



TURKISH PLASTICS INDUSTRY FOLLOW-UP REPORT

2020

PREFACE

The plastic industry is one of the most important actors of the Turkish economy. Today, the contribution of the plastics industry to the country's economy is gradually increasing with the total production exceeding 9 million tons, and 35 billion dollars' worth of turnover, the approaching direct exports of 5 billion dollars.

Our industry, with its production capacity, has reached the second place in Europe and the sixth place in the world. As PAGEV, we continue to lead the industry successfully in the framework of the "Unifying Power" mission of the Turkish Plastics Industry.

We also know that having the right and reliable data and information is the most important part of the solution when we sign the indispensability of Plastics in our lives and sign our work to tackle our industrial problems with concrete steps based on scientific evidence. In this direction we constantly investigate, collect new data, compile, and report them. We present our reports that we believe are important for the development of our industry and our booklets containing important information to the plastics industry representatives, stakeholders, and public institutions.

As PAGEV, we prepared a report set that will contribute to the industry in a serious way in the face of our long and dedicated research. With our reports, we made booklets with the comments of our expert reporters about the point where the Turkish Plastics Industry is in the right and reliable light, common problems and what should be the search for concrete solutions. We believe that our reports and information set will benefit all our stakeholders, especially our members, and will guide the plastics world. At the same time, we are pleased that our public institutions have reached the most up-to-date and accurate information about the plastics industry.

On the other hand, with our sector reports in English, we think that our colleagues will be able to share the potential of our country's plastics industry with the most up-to-date business partners in the global marketplace.

Hereby, presenting our current reports and information files relating with our industry, we would like to thank all our colleagues who have contributed to this day's achievement of our industry, who has taken a position as a locomotive mission in the development of our country.

**Best regards,
Yavuz EROĞLU
PAGEV President**

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EXECUTIVE SUMMARY

In the global economic crisis triggered by the corona virus epidemic, institutions and governments are trying to predict what kind of economic damage will remain when the epidemic ends, while announcing expansion and liquidity packages. The International Monetary Fund (IMF) updated its growth forecasts for the world economy in its "World Economic Outlook 2020" report. According to the IMF, the economic crisis the world is in today is much deeper than the crisis in 2008.

According to Turk Stat's data Turkey's economy grew by 4.5% in the first quarter of the year compared to the first quarter of last year. Turkey's economy in the 2nd quarter of the year is also contracted by 9.9% with the global economic crisis caused by the outbreak. In the 3. quarter Turkey grew by 6.7% has been the fastest growing in Europe following the Irish economy. Apart from these, when the GDP is analyzed on a dollar basis at current prices, the GDP was \$ 551.8 billion in the first 3 quarters of 2019, while this value decreased to \$ 527.1 billion in the first 3 quarters of 2020.

Developments of Turkey and the world economy shows some positive developments will continue to monitor the possible risk factors. For this reason, uncertainty is generally predicted to lead to risk aversion and a prudent use of resources.

In the plastics industry, 9.54 million tons of production, 584 thousand tons of imports, 2.38 million tons of exports and 7.74 million tons of domestic market consumption were realized in 2020. In 2020, when 1.8 million tons of foreign trade surplus was given, the share of exports in production was 25% on amount basis, and the share of imports in domestic consumption was 8%.

The machinery investments of the plastics industry, which increased by an average of 2.1% per year between 2015 and 2020, increased by 19% in 2020 compared to 2019 and reached 870 million dollars.

Plastics raw material prices increased between % 23-137 in the last 6 months and between % 25-56 in the last 3 months in Turkey due to the production cuts of global manufacturer because of compelling reasons. This situation is an important problem that prevents competitive production and export in the plastic products industry. It is considered essential for the short-term solution of the problem that the import and surveillance taxes imposed on plastic raw materials are eliminated and that the domestic plastic raw material producers give priority to the domestic producer over exports.

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1. ECONOMIC SITUATION

1.1. WORLD ECONOMY

- In the global economic crisis triggered by the corona virus epidemic, institutions and governments are trying to predict what kind of economic damage will remain when the epidemic ends, while announcing expansion and liquidity packages.
- The International Monetary Fund (IMF) updated its growth forecasts for the world economy in its "World Economic Outlook 2020" report. According to the IMF, the economic crisis the world is in today is much deeper than the crisis in 2008.
- The IMF predicts that the global economy, which grew by 2.9 percent in 2019, will shrink by 3 percent in 2020 due to the corona virus outbreak, and will grow by 5.8 percent in 2021. The IMF estimates that developed economies, which grew by 1.7 percent in 2019, will shrink by 6.1 percent in 2020 and grow 4.5 percent in 2021.
- As of the last weeks of 2020, the vaccination process started around the world, especially in the EU countries and the USA, positively affects the expectations for the upcoming period. On the other hand, the emergence of a Covid-19 strain that has been found to be more contagious limits this optimism somewhat.
- On the commodity prices side, especially as of the last months of the year, the increases stand out despite the loss of momentum in economic activity.
- While the economic activity in the USA maintains its moderate course, the improvement in confidence indicators in the Euro Area and the positive outlook in the Chinese economy continue.
- The World Bank anticipates that global investments and trade are expected to gradually improve in the upcoming period, although there will still be downward pressures in the global economic outlook.
- Possibilities such as a global slowdown in growth, increased trade wars, uncertainties in trade policies, higher-than-expected economic deterioration in large economies, and economic tensions in emerging markets will be among the risks to be considered in the future.

1.2. TURKISH ECONOMY

In this period, the main developments that affect and are expected to affect the Turkish economy and therefore the plastics industry are.

- In the shadow of the COVID-19 pandemic, 2020 has been a year where governments have struggled to keep the economy running as well as preventing the epidemic. Terms of the

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epidemic period since March 2020. Turkey also shows the impact of the economy as the dominant indicator. economic problems inherited from the 2019 and Covidien-19 these issues deepening impact of the epidemic until 2020 for Turkey's economy to the global economy that has also been available.

- According to Turk Stat's data Turkey's economy grew by 4.5% in the first quarter of the year compared to the first quarter of last year. Turkey's economy in the 2nd quarter of the year is also contracted by 9.9% with the global economic crisis caused by the outbreak. In the 3. quarter Turkey grew by 6.7% has been the fastest growing in Europe following the Irish economy. Apart from these, when the GDP is analyzed on a dollar basis at current prices, the GDP was \$ 551.8 billion in the first 3 quarters of 2019, while this value decreased to \$ 527.1 billion in the first 3 quarters of 2020.
- According to the IMF report, Turkey which grew by %0,9 in 2019 is expected a 5 percent contraction in 2020. It is estimated that the unemployment rate, which was 13.7 percent on average in 2019, will jump to 17.2 percent in 2020. The consumer inflation forecast for the year, is estimated by 12 percent and growth rate of Turkey's economy by 5 percent of. in 2021
- One of the factors most affecting all macroeconomic indicators in Turkey's economy is the value of foreign currencies on Turkish lira. The depreciation of the TL against foreign currencies, which started to increase its momentum with political developments since the second half of 2018, was higher in 2020 compared to 2019. Although TL gains value against foreign exchange rates with the change of economy management in the last months of 2020, it is not possible to talk about a good performance of TL for the year 2020.
- On the last business day of 2019, on December 31, the dollar was 5.95 TL, the Euro was 6.67 TL, and the pound was 7.84 TL. On 30 December 2020, the dollar was 7.35 TL, the Euro was 9.02 TL, and the pound was 10 TL. In 2020, the TL lost value by 23.5% against the dollar, 35.2% against the Euro and 27.6% against the pound.
- High inflation is one of the chronic problems of Turkey. Although the Central Bank and the government's inflation target as to stabilize the single-digit rate even though the rate of inflation in Turkey has decreased to single digits in any month in 2020. Inflation, which was 11.84% at the end of 2019, was realized at 14.6%, the highest level of 2020 as of December.
- The CBRT policy rate, which fell from 14% to 12% in December 2019, was reduced to 8.25% at the end of May, the lowest level since May 2018. Especially in the second half of the year, as the dollar increased to 8.5 TL, the policy interest was increased 3 times in the second half of the year and was announced as 17% because of the meeting held on December 25.
- Broadly defined unemployment rate is also one of the important indicators to understand the current state of the economy. As a result of the data calculated by including those who are ready to work and seasonal workers evaluated in the category of population not included in

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the labor force, the broadly defined unemployment rate, which was 20.2% in December 2019, rose to 25.1% in May. In October 2020, this rate decreased to 22.5%. The broadly defined total number of unemployed people in October was 8 million 435 thousand people.

- As of 29 December, the UK and Turkey signed a free trade agreement. It is aimed to develop the agreement, which includes all industrial and agricultural products in its current form, as soon as possible to cover areas such as investments and services.
- The macroeconomic indicator most affected by the global COVID-19 outbreak in 2020 was foreign trade. As a result of preventive measures such as closure and restriction, mobility between countries has decreased to exceptionally low levels.
- Turkey's exported \$ 180.8 billion and imported \$ 210.3 billion in 2019. In 2020, exports decreased by 6.3% to 169.5 billion dollars, imports increased by 4.3% to 219.4 billion dollars. In 2020 the trade deficit stood as \$ 50 billion and import coverage ratio of export as 77.2%.
- In 2020, the share of high-tech products in manufacturing industry exports was 3.8%. On the other hand, the share of high technology products in imports of manufacturing industry products is 12.8%.
- The only institution that changed the credit rating for Turkey in 2020 was Moody's. Moody's, which changed its credit rating from B1 negatively at the end of 2019, announced its new credit rating as B2. In addition, Turkey since 2017 was evaluated by the three institutions, "done-speculative investment" level.
- While the seasonally adjusted industrial production index was 118.3 points in December 2019, it fell to 78.7 points in April, the lowest level since May 2011, due to the impact of the epidemic. Continuing to increase month by month with the normalization process, this index rose to its highest level this year, 126.4 points, in October 2020.
- While the monthly economic confidence index announced by TURKSTAT was 97.2 points in December 2019, it dropped to 52.4 points, the lowest level in April. This index, which increased to 92.8 points in October with the normalization process, was announced as 86.4 points as of December 2020.

Developments show that the world and the Turkish economy will live a brilliant year in 2017. It is expected that the old risk elements will continue in the economy and the new ones will be added to these. It is therefore estimated that the uncertainty to be raised will often lead to the use of risqué escape and a cautious Source, and that the question of not growing in the world economy will continue.

Sources: T. İş Bank and Akbank Economic Publications, Central Bank and TURKSTAT Statistics

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		2015	2019	2020	Period
GDP	Billion \$	867	761	527	Jan. – Sep.
Growth Rate	%	6,1	0,9	4,4/-9,9/6,7	Q1/Q2/Q3
Inflation	%	8,81	11,84	14,6	December
Unemployment	%	10,2	13,2	12,7	September
Exports	Billion \$	151	180,8	169,5	
Imports	Billion \$	213,6	210,3	219,3	
Foreign Trade Balance	Billion \$	-63,6	-29,5	-49,9	
Exports/Imports	%	70,7	86,5	77,2	
USD / TL	TL	2,92	5,95	7,43	
EURO / TL	TL	3,17	6,68	9,09	

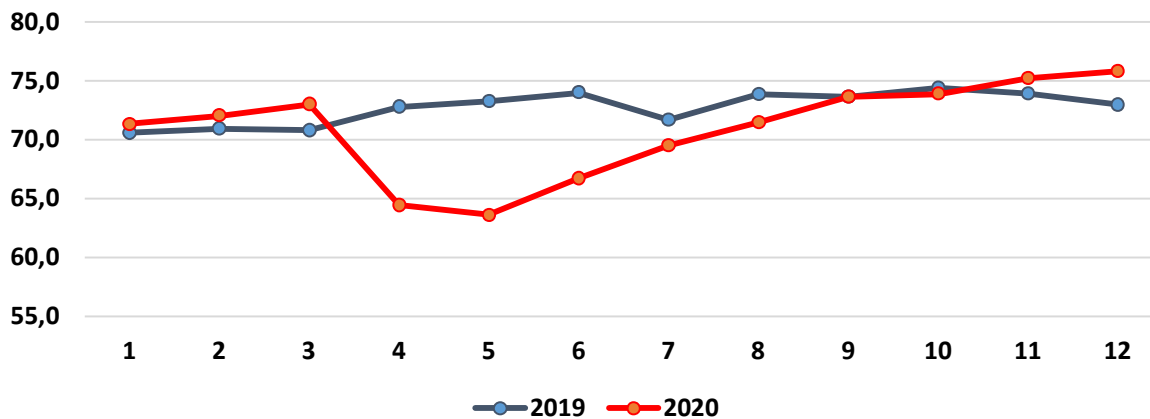
Table 1: Turkey's Main Economic Indicators

Sources: T. İş Bank and Akbank Economic Publications, Central Bank and TURKSTAT Statistics

2. PLASTICS END PRODUCTS INDUSTRY

2.1. CAPACITY UTILIZATION

While capacity utilization in the plastics industry was at higher levels in the first 3 months of 2010 compared to the peers of 2019, it decreased significantly in April and May due to the Covid-19 outbreak but started to increase again after May. Although the upward trend in capacity utilization continued in the May-October period, it remained below the levels in 2019 peers. However, it is seen that capacity utilization in the last two months of 2020 exceeded the same months of 2019.



Graphic1: Capacity Utilization in Plastics Industry

Source: Turkish Republic Central Bank

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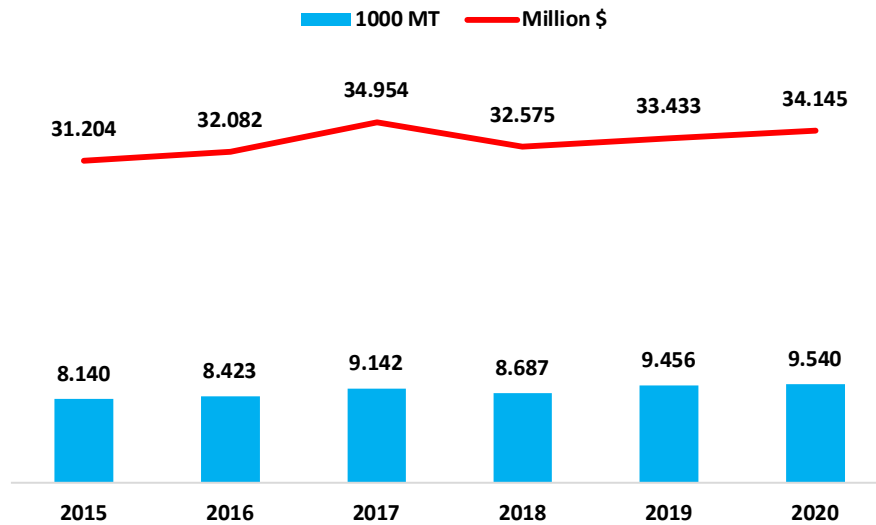
2.1. PRODUCTION

In the period covering 2015-2020, plastic product production, which increased by 3.2% on amount and 1.8% on value basis annually, increased by 0.9% on amount basis and 2.1% on value basis in 2020 compared to 2019. The slight increase in production in the plastic sector, which was operating at higher capacity utilization in the 5 months of 2020 compared to the same months of 2019, was due to the high increase in exports despite the decrease in domestic market demand.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	8.140	9.456	9.540	3,2	0,9
Million \$	31.204	33.433	34.145	1,8	2,1

Table 2: Plastics End Products Production

Source: TURKSTAT and ITC Trade Statistics

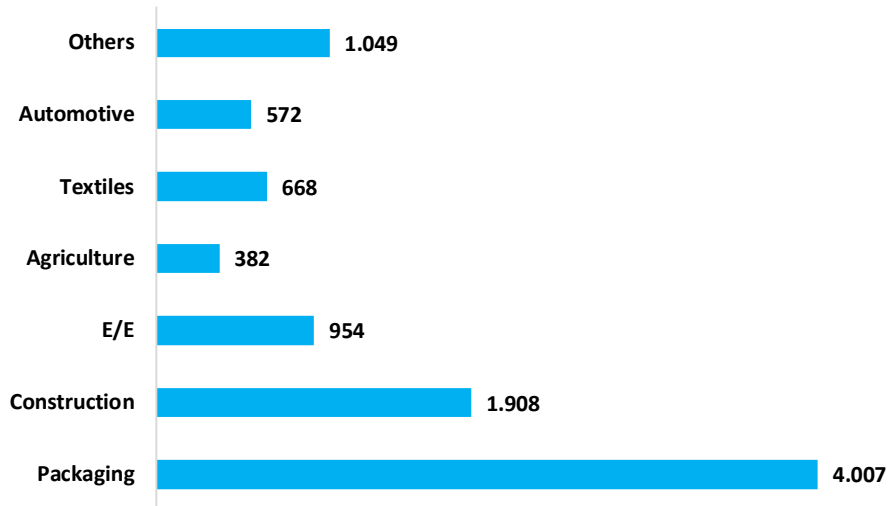


Graphic 2: Plastics End Product Production

Source: TURKSTAT and ITC Trade Statistics

It is seen that plastic packaging materials lead the total production of 9.54 million tons of plastic products with 4 million tons in 2020, followed by plastic construction materials production with 1.9 million tons.

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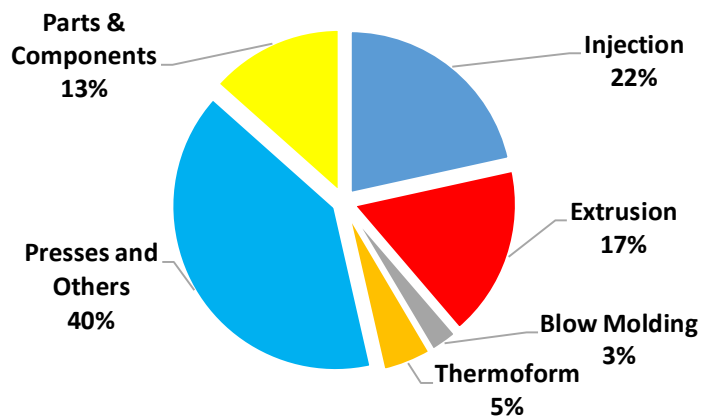


Graphic 3: Plastics End Product Production by Subsectors – (1000 Ton) 2020

Source: TURKSTAT and ITC Trade Statistics

2.2. MACHINERY INVESTMENTS

In the period covering the years 2015-2020, the plastics industry has invested an average of \$ 840 million in machinery and equipment per year, 40% of the total investment is in presses and other machines, 22% injection, 17% extrusion, 5% thermoforming, 3% blow molding and 13% was parts and components.



Graphic 4: Share of Machinery Investments of Plastics Industry In 2015 – 2020 Period

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Source : TURKSTA and ITC Trade Statistics

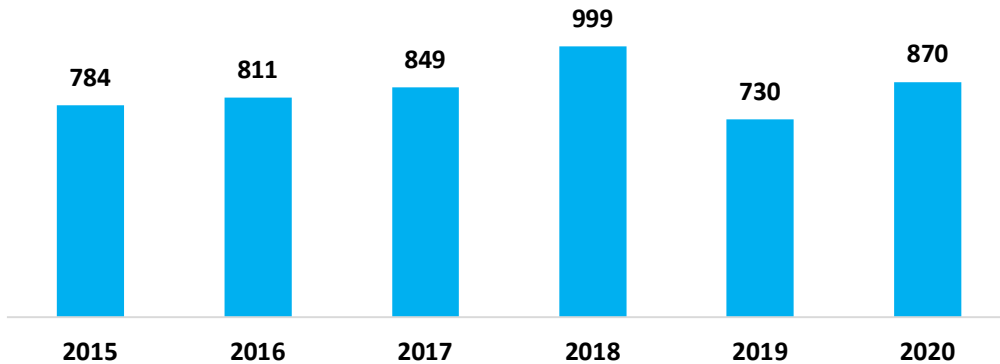
In the plastic processing machinery sector, production decreased by 9% and exports by 1% in 2020 compared to 2019. During the period in question, imports increased by 43% and domestic sales by 197%.

	2015	2019	2020	% Increase 2020/2019
Production	338	507	462	-9
Imports	577	421	603	43
Exports	131	197	195	-1
Domestic Consumption	784	730	870	19

Table 3: Supply & Demand in Plastics Processing Machineries

Source : TURKSTA and ITC Trade Statistics

The machinery investments of the plastics industry, which increased by an average of 2.1% per year between 2015 and 2020, increased by 19% in 2020 compared to 2019 and reached 870 million dollars.

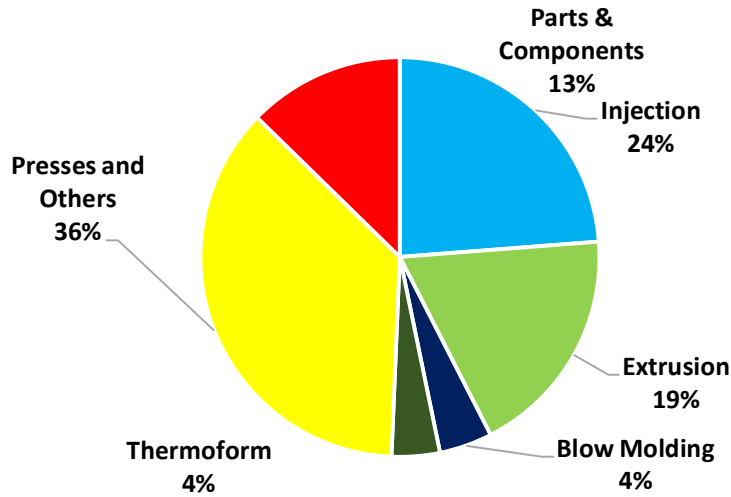


Graphic 5: Machinery and Parts and Components Investments of Plastics Industry (Million \$)

Source : TURKSTA and ITC Trade Statistics

In 2020, among the total machinery investments of the plastic industry, injection machines have a share of 24%, extrusion machines 19%, blow molding machines 4%, thermoforming machines 4%, presses and other machines 36% and parts and components 13%.

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Graphic 6: Breakdown of Machineries Investment of Plastics Industry (2020)

Source : TURKSTA and ITC Trade Statistics

2.3. FOREIGN TRADE

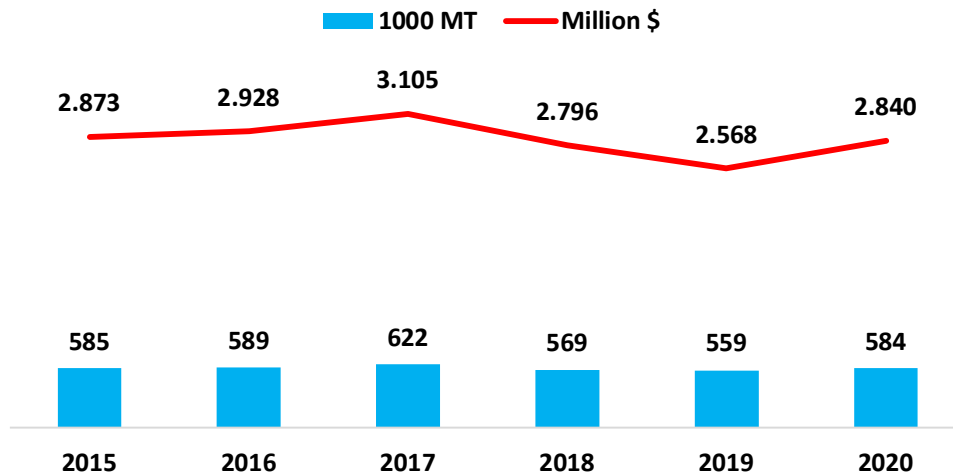
2.3.1. IMPORTS

In the period covering the years 2015-2020, the imports of plastic end products, which increased by 0.01% annually on amount and decreased by 0.2% on value basis, increased by 4.5% on amount basis and 10.6% on value basis in 2020 compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	585	559	584	0,0	4,5
Million \$	2.873	2.568	2.840	-0,2	10,6

Table 4: Plastics End Product Imports

Source: TURKSTAT and ITC Trade Statistics



Graphic 7: Plastics End Product Imports

Source: TURKSTAT and ITC Trade Statistics

In 2020, the highest import on amount and value basis was in the product group with the HS Code of 3920 (other plastic plates, leaves, pellicles, foils, and slides). The imports of the products included in this HS Code constituted 41% of total plastic product imports on amount and 27% on value basis.

HS CODE	PLASTIC PRODUCTS DEFINITIONS	1000 MT	% Share MT	Million \$	% Share \$
3916	Monofilament, bar, profiles from plastic-cross section over 1mm	12	2	53	2
3917	Tubes, pipes, hoses from plastic; gasket, elbow, union etc.	40	7	285	10
3918	Floor coverings from plastic – incl. wall and ceiling coverings	22	4	54	2
3919	adhesive plate, sheet, strip, slide, etc. from plastic; flat	58	10	301	11
3920	Other plate, sheet, pellicles, and slides from plastic	242	41	768	27
3921	Other plates, sheets, pellicles, foils, and slides from plastic	50	9	235	8
3922	Bathtub, shower, sink, bidet, water-closet pan, and hardware from plastic	3	1	18	1
3923	Plastic products for moving furniture, tap, cap, capsule	81	14	377	13
3924	Table, kitchen and other household furniture, toiletry form plastic	7	1	46	2
3925	Construction materials from plastic	5	1	28	1
3926	Other goods from plastic	65	11	673	24
	TOTAL	584	100	2.840	100

Table 5: Plastics End Products Imports by HS Codes (2020)

Source: Turk Stat & ITC Trade Statistics

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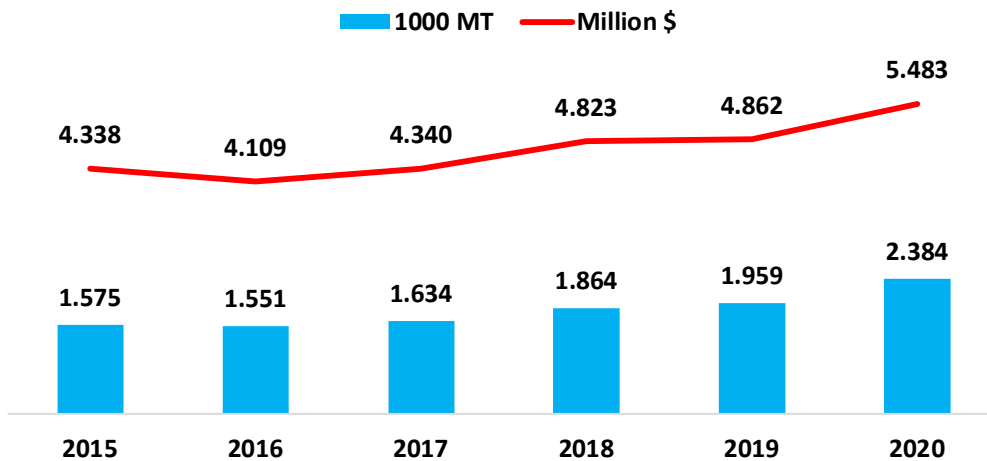
2.3.2. EXPORTS

In the period covering the years 2015-2020, the export of plastic products, which increased by an average of 8.6% on amount and 4.8% on value basis per year, increased by 21.7% on amount and 12.8% on value basis in 2020 compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	1.575	1.959	2.384	8,6	21,7
Million \$	4.338	4.862	5.483	4,8	12,8

Table 6: Plastics End Product Exports

Source: TURKSTAT and ITC Trade Statistics



Graphic 8: Plastics End Product Exports

Source: TURKSTAT and ITC Trade Statistics

In 2020, the largest export based on amount and value was realized in HS Code of 3920 (other plastic plates, leaves, pellicles, and slides) and HS Code of 3923 (plastic products for goods transport packaging, stoppers, caps, capsules). Exports of products injured in these HS Codes constituted 44% of the total plastic product exports on amount and 45% on value basis.

HS CODE	PLASTIC PRODUCTS DEFINITIONS	1000 MT	% Share MT	Million \$	% Share \$
3916	Monofilament, bar, profiles from plastic-cross section over 1mm	211	9	340	6
3917	Tubes, pipes, hoses from plastic; gasket, elbow, union etc.	298	12	612	11
3918	Floor coverings from plastic – incl. wall and ceiling coverings	32	1	49	1
3919	adhesive plate, sheet, strip, slide, etc. from plastic; flat	21	1	104	2
3920	Other plate, sheet, pellicles, and slides from plastic	608	25	1.413	26
3921	Other plates, sheets, pellicles, foils, and slides from plastic	184	8	480	9
3922	Bathtub, shower, sink, bidet, water-closet pan, and hardware from plastic	32	1	119	2
3923	Plastic products for moving furniture, tap, cap, capsule	454	19	1.041	19
3924	Table, kitchen and other household furniture, toiletry form plastic	185	8	472	9
3925	Construction materials from plastic	118	5	277	5
3926	Other goods from plastic	240	10	576	11
	TOTAL	2.384	100	5.483	100

Table 7: Plastics End Products Exports by HS Codes (2020)

Source: TURKSTAT and ITC Trade Statistics

2.3.4 IMPORTS AND EXPORTS BY COUNTRIES

Turkey is importing plastics end products from over 100 countries while exporting to more than 200 countries each year.

Imports from 10 countries in 2020 constituted 71% of total imports on amount and 75% on value basis. In this period, Germany became the country with the highest amount of plastic product imports, taking 17% share on amount and 20% on value basis, and China became the second largest import market with a share of 22% on amount and 16% on value basis. Apart from Germany and China, it is seen that Italy, France and South Korea are the countries from which Turkey imports the biggest plastic products.

Exports to 10 countries in 2020 constituted 50% of total exports on amount and 49% on value basis. During this period, Iraq, UK, Germany, Israel, and the USA formed Turkey's largest export markets in plastic products.

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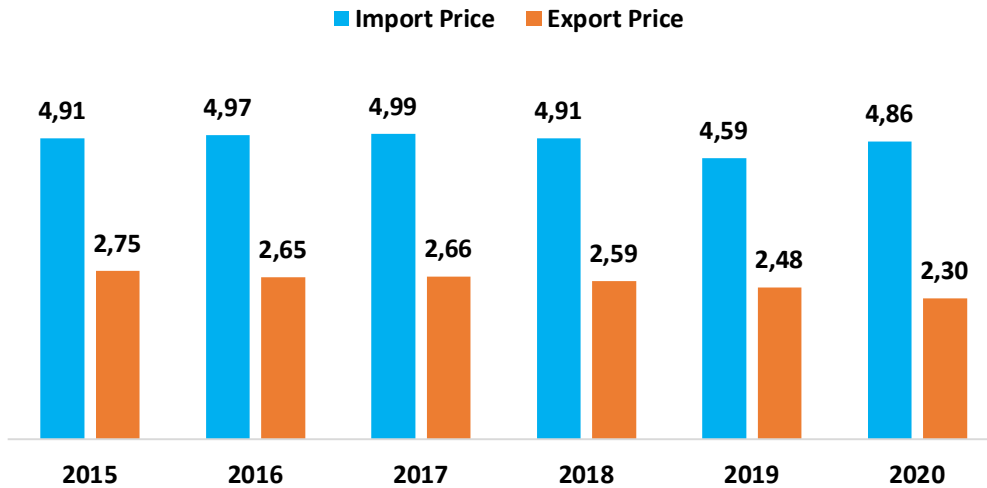
Imports					Exports				
Countries	1000 MT	Million \$	% -MT	%-\$	Countries	1000 MT	Million \$	% -MT	%-\$
Germany	100	576	17,2	20,3	Iraq	294	484	12,3	8,8
China	128	455	21,9	16,0	UK	168	396	7,0	7,2
Italy	60	335	10,3	11,8	Germany	116	394	4,9	7,2
France	26	173	4,5	6,1	Israel	162	296	6,8	5,4
S.Korea	33	155	5,6	5,5	USA	86	220	3,6	4,0
USA	10	118	1,7	4,2	Italy	96	202	4,0	3,7
UK	12	91	2,1	3,2	France	66	202	2,7	3,7
Belgium	21	80	3,6	2,8	Romania	78	194	3,3	3,5
Poland	13	73	2,2	2,6	Spain	63	149	2,6	2,7
Spain	11	68	2,0	2,4	Libya	69	130	2,9	2,4
10 Countries	415	2.123	71,0	74,8	10 Countries	1.197	2.668	50,2	48,7
Others	170	717	29,0	25,2	Others	1.187	2.815	49,8	51,3
TOTAL	584	2.840	100,0	100,0	TOTAL	2.384	5.483	100,0	100,0

Table 8: Plastic End Products Imports and Exports by Countries (2020)

Source: TURKSTAT and ITC Trade Statistics

2.3.5. IMPORT AND EXPORT PRICES

Unit import prices for plastic end products are always above the unit export prices in Turkey.



Graphic 9: Average Unit Foreign Trade Prices for Plastics End Products (\$/Kg)

Source: Turk Stat & ITC Trade Statistics

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In 2020, the average import prices of plastic end products were 4.86 \$ / Kg and the average export prices were 2.30 \$ / Kg. In 2020, the average import price increased by 5.9%, while the average export price decreased by 7.3% compared to 2019

HS CODE	PLASTIC PRODUCTS DEFINITIONS	Import Price			Export Price		
		2019	2020	% Increase	2019	2020	% Increase
3916	Monofilament, bar, profiles from plastic-cross section over 1mm	4,3	4,5	2,5	1,6	1,6	0,0
3917	Tubes, pipes, hoses from plastic; gasket, elbow, union etc.	8,2	7,2	-11,7	2,3	2,1	-9,3
3918	Floor coverings from plastic – incl. wall and ceiling coverings	3,4	2,5	-27,0	1,7	1,5	-11,6
3919	adhesive plate, sheet, strip, slide, etc. from plastic; flat	5,1	5,2	3,0	4,9	4,9	0,3
3920	Other plate, sheet, pellicles, and slides from plastic	3,0	3,2	5,0	2,4	2,3	-3,0
3921	Other plates, sheets, pellicles, foils, and slides from plastic	3,8	4,7	24,0	2,6	2,6	0,0
3922	Bathtub, shower, sink, bidet, water-closet pan, and hardware from plastic	6,6	6,1	-7,9	3,7	3,7	1,0
3923	Plastic products for moving furniture, tap, cap, capsule	4,6	4,6	1,9	2,4	2,3	-3,1
3924	Table, kitchen and other household furniture, toiletry form plastic	6,1	6,4	5,6	2,7	2,5	-4,2
3925	Construction materials from plastic	5,3	6,1	14,2	2,4	2,3	-2,9
3926	Other goods from plastic	10,2	10,3	1,2	4,6	2,4	-48,2
	AVERAGE	4,6	4,9	5,9	2,5	2,3	-7,3

Table 9: Average Unit Foreign Trade Prices for Plastics End Products (\$/Kg)

Source: Turk Stat & ITC Trade Statistics

2.3.6. FOREIGN TRADE SURPLUS

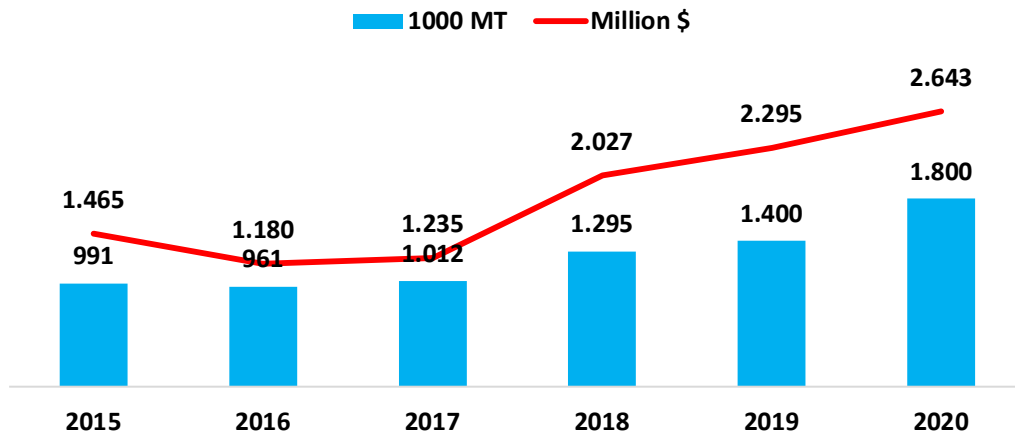
Turkey always gives surplus in foreign trade of plastic end products. In the plastic end products sector, 1 million 800 thousand tons and 2 billion 643 million dollars foreign trade surplus were given in 2020. Foreign trade surplus increased by 28.6% on amount and 15.2% on value basis in 2020 compared to 2019.

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	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	991	1.400	1.800	12,7	28,6
Million \$	1.465	2.295	2.643	12,5	15,2

Table 10: Foreign Trade Equilibrium in Plastics End Products Industry

Source: Turk Stat & ITC Trade Statistics



Graphic 10: Foreign Trade Surplus of Plastics End Products Industry

Source: Turk Stat & ITC Trade Statistics

2.4. DOMESTIC CONSUMPTION

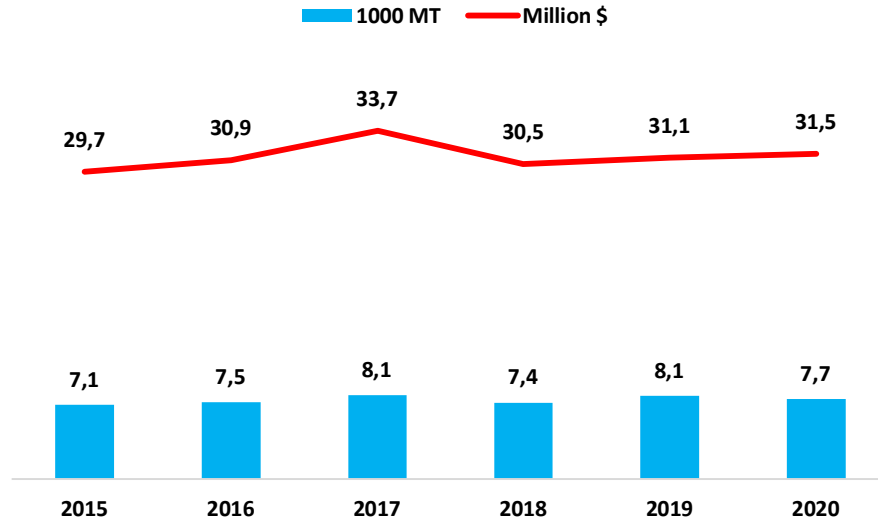
In the period covering 2015-2020, domestic consumption of plastic products increased annually by 1,6% on amount and 1.2% on value basis and realized as 7.7 million tons and 31.5 billion dollars in 2020 decreasing by 3.9% on amount and increasing by 1.2% on value basis compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	7,1	8,1	7,7	1,6	-3,9
Million \$	29,7	31,1	31,5	1,2	1,2

Table 11: Domestic Consumption for Plastics End Products

Source: Turk Stat & ITC Trade Statistics

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Graphic 11: Domestic Consumption for Plastics End Products

Source: TURKSTAT and ITC Trade Statistics

Approximately 3.8 million tons of the total domestic consumption of 7.7 million tons of plastic end products in 2020 were exported indirectly as semi-finished and finished products through exporter sectors such as automotive, packaging, construction, and electronics. The remaining 3.9 million tons were consumed directly by the consumer.

2.5. SUPPLY AND DEMAND

In the plastics industry, 9.54 million tons of production, 584 thousand tons of imports, 2.38 million tons of exports and 7.74 million tons of domestic market consumption were realized in 2020. In 2020, when 1.8 million tons of foreign trade surplus was given, the share of exports in production was 25% on amount basis, and the share of imports in domestic consumption was 8%.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
Production	8.140	9.456	9.540	3,2	0,9
Imports	585	559	584	0,0	4,5
Exports	1.575	1.959	2.384	8,6	21,7
Domestic Consumption	7.149	8.056	7.740	1,6	-3,9
Foreign Trade Surplus/Deficit	991	1.400	1.800	12,7	28,6
Exports/Production (%)	19	21	25		
Imports/Domestic Consumption (%)	8	7	8		

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Table: 12 Supply and Demand in Plastics End Products Industry (1000 Tons)

Source: Turk Stat and ITC Trade Statistics

In the plastic sector, 34.1 billion dollars of production, 2.84 billion dollars of imports, 5.48 billion dollars of exports and 31.5 billion dollars of domestic market consumption were realized in 2020. In 2020, when the foreign trade surplus of 2.6 billion dollars was given, the share of exports in production was 16% on value basis, and the share of imports in domestic consumption was 9%.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
Production	31.204	33.433	34.145	1,8	2,1
Imports	2.873	2.568	2.840	-0,2	10,6
Exports	4.338	4.862	5.483	4,8	12,8
Domestic Consumption	29.739	31.138	31.501	1,2	1,2
Foreign Trade Surplus/Deficit	1.465	2.295	2.643	12,5	15,2
Exports/Production (%)	14	15	16		
Imports/Domestic Consumption (%)	10	8	9		

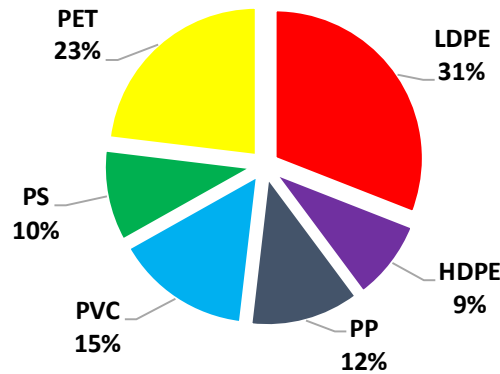
Table 13: Supply and Demand in Plastics End Products Industry (Million \$)

Source: Turk Stat and ITC Trade Statistics

3. PLASTICS RAW MATERIALS INDUSTRY

3.1. PRODUCTION

It is estimated that, in 2020, the plastics raw materials production realized about 1 million MT. In this period, 31% of the total plastic raw materials was LDPE 9% was HDPE, 15% was PVC, 12% was PP, 10% was PS and 23% was PET.



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Graphic 12: Plastics Raw Materials Production (2020)

Source : PETKİM and Other Producers

3.2. FOREIGN TRADE

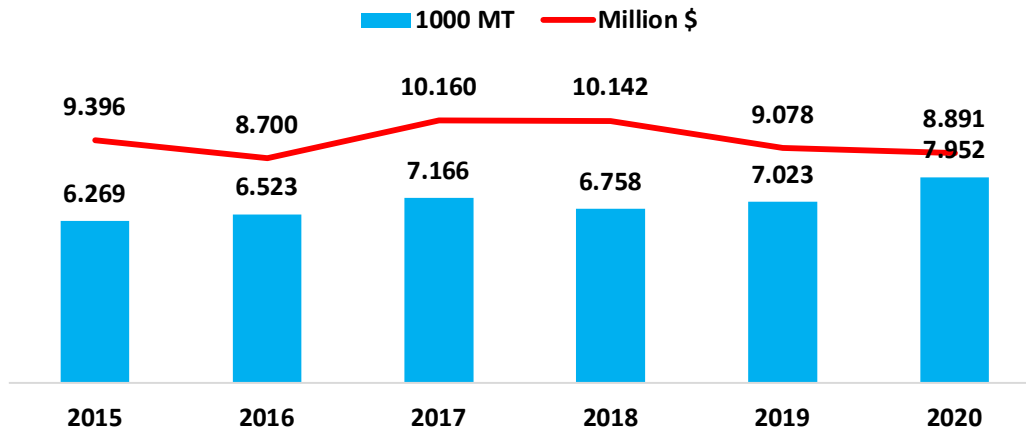
3.2.1. IMPORTS

In 2020, 7 million 952 thousand Mt and 8 billion 89 million dollars of plastic raw materials were imported. Imports of plastic raw materials, which increased annually by 4.9% on amount and decreased by 1.1% on value basis between 2015 and 2020, increased by 13.2% on amount and decreased by 2.1% on value basis in 2020 compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	6.269	7.023	7.952	4,9	13,2
Million \$	9.396	9.078	8.891	-1,1	-2,1

Table 14: Plastics Raw Materials Imports

Source : PETKİM and Other Producers



Graphic 13: Plastics Raw Materials Imports

Source : PETKİM and Other Producers

In 2020, polyethylene and polypropylene had the highest amount of imports in terms of amount and value. The imports of these two raw materials took a share of 56% on amount and 52% on value basis from the total plastic raw material imports.

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HS Code	CN Description	1000 MT	MT- %	Million \$	\$ - %
3901	Ethylene polymers (initial forms)	2.003	25	1.973	22
3902	Propylene and polymers of other olefins (initial forms)	2.496	31	2.675	30
3903	Styrene polymers (initial forms)	369	5	487	5
3904	Other olefin polymers with vinyl chloride/homogenous	796	10	792	9
3905	Vinyl acetate/polymers of other vinyl esters (initial forms)	47	1	103	1
3906	Acrylic polymers (initial forms)	258	3	400	5
3907	Polyacetals, other polyether's, epoxide-alkyd resins (initial forms)	740	9	1.166	13
3908	Polyamides (initial forms)	108	1	260	3
3909	Amino resins, phenolic resins, polyurethanes (initial forms)	247	3	442	5
3910	Silicones (initial forms)	40	1	144	2
3911	Petroleum resins, coumarone, indene/coumarone-indene resin, polytrees	42	1	110	1
3912	Cellulose and chemical derivatives (initial form)	40	1	157	2
3913	Natural polymers, modified natural polymers, derivatives (initial forms)	4	0	27	0
3914	Polymer based ion exchangers (initial form)	6	0	14	0
3915	Wastes, residuals, and scraps from plastic	757	10	140	2
	Total	7.952	100	8.891	100

Table 15: Plastics Raw Materials Imports by HS Codes (2020)

Source: Turk Stat & ITC Trade Statistics

3.2.2. EXPORTS

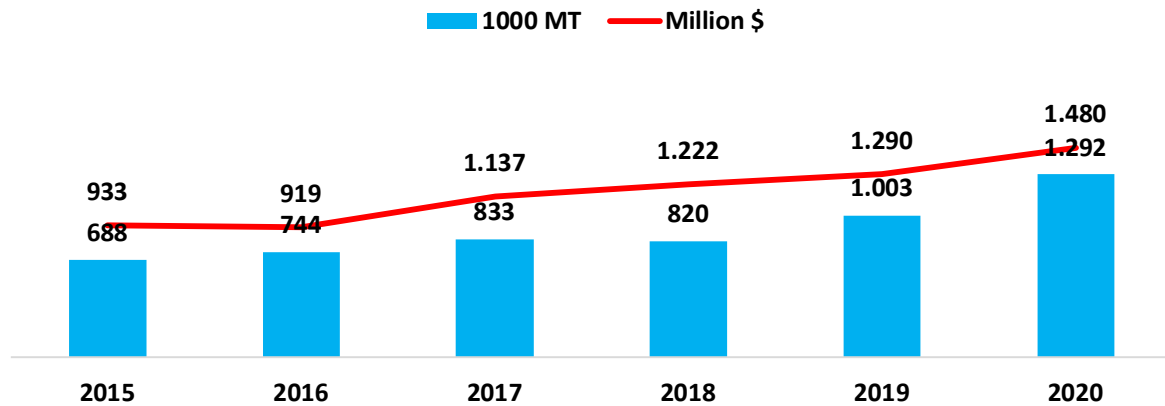
In 2020, 1 million 292 thousand Mt and 1 billion 480 million dollars of plastic raw materials were exported. Exports of plastic raw materials, which increased by 13.4% on amount and 9.7% on value basis per year between 2015 and 2020, increased by 28.8% on amount and 14.7% on value basis in 2020 compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	688	1.003	1.292	13,4	28,8
Million \$	933	1.290	1.480	9,7	14,7

Table 16: Plastic Raw Materials Exports

Source: Turk Stat & ITC Trade Statistics

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Graphic 14: Plastics Raw Materials Exports

Source: Turk Stat & ITC Trade Statistics

In 2020, acrylic polymers and polyacetals, which are in the 3906 and 3907 HS Codes, were the largest exports on amount and value basis. The share of plastic raw materials included in these HS Codes in total exports was 53% on amount and 56% on value basis.

HS Code	Description	1000 MT	MT- %	Million \$	\$ - %
3901	Ethylene polymers (initial forms)	82	6	74	5
3902	Propylene and polymers of other olefins (initial forms)	35	3	36	2
3903	Styrene polymers (initial forms)	134	10	131	9
3904	Other olefin polymers with vinyl chloride/homogenous	30	2	32	2
3905	Vinyl acetate/polymers of other vinyl esters (initial forms)	46	4	51	3
3906	Acrylic polymers (initial forms)	251	19	252	17
3907	Polyacetals, other polyether's, epoxide-alkyd resins (initial forms)	445	34	570	39
3908	Polyamides (initial forms)	31	2	70	5
3909	Amino resins, phenolic resins, polyurethanes (initial forms)	169	13	163	11
3910	Silicones (initial forms)	6	0	21	1
3911	Petroleum resins, coumarone, indene/coumarone-indene resin, polytrees	3	0	8	1
3912	Cellulose and chemical derivatives (initial form)	47	4	59	4
3913	Natural polymers, modified natural polymers, derivatives (initial forms)	0	0	1	0
3914	Polymer based ion exchangers (initial form)	0	0	1	0
3915	Wastes, residuals, and scraps from plastic	14	1	10	1
Total		1.292	100	1.480	100

Table 17: Plastics Raw Materials Exports by HS Codes (2020)

Source: Turk Stat & ITC Trade Statistics

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3.2.3. EXPORTS AND IMPORTS BY COUNTRIES

Turkey imports plastics raw materials from over 100 countries while exports to more than 100 countries each year.

In 2020, 62% of total plastic raw material imports on amount and 67% on value basis were made from 10 countries. In this period, Saudi Arabia, Germany, and S. Korea took the first 3 places in total plastic raw material imports and the share of these 3 countries in total plastic raw material imports was 32% on amount and 33% on value basis.

In 2020, 54% of total plastic raw material exports on amount and 52% on value basis were made to 10 countries. In this period, Romania, Germany, and Egypt took the first 3 places in total plastic raw material exports and the share of these 3 countries in total plastic raw material exports was 25% on amount and 21% on value basis.

Imports					Exports				
Countries	1000 MT	Million \$	MT- %	\$ - %	Countries	1000 MT	Million \$	MT- %	\$ - %
S.Arabia	1.197	1.113	15,1	12,5	Romania	168	120	13,0	8,1
Germany	659	969	8,3	10,9	Germany	70	89	5,4	6,0
S.Korea	680	873	8,5	9,8	Egypt	88	83	6,8	5,6
Belgium	517	622	6,5	7,0	Iran	39	82	3,0	5,5
USA	474	493	6,0	5,5	Russian Fed.	45	76	3,5	5,1
Spain	331	408	4,2	4,6	Italy	68	73	5,3	4,9
France	287	379	3,6	4,3	Iraq	62	72	4,8	4,9
Netherlands	309	370	3,9	4,2	Israel	57	58	4,4	3,9
Italy	232	364	2,9	4,1	Algeria	42	55	3,3	3,7
China	215	362	2,7	4,1	Bulgaria	59	54	4,6	3,6
10 Total	4.901	5.952	61,6	66,9	10 Total	698	762	54,0	51,5
Others	3.051	2.940	38,4	33,1	Others	594	717	46,0	48,5
Total	7.952	8.891	100,0	100,0	Total	1.292	1.480	100,0	100,0

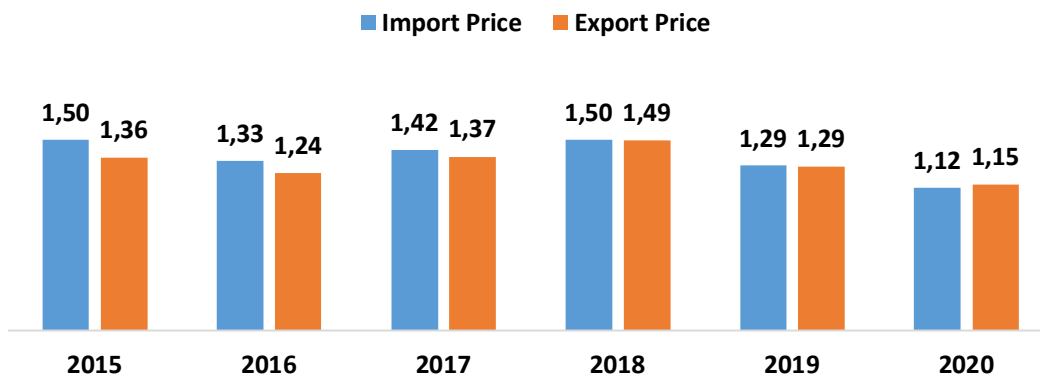
Table 18: Plastics Raw Materials Imports and Exports by Countries (2020)

Source: Turk Stat & ITC Trade Statistics

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3.2.4. IMPORT AND EXPORT PRICES

In 2020, the average unit import price of plastic raw materials was 1.12 \$ / Kg, and the export price was 1.15 \$ / Kg, and the import price decreased by 13.5% and the export price by 11% compared to 2019.



Graphic 15: Plastics Raw Materials Average Foreign Trade Prices (\$/Kg)

Source: Turk Stat & ITC Trade Statistics

HS Code	Import Prices			Export Prices		
	2019	2020	% Increase	2019	2020	% Increase
3901	1,2	1,0	-15,2	1,0	0,9	-6,1
3902	1,3	1,1	-15,6	1,1	1,0	-8,6
3903	1,4	1,3	-8,1	1,1	1,0	-14,4
3904	1,0	1,0	1,9	1,2	1,1	-12,8
3905	2,2	2,2	0,9	0,9	1,1	31,0
3906	1,7	1,6	-9,9	1,1	1,0	-10,1
3907	1,7	1,6	-4,7	1,7	1,3	-24,6
3908	3,0	2,4	-20,6	2,4	2,3	-2,7
3909	1,9	1,8	-7,6	1,1	1,0	-9,5
3910	4,1	3,6	-13,4	3,6	3,4	-6,7
3911	2,8	2,6	-5,6	3,0	2,6	-12,7
3912	3,7	3,9	4,4	1,3	1,3	-2,6
3913	7,2	6,9	-4,4	5,5	4,7	-14,3
3914	2,4	2,4	3,1	2,4	3,5	49,1
3915	0,2	0,2	-11,5	0,8	0,7	-9,9
Average	1,3	1,1	-13,5	1,3	1,1	-11,0

Table 19: Plastics Raw Materials Average Import and Exports Prices by HS Codes (\$/Kg)

Source: Turk Stat & ITC Trade Statistics

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Plastics raw material prices increased between % 23-137 in the last 6 months and between % 25-56 in the last 3 months in Turkey due to the production cuts of global manufacturer because of compelling reasons. This situation is an important problem that prevents competitive production and export in the plastic products industry.

Plastics Raw Materials	Last 6 Months	Last 3 Months
PVC	137	56
GPPS	60	50
HIPS	55	50
AYPE	60	40
YYPE	47	25
PP	45	40
PET	23	40

Table 20: Price Increases in Plastics Raw Materials (%)

Source: Chemorbis

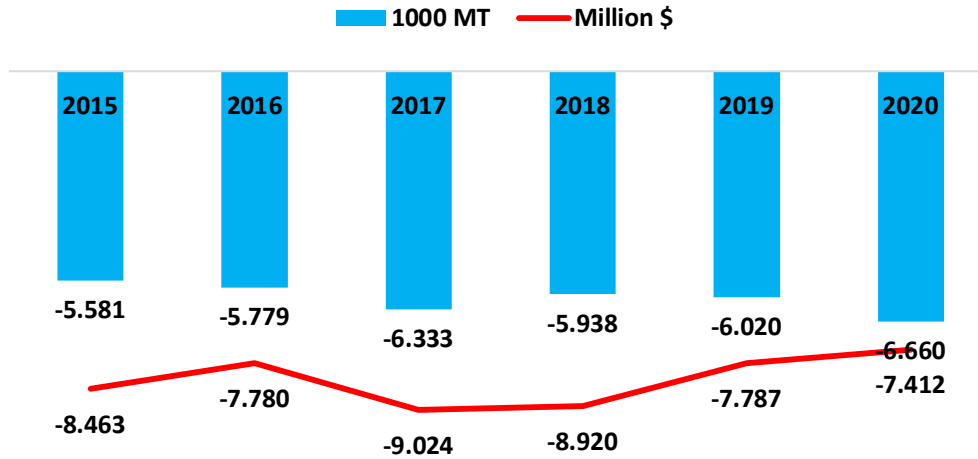
3.2.5. FOREIGN TRADE DEFICIT

Turkey is a country that always has deficit in plastic raw materials foreign trade. In 2020, plastic raw material foreign trade deficit was realized as 6.66 million tons and 7.4 billion dollars. The foreign trade deficit increased by 10.6% on amount and decreased by 4.8% on value basis compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	-5.581	-6.020	-6.660	3,6	10,6
Million \$	-8.463	-7.787	-7.412	-2,6	-4,8

Table 21: Plastics Raw Materials Foreign Trade Deficit

Source: Turk Stat & ITC Trade Statistics



Graphic 16: Plastics Raw Materials Foreign Trade Deficit

Source: Turk Stat & ITC Trade Statistics

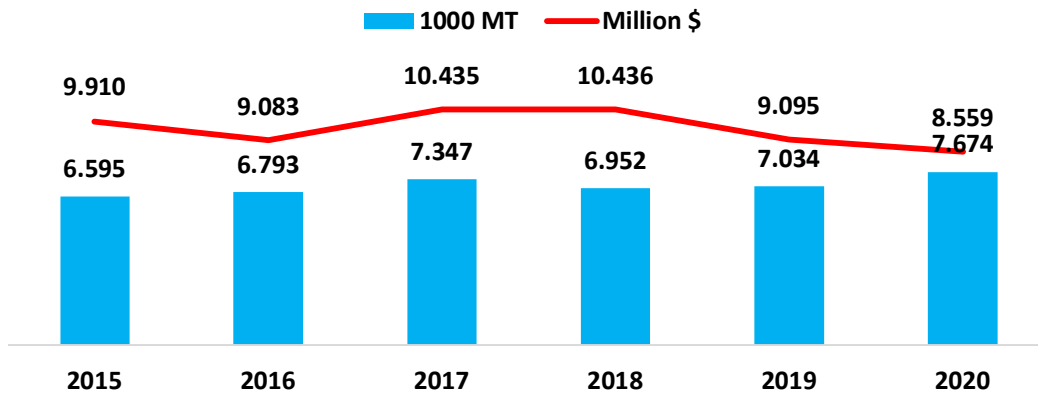
3.3. DOMESTIC CONSUMPTION

Between 2015 and 2020, the domestic market consumption of plastic raw materials, which annually increased by 3.1% on amount and decreased by 2.9% on value basis, realized as 7.67 million tons and 8.56 billion dollars in 2020, increasing by 9.1% on amount and decreasing by 5.9% on value basis compared to 2019.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
1000 MT	6.595	7.034	7.674	3,1	9,1
Million \$	9.910	9.095	8.559	-2,9	-5,9

Table 22: Domestic Consumption in Plastics Raw Materials

Source: Turk Stat & ITC Trade Statistics



Graphic 17: Domestic Consumption in Plastics Raw Materials

Source: Turk Stat & ITC Trade Statistics

3.4. SUPPLY AND DEMAND

In 2020, around 1 million tons of production, 7.95 million tons of imports, 1.29 million tons of exports and 7.67 million tons of domestic market consumption were realized in the plastic raw material sector. 87% of the plastic raw material supply was met by imports in 2020.

	2015	2019	2020	CAGR (%) 2020/2015	% Increase 2020/2019
Production	1.014	1.014	1.014	0,0	0,0
Imports	6.269	7.023	7.952	4,9	13,2
Exports	688	1.003	1.292	13,4	28,8
Domestic Consumption	6.595	7.034	7.674	3,1	9,1
Foreign Trade Deficit	-5.581	-6.020	-6.660	3,6	10,6

Table 23: Supply and Demand Equilibrium in Plastics Raw Materials (1000 MT)

Source: Turk Stat & ITC Trade Statistics

4. CONCLUSION

Negative developments in Turkish and the world economy, makes it difficult to compete with the standstill or even declining sales prices and narrow profit margins.

The important thing is to produce high value-added raw materials in Turkey. Taxes that Turkey pays when importing raw materials purchased by everyone, such as polypropylene and polyethylene that the industry cannot meet the domestic demand, negatively affect Turkey's

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competition. It is known that when we eliminate these negativities, the added value that Turkey's industry provides to the economy will increase even more.

The most important problem of the industry that it cannot provide enough added value. There are mainly two ways to provide higher value-added production and exports. To produce innovative high value-added products or to increase profit margins by reducing costs without compromising quality. To enhance production and export opportunities in a competitive global market without compromising on quality, the industry must produce environmentally friendly at EU standards.

The work needed to produce advanced plastic center will facilitate Turkey's lives should be made. The traditional production model that does not provide added value in the industry should be transformed into the production of advanced plastics.

The companies which cannot compete with the change in prices due to increasing global competition, must issue the "Costs of the Competition" to the forefront, to increase profitability. To create a successful competition that makes the difference in cost, it is necessary to implement changes in the changing world beyond the known method of saving techniques.

Even though only 13% of the raw material needs are covered by domestic production, the sector is deprived of the raw material supply facilities with high import prices and tax rates for the protection of domestic production at more economical prices. This reduces competitive export opportunities of sectors in global markets for the protection of the domestic raw material producer. Local producers should be protected by applying incentives to reduce production and investment costs instead of putting taxes on imports of raw materials. If the production of plastic raw materials cannot meet the need, importing obstacles must be removed.

Plastics raw material prices increased between % 23-137 in the last 6 months and between % 25-56 in the last 3 months in Turkey due to the production cuts of global manufacturer because of compelling reasons. This situation is an important problem that prevents competitive production and export in the plastic products industry. It is considered essential for the short-term solution of the problem that the import and surveillance taxes imposed on plastic raw materials are eliminated and that the domestic plastic raw material producers give priority to the domestic producer over exports.

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DAHA YAŞANILABİLİR
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