o.	22.8	0.20	2.8	4.59

Source: The author's calculation according to data from Poslovna Hrvatska.

IN 2022, THE TOTAL REVENUE OF TEN LEADING COMPANIES IN THE MANUFACTURE OF PLASTIC AND RUBBER PRODUCTS AMOUNTED TO 504.7 MILLION EUROS AND WAS 27.1 PERCENT HIGHER COMPARED TO THE PREVIOUS YEAR.

Measured by total revenue, the following companies are at the top of the list of ten leading companies in the chemical industry in 2022: Petrokemija d.d. [261.9 million euros], Saponia d.d. [93.5 million euros], Adriatica Dunav d.o.o. [44.4 million euros], and Hempel d.o.o. [42.7 million euros]. They are followed by Messer Croatia Plin d.o.o., Ireks Aroma d.o.o., Meteor grupa – Labud d.o.o., Chromos-Svjetlost d.o.o., and LUSH manufaktura d.o.o.

According to data from Poslovna Hrvatska, only Petrokemija d.d. recorded a decrease in revenue in 2022 compared to 2021 [-9.6 percent]. At the same time, the company Adriatica Dunav d.o.o. achieved the highest year-on-year growth in total revenue [152.7 percent], followed by Hempel d.o.o. with a growth of 19.6 percent, Meteor grupa – Labud d.o.o. with a growth of 16.4 percent, and Ireks Aroma d.o.o., which achieved an increase in total revenue of 10.7 percent.

According to data from Poslovna Hrvatska, in 2022, 804 business entities were active in the C22 “Manufacture of rubber and plastic products” activity. They generated total revenue of 1.1 billion euros, which accounted for 37.5 percent of the total revenue of this industry. An analysis of the financial indicators of ten leading companies in the manufacture of plastic and rubber products indicates the growth of the sector during 2022 [Table 7].

The main characteristics of the operations of the observed group of manufacturers of plastic and rubber products are strong growth in revenue, profit, and employment. In 2022, the total revenue of ten leading companies in this sector amounted to EUR 504.7 million and was 27.1 percent higher compared to the previous year. The number of persons employed increased from a total of 2,103 in 2021 to 2,157 in 2022 [an increase of 2.6 percent]. Ten leading manufacturers in both observed years, 2021 and 2022, cumulatively operated profitably, whereby in 2021 they realized a cumulative profit of 27 million euros, and in 2022 of 28.8 million euros [growth by 6.6 percent].

Stronger revenue growth (27.1 percent) than employment growth (2.6 percent) resulted in a 24 percent increase in labor productivity. The value of the current ratio of ten leading plastic and rubber manufacturers of 2.0 indicates that the companies have no significant difficulties in meeting short-term obligations during 2022. In 2022, the debt ratio takes on a value of 0.49, which is slightly below the level of the previous year, when it was 0.50. At the same time, the asset turnover ratio increased compared to 2021, from 1.36 to 1.54. While in 2021, each euro of assets of ten leading plastic and rubber manufacturers resulted in 8.5 euros of revenue, in 2022, 8.1 euros of revenue was realized for each euro of assets. After covering the manufacturing costs, the observed companies were left with 5.7 percent of total revenue in 2022, and 6.8 percent of total revenue in 2021.

Table 7
The average values of the selected performance indicators of the leading ten companies in manufacture of plastic and rubber, 2021 and 2022

	2021	2022	2022/2021
Total revenue (in millions of euros)	397.0	504.7	127.1
Profit before tax (in millions of euros)	27.0	28.8	106.6
Number of persons employed	2,103	2,157	102.6
Gross margin (in %)	6.8	5.7	-1.1 p.p.
Return on asset (in %)	8.5	8.1	-0.5 p.p.
Labor productivity (revenue in thousands of euros per person employed)	188.8	234.0	124.0
Asset turnover ratio	1.36	1.54	113.2
Current ratio	1.86	2.02	108.8
Debt ratio	0.50	0.49	98.7

Notes: p.p. indicates a percentage point. Covers leading companies: Bomark Pak d.o.o., Muraplast d.o.o., Gumiimpex-GRP d.d., Deceuninck d.o.o., Aquaestil plus d.o.o., Alpla d.o.o., Sipro d.o.o., Vargon d.o.o., Plastform d.o.o., and Marlex d.o.o.

Source: The author's calculation according to data from Poslovna Hrvatska.

Looking at the level of individual companies, the increase in total revenue in 2022 compared to 2021 was achieved by all ten leading manufacturers of plastic and rubber, with the largest increase achieved by Alpla d.o.o. (67.3 percent), Deceuninck d.o.o. (41.7 percent), Sipro d.o.o. (35.5 percent), and Bomark Pak d.o.o. (35.1 percent). Among the remaining companies, the year-on-year growth in total revenue was in the range from 11.4 percent in the company Aquaestil plus d.o.o. to 31.2 percent in the company Plastform d.o.o. The highest gross profit in 2022 was achieved by Muraplast d.o.o. (7.8 million euros), Gumiimpex-GRP d.d. (6.3 million euros), and Bomark Pak d.o.o. (5.0 million euros). The highest liquidity in 2022 was recorded by Marlex d.o.o. (3.4), followed by Vargon d.o.o. (2.7), and Aquaestil plus d.o.o. (2.6). Operations of the companies Deceuninck d.o.o. and Sipro d.o.o. were marked by the weakest ability to finance short-term liabilities. Compared to 2021, two companies, Alpla d.o.o. and Plastform d.o.o., entered the group of ten leading plastic and rubber manufacturers in 2022, while the companies Heplast-pipe d.o.o. and Telur d.o.o. left that group.

Table 8

Ten leading companies in the manufacture of plastics and rubber – selected financial indicators, 2022

	Total revenue (in millions of euros)	Debt ratio	Current ratio	Gross margin [%]
Bomark Pak d.o.o.	117.7	0.47	2.1	4.2
Muraplast d.o.o.	82.9	0.42	2.2	9.4
Gumiimpex-GRP d.d.	78.5	0.63	2.1	8.0
Deceuninck d.o.o.	40.0	0.88	1.1	0.4
Aquaestil plus d.o.o.	36.8	0.44	2.6	3.5
Alpla d.o.o.	32.4	0.64	1.5	0.4
Sipro d.o.o.	32.1	0.52	1.7	3.5
Vargon d.o.o.	30.7	0.32	2.7	8.5
Plastform d.o.o.	27.7	0.28	2.2	7.4
Marlex d.o.o.	25.8	0.42	3.4	9.3

Source: The author's calculation according to data from Poslovna Hrvatska.

Report from the Zagreb Stock Exchange

“In 2023, shares of Saponia d.d. recorded a year-on-year decrease in turnover by 14.8 percent.

— Only one company from the manufacture of chemicals and chemical products, i.e., Saponia d.d., was listed on the Zagreb Stock Exchange, while not a single company from the manufacture of plastics and rubber was listed on the Zagreb Stock Exchange. Company Petrokemija d.d., as of March 9, 2022, is no longer listed on the Zagreb Stock Exchange. By revising the stock indices from September 8, 2022, the shares of the company Saponia d.d. were excluded from the CROBEX, CROBEXtr, CROBEXplus® index composition and associated sector indices [CBXindustrija].

It is interesting to note that the trade statistics for the year 2023 were marked by the growth of most indices, with the strongest year-on-year growth of 56.07 percent recorded by the CROBEXindustrija index, followed by CROBEXprime with a growth of 41.15 percent, then the CROBEX10tr index [37.7 percent], and CROBEX10 [33.9 percent]. Year-on-year decline was recorded by only two indices, namely CROBEXkonstrukt [-5.6 percent] and CROBIS [-0.78 percent]. Last year, shares of Saponia d.d. recorded a year-on-year decline in turnover by 14.8 percent.

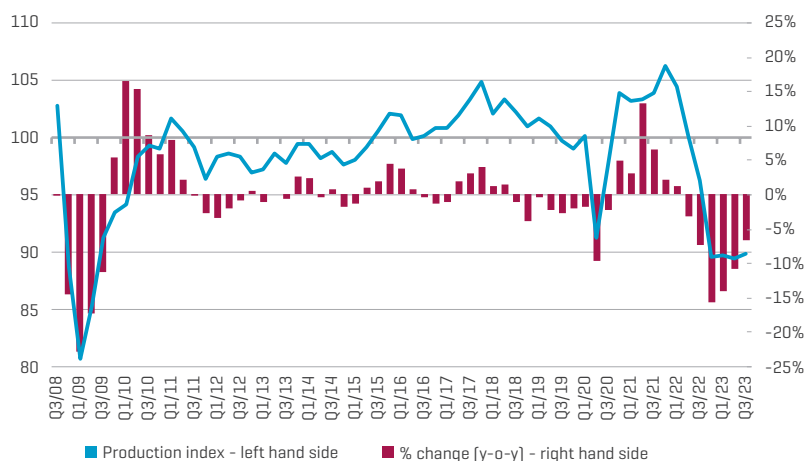
The chemical sector in the EU-27³

“In 2022, the chemical sector of the European Union recorded a year-on-year decline of 6.3 percent in production, while in 2023 it recorded a decline of 8 percent.

The manufacture of the chemical sector of the European Union has experienced a year-on-year decline for the second year in a row. In 2022, this sector recorded an annual decline in manufacture by 6.3 percent, and in 2023, by 8 percent [CEFIC, 2024]. At the same time, exports of the chemical sector of the European Union decreased by 7 percent, and imports by 21 percent. A decline in production of the chemical sector compared to 2022 was also recorded last year at the level of the entire manufacturing industry of the European Union, namely by 1.4 percent. The negative trends were largely contributed by the energy crisis marked by the increase in energy and raw material costs and the lack of demand for products of the chemical sector. The level of capacity utilization in the EU-27 chemical industry in the fourth quarter of 2023 was around 74 percent, which is close to the levels of the first period of economic closure during the 2020 COVID-19 pandemic. The competitiveness of the European chemical industry has been undermined by high energy costs and dependence on trade at a time of geopolitical disruption.

Figure 5
Trends of chemical industry activities (seasonally adjusted) from the third quarter of 2008 to the third quarter of 2023

Source: Created by the author according to CEFIC data [CEFIC, 2023].



³ The data in this chapter are taken from a report published by the European Chemical Industry Council [CEFIC], <https://cefic.org/cefic-chemicals-trends-report/>

About 30,000 companies are active in the EU-27 chemical industry, 95 percent of which are small and medium-sized enterprises. The chemical industry of the European Union employs around 1.2 million employees directly and around 3.4 million employees indirectly [CEFIC, 2023].

If we look at the trends of production by individual activities of the chemical sector, the biggest drop in manufacture in 2023 compared to 2022 is observed in basic chemical industries, with petrochemical manufacturing [-10.6 percent] and polymer manufacturing [-10.5 percent]. This is followed by the manufacture of specialty chemicals and the manufacture of basic inorganics, with year-on-year decline in production of 6.3 and 5.2 percent, respectively. Year-on-year increase in manufacture in 2023 was recorded only in the manufacture of consumer chemicals [soaps, detergents, and cosmetics], i.e., by 3.2 percent.

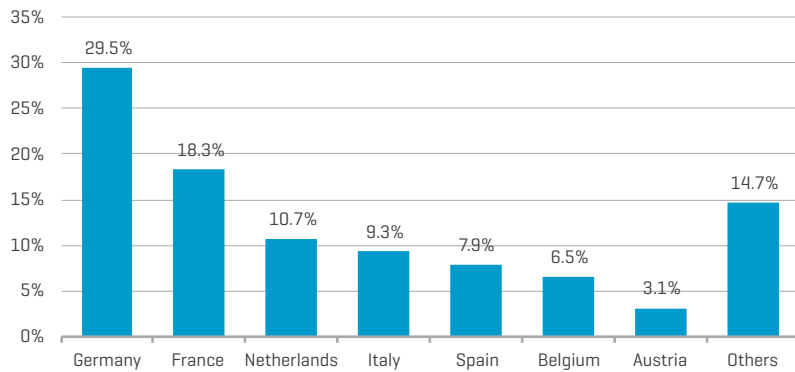
Seen on a monthly basis, chemical manufacturing in the EU-27 decreased by 2.9 percent in December 2023 compared to the previous month.

In 2023, the chemical sector in the EU-27 achieved sales revenues of 661 billion euros, which represents a decrease of 14.9 percent compared to 2022. Nevertheless, monthly sales data indicate positive trends towards the end of last year. In November 2023, sales revenues of this industry were higher by 2.1 percent compared to the previous month. It is expected that the sales of chemicals in the EU-27 in 2023 will be slightly higher than in 2022.

Analysis of the sales structure of the chemical sector by EU-27 member states shows that more than half of the total sales of the chemical sector of the European Union in 2022 are realized in only three countries, i.e., Germany [29.5 percent], France [18.3 percent], and the Netherlands [10.7 percent] [Figure 6]. If joined by Italy, Spain, Belgium, and Austria, the share increases to 85.4 percent. Other member states account for only 14.6 percent of the total trade in the chemical sector of the European Union, with the largest contribution coming from Sweden and Poland [2.1 percent each]. With a share of 0.08 percent, Croatia occupies a modest 24th place in the ranking of EU member states in 2022. For the sake of comparison, in 2021, with a share of 0.13 percent, Croatia was in 22nd place in this ranking.

Figure 6
Structure of total sales of the chemical sector by member states of the European Union, 2022 (EU-27 = 100%)

Source: Created by the author according to CEFIC data [CEFIC, 2023].



If the structure of exports and imports of the chemical sector of the EU in 2022 is observed according to product groups, it is evident that more than half of the exports refer to the export of specialty chemicals [29.6 percent] and the export of petrochemicals [26 percent] (Table 9). This is followed by polymers, with a share of 17.4 percent, and consumer chemicals, which represent 15.8 percent of the total export. The smallest part of the export of the chemical sector is the export of basic inorganics, that is, 10.5 percent. On the other hand, the largest part of the import of chemical products is petrochemicals [40.4 percent], followed by specialty chemicals [22.4 percent]. Polymers account for 16.4 percent of total imports, basic inorganics for 14.6 percent, and consumer chemicals for 5 percent. Looking at product groups, the positive balance of EU-27 foreign trade with the rest of the world was recorded in consumer chemicals [25.9 billion euros], specialty chemicals [17.2 billion euros], and polymers [2.4 billion euros]. On the other hand, greater imports than exports were realized in petrochemicals [-34.5 billion euros] and basic inorganics [-9.8 billion euros].

Table 9
Exports and imports of the EU-27 chemical sector to the rest of the world by main product groups in 2022

	Petrochemicals	Polymers	Basic inorganics	Consumer chemicals	Specialty chemicals
Export, in billion euros	62.5	41.7	25.2	37.8	71.0
%	26%	17.4%	10.5%	15.8%	29.6%
Import, in billion euros	97.0	39.3	35.0	11.9	53.7
%	40.4%	16.4%	14.6%	5%	22.4%
Foreign trade balance	-34.5	2.4	-9.8	25.9	17.2

Source: Created by the author according to CEFIC data [CEFIC, 2023].

The chemical industry of the European Union, with a share of 14 percent in the realized world sales of products of the chemical sector in 2022, ranks second among ten leading countries in the world, after China and before the USA and Japan (Figure 7). Dynamically, the share of the European Union's chemical industry on the world market has decreased over the last decade. Thus, despite the increase in total sales of the chemical sector from 519 billion euros in 2012 to 760 billion euros in 2022, the share of the EU-27 in the total world sales of chemicals decreased from 17.1 percent to 14 percent (Figure 7). On the other hand, China (from 31.3 percent to 44 percent), Saudi Arabia (from 0.9 percent to 1.6 percent), and Russia (from 1.2 to 1.4 percent) recorded an increase in the share of the chemical industry on the world market during the same period. Factors such as population ageing, maturity of the market, high energy and labor costs, regulatory burden, and an increasingly competitive global market contributed to the decline in the market share of the European chemical industry. If we look at the average annual growth rates of the production of the chemical sector by the leading countries of the world economy from 2012 to 2022, the strong growth of the chemical sector of China (6.9 percent) and Russia (4.5 percent) is visible, while, on average, the manufacture of chemical sector of the EU-27 decreased by 0.03 percent annually. In addition to the EU-27, the negative average annual growth rate of chemical manufacturing is also recorded by Japan, Brazil, and the USA. According to CEFIC forecasts, the share of the European Union's chemical industry in the world market will decrease to 10.7 percent by 2030. Much of the expected increase in chemical manufacturing at the world level will be transferred to developing countries and economies in transition. At the same time, the European Union will position itself as a leader in health and environmental standards in the field of chemicals management, with the aim of taking the lead in the manufacture and use of sustainable chemicals.

Figure 7
Ten leading countries
according to the share of
world trade in chemical
products sector, 2012
and 2022

Source: CEFIC (2023).

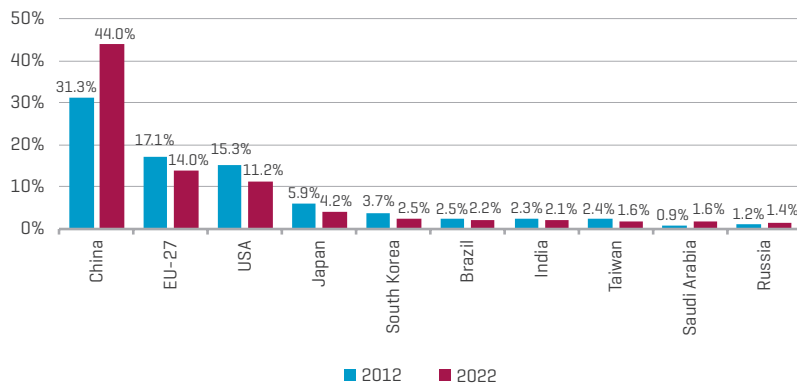
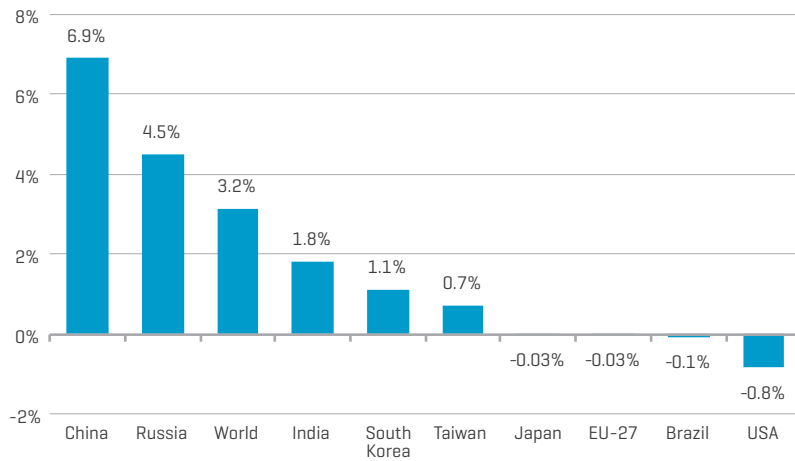


Figure 8
Average chemicals production growth per annum by leading countries of the world economy, 2012–2022

Source: Created by the author according to CEFIC data [CEFIC, 2023].



The EU chemical industry is involved in complex international value chains that are sensitive to geopolitical developments, such as Russian aggression against Ukraine. Although it is difficult to predict the longer-term impact of the war on the EU economy, its effects are already visible and are reflected in inflation, more fragile supply chains with possible disruptions in the supply of fossil raw materials and energy sources and weakened growth prospects. Therefore, growth expectations for 2024 are still limited. Higher interest rates continue to dampen demand in the construction sector, while the auto industry, which relies on products from the chemical sector, is not expected to accelerate beyond manufacturing levels achieved in 2023. Bearing in mind the uncertain global economic and business environment, the European Chemical Industry Council (CEFIC) provides a cautious forecast for the growth of chemical manufacturing in the EU-27 for the year 2024 of a modest 1 percent. It is expected that the impetus for growth will primarily come from an increase in private demand, which would be stimulated by an increase in the purchasing power of the population, a decrease in inflation rates, and an increase in wages. For European chemical companies, the global economic and business environment is still uncertain.

Conclusion

In 2023, the manufacture of chemicals and chemical products in Croatia recorded a year-on-year decline of 2.7 percent, while the manufacture of rubber and plastic products recorded a decline of 3.6 percent. The year-on-year decline in the manufacture of the chemicals and chemical products had a negative impact on employment, while wages in this industry recorded growth. Compared to 2022, in 2023 the average monthly gross wages of persons employed in the manufacture of chemicals and chemical products nominally increased by 10.9 percent, while employment decreased by 1.8 percent on average. At the same time, average monthly gross wages in the manufacture of plastic and rubber products recorded a nominal growth of 14.7 percent year-on-year, while employment decreased by 3 percent. When analyzing wage trends, one should also consider the fact that, last year, according to CBS data, inflation of 8 percent was recorded at the level of the entire Croatian economy. Compared to the previous year, the export of the chemical sector in 2023 increased by only 0.9 percent, while the import decreased by 5.1 percent. The manufacture of chemicals and chemical products recorded an increase in exports of 4.2 percent and a decrease in imports of 6.7 percent, while the manufacture of rubber and plastic products recorded a decrease in imports and exports of 4.2 and 1.8 percent, respectively. Due to the dependence on imported raw materials, both industries constantly record a foreign trade deficit. The foreign trade deficit of the manufacture of chemicals and chemical products in 2023 was 1.5 billion euros, and that of rubber and plastic products was 711.9 million euros.

The contribution of the chemical industry sector to the Croatian economy is also visible in the data on GVA, employment, and the number of active business entities. The share of the chemical industry sector in the GDP of the Croatian economy was 0.92 percent in 2021. The manufacture of chemicals, chemical products, and man-made fibers accounted for 0.35 percent, while the manufacture of rubber and plastic products accounted for 0.57 percent of GDP that year. At the same time, the share of the chemical industry sector in the GVA of the manufacturing industry was 7.9 percent, of which 3 percent was the share of the manufacture of chemicals,

chemical products, and man-made fibers, while 4.9 percent was the share of the manufacture of rubber and plastic products. The total number of persons employed in the chemical industry sector in January 2024 was 16,339, or 7 percent of the total employment in the manufacturing industry. According to data from Poslovna Hrvatska for the year 2022, business entities in the chemical industry make up as much as 7.4 percent of business entities in the manufacturing industry in Croatia. There were 409 business entities that were active in the manufacture of chemicals and chemical products, while 804 were active in the manufacture of rubber and plastic products. The operations of the leading companies in the manufacture of chemicals and chemical products and in the manufacture of plastic and rubber products during 2022 were marked by an increase of total revenue. The total revenue of the ten leading companies in the manufacture of chemicals and chemical products in 2022 was higher by 4.5 percent compared to 2021, and that of the manufacture of plastic and rubber products by 27.1 percent.

According to CEFIC data, the manufacture of the chemical sector in the European Union in 2023 recorded a year-on-year decline by 8 percent, and a year earlier by 6.3 percent. At the same time, exports of the chemical sector of the European Union decreased by 7 percent, and imports by 21 percent. A decline in production compared to 2022 was also recorded last year at the level of the entire manufacturing industry of the European Union, namely by 1.4 percent. The negative trends were largely contributed by the energy crisis marked by the increase in energy and raw material costs, and the lack of demand for products from the chemical sector. The competitiveness of the European chemical industry has been undermined by high energy costs and dependence on trade at a time of geopolitical disruption. Dynamically, the share of the European Union's chemical industry on the world market has decreased over the last decade. Despite the increase in total sales of the chemical sector of the European Union from 519 billion euros in 2012 to 760 billion euros in 2022, the share of the EU-27 in the total world sales of chemicals decreased from 17.1 percent to 14 percent. Factors such as population ageing, maturity of the market, high energy and labor costs, regulatory burden, and an increasingly competitive global market contributed to the decline in the market share of the European chemical industry. According to CEFIC forecasts, this share will decrease to 10.7 percent by 2030.

The global economic and business environment is still uncertain for European chemical companies, so growth expectations for 2024 remain limited. Higher interest rates continue to dampen demand in the construction sector, while the auto industry, which relies on products from the chemical sector, is not expected to accelerate beyond manufacturing levels achieved in 2023.

The European Chemical Industry Council (CEFIC) cautiously forecasts a growth of chemical manufacturing in the EU-27 by 1 percent for 2024.

The energy crisis and problems in the supply chain have raised awareness of the need to strengthen Europe's industrial resilience in order to achieve the ambitious transformation towards the goals of the EU Green Deal by 2050. In this context, the European chemical industry aims to become climate neutral by 2050, which means that it needs to change the method of manufacture and what it manufactures in less than 30 years, while remaining globally competitive in order to continue supplying important EU value chains, including clean technology.

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