



**PAGEV**



**TURKISH PLASTICS INDUSTRY**  
FOLLOW-UP REPORT  
**2018/6**





## — FOREWORD —

The plastics industry is one of the key drivers of the Turkish economy. With over 10 million tons of production, 40 billion dollars in revenue, 5 billion dollars in direct exports and an annual rate of growth that has consistently exceeded 10% over the last decade, the industry is increasingly a major contributor to the economy. The industry has the second highest production capacity in Europe, and sixth in the world. Staying true to our mission of being the "uniting force" of the Turkish plastics industry, we at PAGEV continue to implement projects that will carry our industry forward.

We rely on scientific, proven data showing how plastics constitute an indispensable part of our lives to solve long-standing issues in the industry in a meaningful way, and we realize that having accurate and reliable information is the largest part of the solution. We keep up the research, collect and compile new data, and publish them in reports. We make our reports and position papers containing valuable information available to all plastics industry representatives and stakeholders, and to public institutions.

We developed a set of reports through long and thorough research, which we hope will contribute significantly to our industry. Expert researchers used accurate and reliable data to determine the current position of the Turkish plastics industry, the problems we all face, and what tangible steps we need to take in order to overcome these issues. We believe that the set of reports and position papers we make available to PAGEV members and all stakeholders will help to shape the world of plastics. It delights us further that our work will enable public authorities to access the most current and accurate data regarding the plastics industry.

By offering these reports in English, we hope that our members will be able to share the true potential of the plastics industry in Turkey with their business partners abroad.

It is our pleasure to present you a compendium of current reports and supplemental information, and I would like to take this opportunity to extend my gratitude to everyone who has helped our industry grow into the driving force that it is today.

**Yours sincerely,**

**Yavuz EROĞLU**  
**PAGEV Chairman**

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# 1. ECONOMIC OUTLOOK

## 1.1. GLOBAL ECONOMY

- The harsh sanctions imposed or planned by the United States, and the resulting backlash from China, escalate political tension. Other trading partners of the US give similar reactions to protectionist policies.
- In the June 12-13 meeting, FED increased policy interest by 25 basis points to 1.75-2.0% as expected. The cumulative interest increase expectation of FED for 2018 was revised from 3 to 4.
- Recent data on the Eurozone economy suggest that the loss of power in the economy may remain limited.
- The DXY index used to measure the value of the USD against other developed country currencies showed an upward trend after the FED and ECB meetings. The valuation of the dollar caused a sharp decline in gold prices.
- Oil prices were fluctuating prior to the OPEC meeting on June 22-23. Although the resolution was to reduce restrictions, it was noted that the increase in production would not have an immediate effect on supply data, which caused upward pressure on prices.
- The Organization for Economic Cooperation and Development (OECD) issued the Economic Outlook report at the end of May, stating that the overall positive outlook in the economy continued. According to the forecasts of the organization, global growth is expected to be at 3.8% and 3.9% for 2018 and 2019, respectively, during which the US economy will grow by 2.9% and 2.8%, respectively, and the Eurozone will continue to recover in terms of the labor market and wages, achieving growth rates of 2.2% and 2.1%, respectively.
- In addition, OECD remarked that trade wars and oil prices presented risks for global growth, causing some developing countries to become fragile under pressure.

	2018	2019	2018 Difference to Previous Forecast (%)
World	3.8	3.9	-0.1
United States	2.9	2.8	-
Eurozone	2.2	2.2	-0.1
Germany	2.1	2.1	-0.3
Japan	1.2	1.2	-0.3
UK	1.4	1.3	0.1
China	6.7	6.4	-
Brazil	2.0	2.8	-0.2
Turkey	5.1	5.0	-0.2

**Table 1: OECD Growth Forecasts**  
Source: OECD

In the second half of 2018, the course of the global economy will be determined by the developments

in the wake of FED's interest rate increases, and geopolitical risks.



# 1. ECONOMIC OUTLOOK

## 1.2. TURKISH ECONOMY

The following factors are expected to be major influences on the Turkish economy, therefore the plastics industry, in the near future:

- The Turkish economy grew by 7.4% in the first half of 2018. This brought the size of the Turkish economy to approximately TL 3.25 trillion as of the first quarter of the year. Gross Domestic Product in USD grew by 5.1% annually and reached USD 883 billion.
- An analysis of GDP based on the method of spending shows that private spending made the greatest contribution in GDP since 2011 with 6.7 percentile points. Capital expenses was the second largest growth contributor at 2.8 percentile points.
- According to the production method, all subsectors have contributed to growth in the first quarter. However, while the contribution of services declined to 4.2% in the first quarter, the share of the industrial sector increased to 1.9%.
- Unemployment was 9.6% as of April.
- Exports in the first half of the year were at 82.2 billion USD, showing an increase of 6.3% compared to the same period last year, while imports increased by 13.5% to 122.9 billion USD, and the foreign trade deficit became 40.7 billion USD. The foreign trade deficit increased by 31.6% compared to the same period last year, while the export-import coverage ratio declined to 66.9%.
- During this period, the share of high-technology products in the exports of the manufacturing industry was 3.2% while the share in imports was 13.6%.
- Manufacturing PMI has been below the threshold for the last quarter. The manufacturing industry purchasing managers' index (PMI) indicate a further slowdown in the industry in June after April and May. The index was at its lowest point of 9 years in May with 46.4, and although it recovered slightly in June and became 46.8, it is still noticeably weak. It has been noted that inflationist pressure has been adversely affecting the activity of the sector due to its effect on costs.
- Trust indices have been declining since the beginning of 2018.
- The first five months of the year show that the central budget management performance has deteriorated compared to the same period last year.
- Consistent with previous months, inflation was above expectations for June as well. Annual CPI rose sharply in June and became 15.39%. The Domestic PPI inflation rate rose to 23.71% in June.
- Recent concerns over the fueling of trade wars cause pressure on developing markets in particular.
- The forecast of FED members to increase interest rates four times this year, which surfaced in the June meeting, supports the US dollar while reducing global risk appetite.
- Statements on economy policies during the election campaign, sustained high rates of inflation, and continued deterioration in the foreign trade balance have had an adverse effect on the risk premiums and TL asset prices of Turkey, where the need for outside financing is high.
- Compounded by the downturn in global markets, the developments in Turkey led to increased borrowing costs in the first half of June.
- Revision in inflation expectations and continued concerns about an independent monetary policy after the elections contributed to the rise in costs.
- From a global perspective, protectionist trade measures implemented by the US, China and other important trading partners put pressure on the global markets. While FED continues interest rate increases, the divide between developed country central banks deepens. Although FED revised its interest rate increase expectations in the upward direction for this year, ECB follows a route of further normalization than expected.
- Second quarter data indicate a loss of momentum in economic activity.
- Under these circumstances, it is expected that the 2018 GDP growth rate will be around 4.5 to 5%, the Current Deficit/GDP rate to be around 5.5 to 6%, and year-end inflation around 14 to 15%.

## 1. ECONOMIC OUTLOOK

According to the outlook, the global and Turkish economies will continue to exhibit signs of risk despite some positive developments. It is predicted that

uncertainties will lead to risk aversion and cautious use of resources.

(Sources: T. İş Bankası and Akbank Economic Publications, Ministry of Development, TÜİK)

		2015	2016	2017	2018
GDP	Billion \$	861	857	851	208 (3 months)
Growth Rate	%	6.1	2.9	7.4	7.4 (3 months)
CPI	%	8.8	8.53	11.92	15.39 (6 months)
PPI	%	5.7	9.94	15.47	22.71 (6 months)
Unemployment	%	10.3	12.0	10.7	9.6 (4 months)
Exports	Billion \$	143.9	142.6	157	82.2 (6 months)
Imports	Billion \$	207.2	198.6	234	122.9 (6 months)
Foreign Trade Deficit	Billion \$	-63.3	-56.0	-77	-40.7 (6 months)
Coverage Rate	%	69.5	71.8	67	66.9 (6 months)
Current Deficit/GDP	%	-3.7	-3.8		
Budget Balance/GDP	%	-1.0	-1.1		
Total Debt Inventory	Billion TL	612.1	677.6	890.8	959.0 (5 months)
USD/TL	TL	2.9207	2.9207	3.7916	4.5812 (6 months)
EURO/TL	TL	3.1867	3.1867	4.5530	5.3486 (6 months)

**Table 2: Primary Economic Indicators in Turkey**

Source: TÜİK, Ministry of Economy, Undersecretariat of the Treasury, Central Bank of Turkey



## 2. PLASTIC PRODUCTS INDUSTRY

### 2.1. PRODUCTION

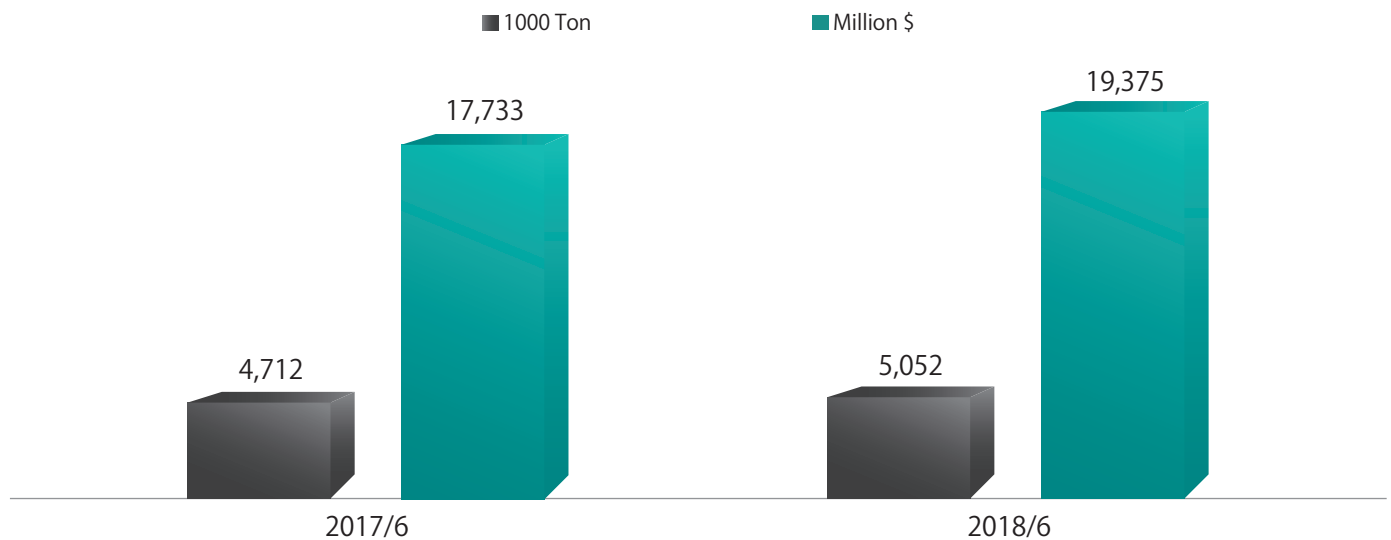
Production values for the first 6 months of 2017 were 4,712 million tons and 17,773 million dollars, and have increased by 7.2% and 9.3% respectively to become 5.52 million tons and 19,375 million dollars in the first half of 2018.

It is projected that by the year's end, plastic product volume will increase by 5% compared to 2017 and become 10.104 million tons, while value is expected to increase by 5.3% to 38,750 million dollars.

	2017/6	2017	2018/6	2018/Est.	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
1000 Tons	4,712	9,624	5,052	10,104	7.2	5.0
Million \$	17,733	36,793	19,375	38,750	9.3	5.3

**Table 3: Plastic Product Manufacturing**

Source: TUIK and ITC Trade Statistics

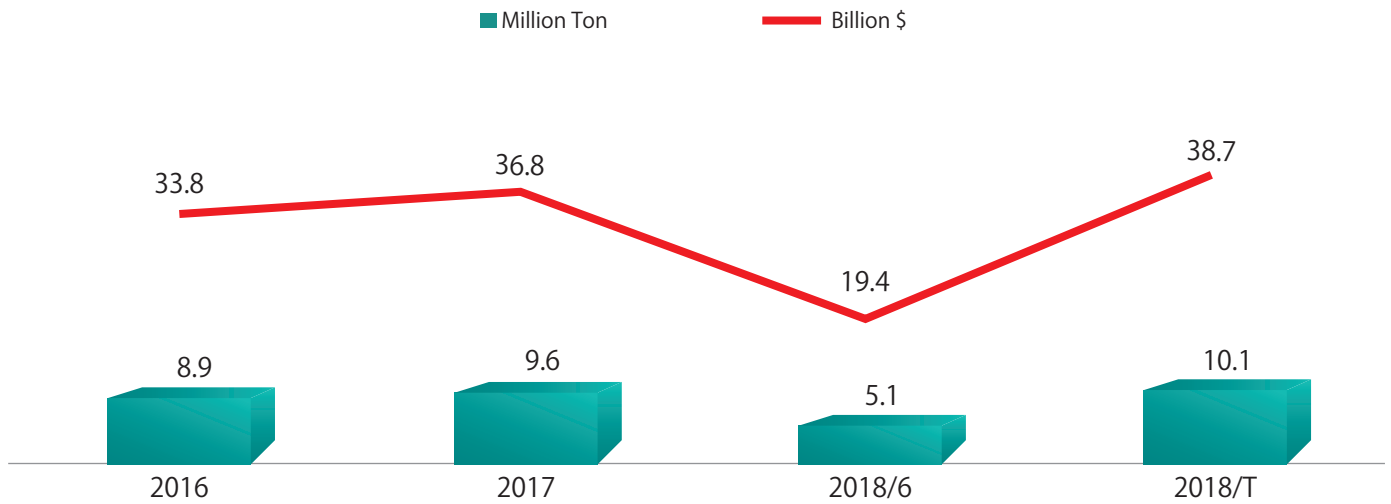


**Graph 1: YTD Comparison, Plastic Products**

Source: TUIK and ITC Trade Statistics



## 2. PLASTIC PRODUCTS INDUSTRY

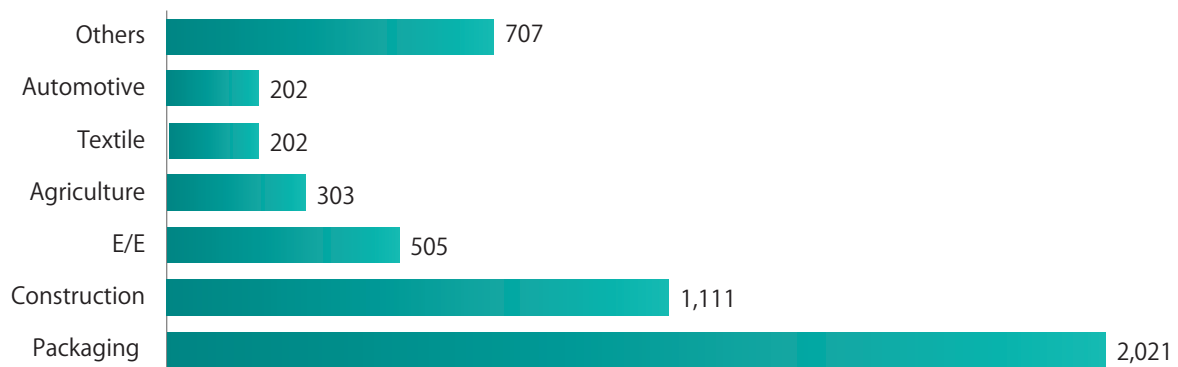


**Graph 2: Plastic Product Manufacturing**

Source: TUIK and ITC Trade Statistics

Plastic packaging products account for 2.21 million tons and plastic construction materials account for

1.1 million tons of the 5.1 million tons of plastic products manufactured in the first 6 months of 2018.



**Graph 3: Plastic Product Manufacturing by Subsectors – 2018/6 (1000 Tons)**

Source: TUIK and ITC Trade Statistics

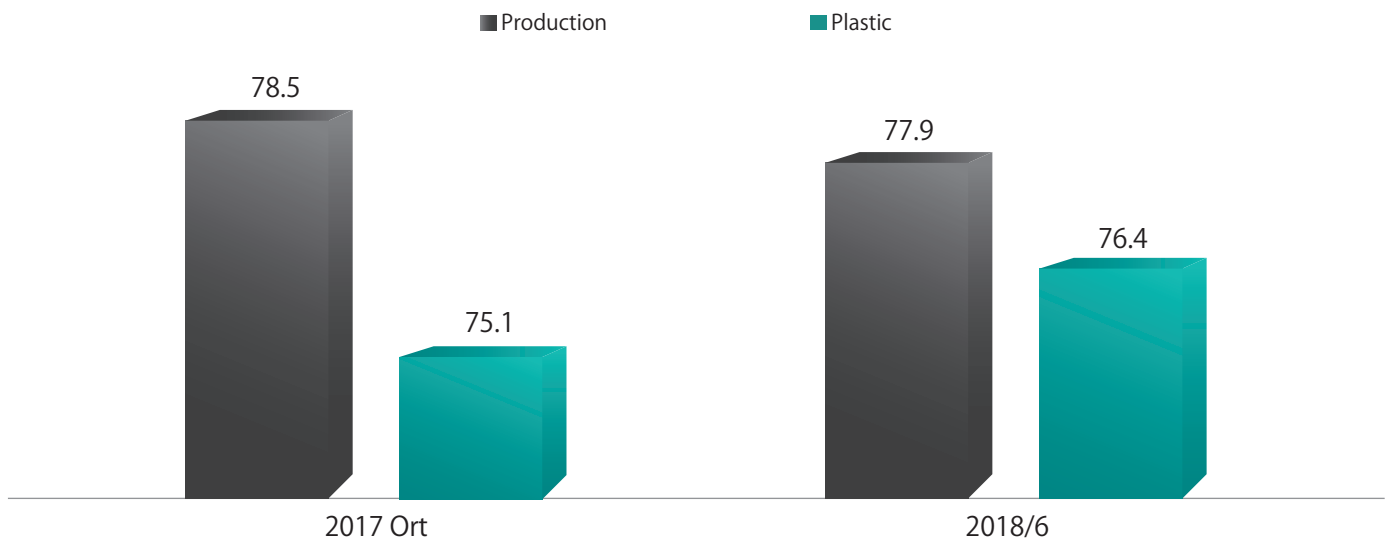


## 2. PLASTIC PRODUCTS INDUSTRY

### 2.2. CAPACITY UTILIZATION

Average capacity utilization for January-June 2018 was 76.4%, showing an increase of 1.3 percentile points compared to the same period last year.

The average capacity utilization in the plastics industry was 1.5 percentile points below overall industry averages for the same period.



**Graph 4: Capacity Utilization in the Plastics Industry**

Source: TUIK and ITC Trade Statistics, Central Bank of Turkey

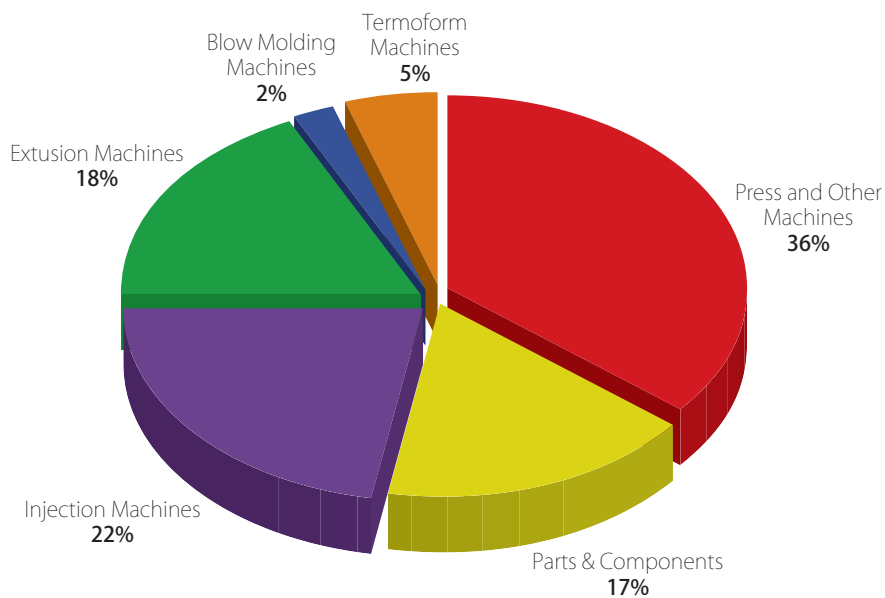


## 2. PLASTIC PRODUCTS INDUSTRY

### 2.3. MACHINERY AND EQUIPMENT INVESTMENTS

In the five years between 2013 and 2017, an annual average of 850 million dollars were invested in machinery and equipment, of which presses and other

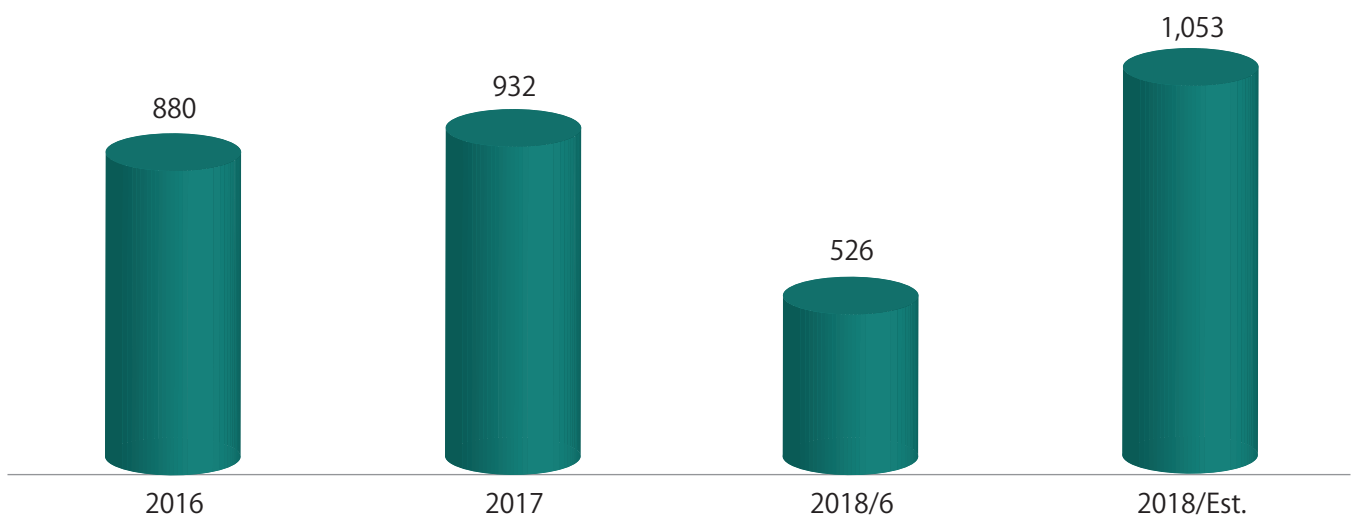
machines accounted for 36%, followed by injection at 22%, extrusion at 18%, thermoform at 5%, blow molding machines at 2%, and parts and component at 17%.



**Graph 5: % Distribution of Machinery Investment, 2013-2017**  
Source: TUIK and ITC Trade Statistics

Machinery and equipment investment in the plastics industry for the first 6 months of 2018 was 526 million dollars, and if the same trend were to continue,

total investment for 2018 is projected to increase by 13% compared to 2017 and reach 1.053 billion dollars.



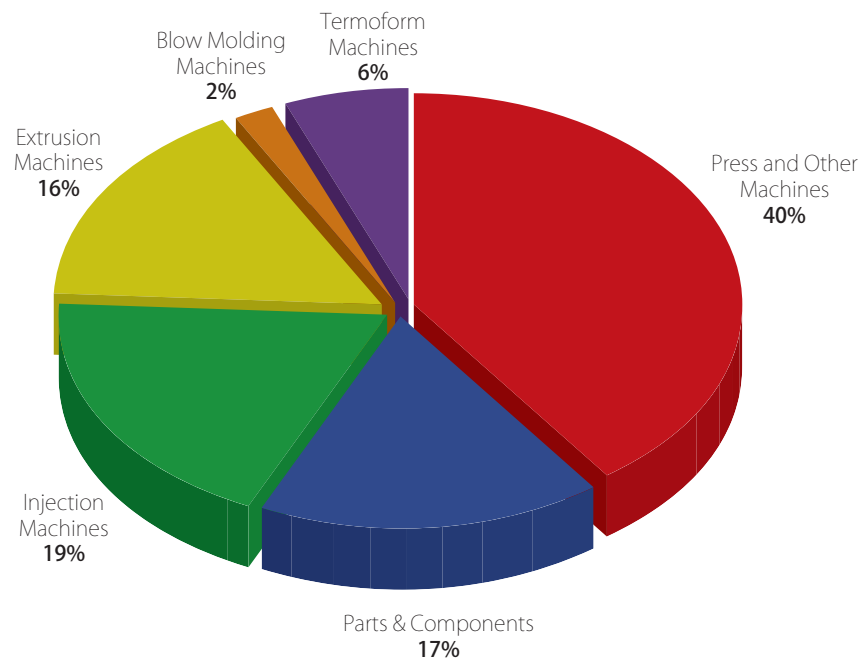
**Graph 6: Machinery and Equipment Investment in the Plastics Industry (Million \$)**  
Source: TUIK and ITC Trade Statistics



## 2. PLASTIC PRODUCTS INDUSTRY

Presses and other machines accounted for 40% of the total investment of 526 million dollars in the first 6 months of 2018, followed by injection at 19%, extrusion at 16%,

and equipment and parts at 17%. Blow molding and thermoform machines accounted for 2% and 6%, respectively.



**Graph 7: Machinery and Equipment Investment in the Plastics Industry (2018/6)**

Source: TUIK and ITC Trade Statistics

### 2.4. FOREIGN TRADE

#### 2.4.1. IMPORTS

317,000 tons and 1.559 billion dollars' worth of plastic products were imported in the first 6 months of 2018. Plastic product imports have increased by 5.6% by quantity and 5.8% by value compared to the first half of 2017.

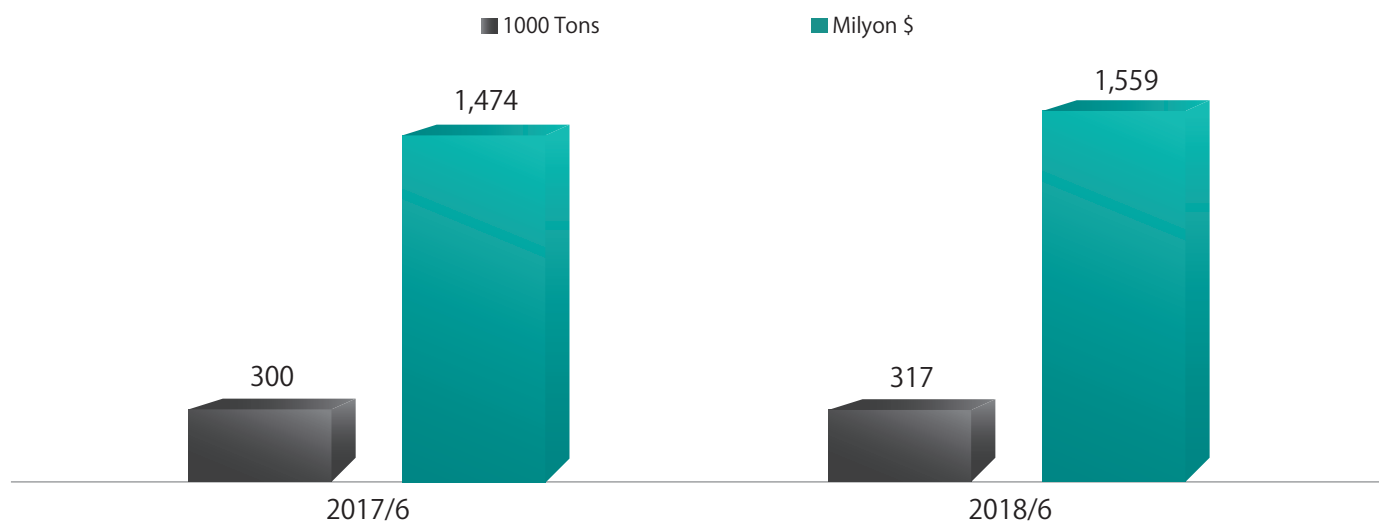
If the same trend were to continue, total plastic product imports for 2018 is projected to increase by 1.8% by quantity and 0.46% by value to reach 634,000 tons and 3.119 billion dollars.

	2017/6	2017	2018/6	2018/T	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
1000 Ton	300	622	317	634	5.6	1.8
Million \$	1,474	3,105	1,559	3,119	5.8	0.4

**Table 4: Plastic Product Imports**

Source: TUIK and ITC Trade Statistics

## 2. PLASTIC PRODUCTS INDUSTRY



**Graph 8: YTD Comparison, Plastic Product Imports**

Source: TUIK and ITC Trade Statistics

In the first 6 months of 2018, the most imported nomenclature number (by quantity and value) was 39.20 (Plates, sheets, film, foil and strip, of non-cellular plastics).

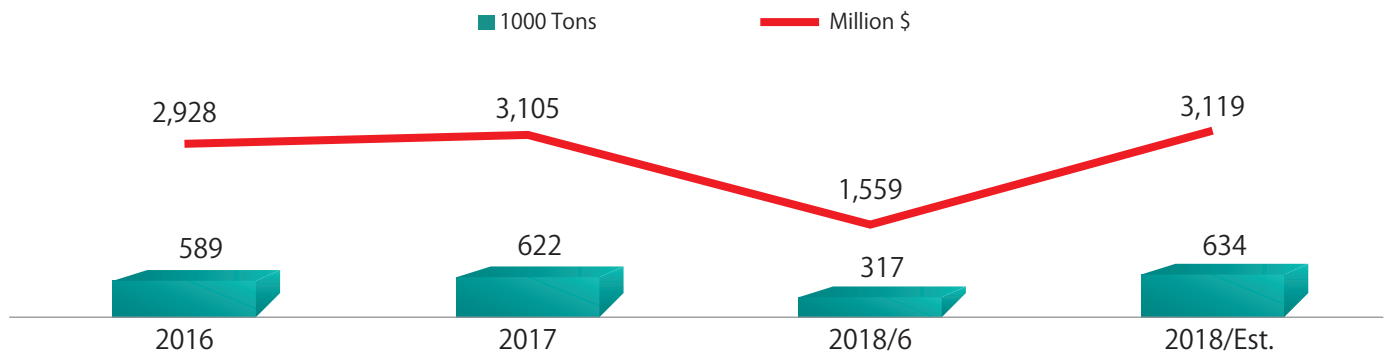
The import of items in this nomenclature number accounted for 42% by quantity and 30% by value of all plastic product imports.

NOMENCLATURE NUMBER	DESCRIPTION	1000 Tons	Amount Share %	Million \$	Value - Share %
39.16	Monofilament of which any cross-sectional dimension > 1 mm	6	2	29	2
39.17	Tubes, pipes and hoses, and fittings therefor, e.g. joints, elbows, flanges, of plastics	18	6	141	9
39.18	Floor coverings of plastics, including wall or ceiling coverings	10	3	33	2
39.19	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether or not in rolls	31	10	173	11
39.20	Plates, sheets, film, foil and strip, of non-cellular plastics	134	42	467	30
39.21	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated	38	12	147	9
39.22	Baths, shower-baths, sinks, washbasins and similar sanitary ware, of plastics	2	1	15	1
39.23	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other closures, of plastics	32	10	151	10
39.24	Tableware, kitchenware, other household articles and toilet articles, of plastics	5	1	31	2
39.25	Builders' ware of plastics	5	2	20	1
39.26	Articles of plastics	36	11	353	23
<b>Total plastic products</b>		<b>317</b>	<b>100</b>	<b>1,559</b>	<b>100</b>

**Table 5: Plastic Product Imports by Nomenclature (2018/6)**

Source: TUIK and ITC Trade Statistics

## 2. PLASTIC PRODUCTS INDUSTRY



**Graph 9: Plastic Product Imports**

Source: TUIK and ITC Trade Statistics

### 2.4.2. EXPORTS

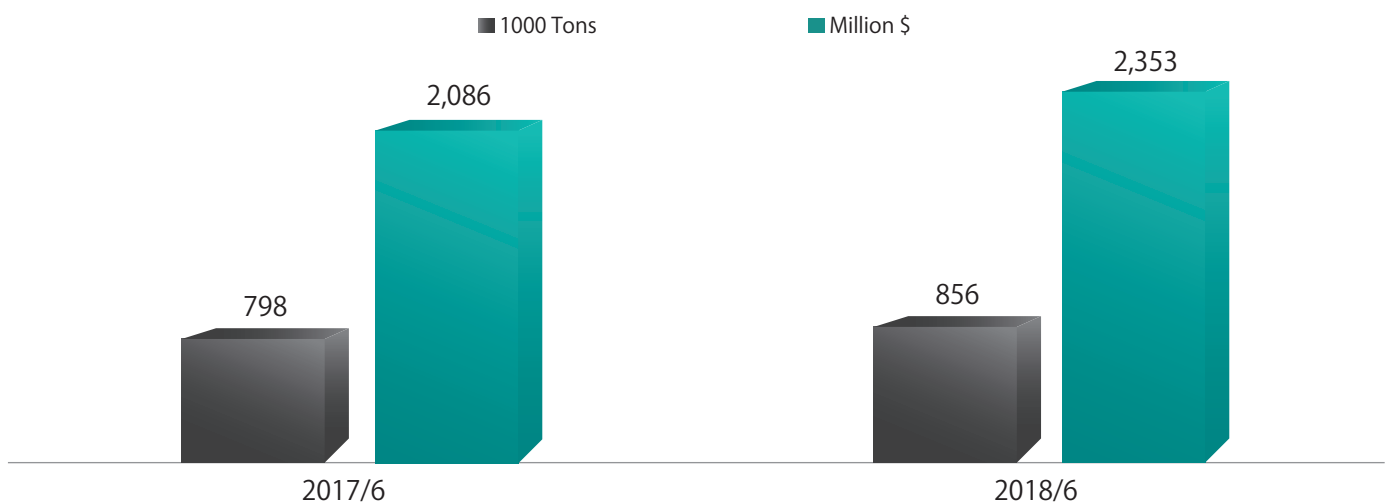
Export values for the first 6 months of 2018 were 856,000 tons and 2.353 billion dollars,

showing an increase of 7.3% by quantity and 12.8% by value compared to the first half of 2017.

	2017/6	2017	2018/6	2018/T	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
1000 Tons	798	798	856	1,712	7.3	4.8
Million \$	2,086	2,086	2,353	4,705	12.8	8.4

**Table 6: Plastic Product Exports**

Source: TUIK and ITC Trade Statistics



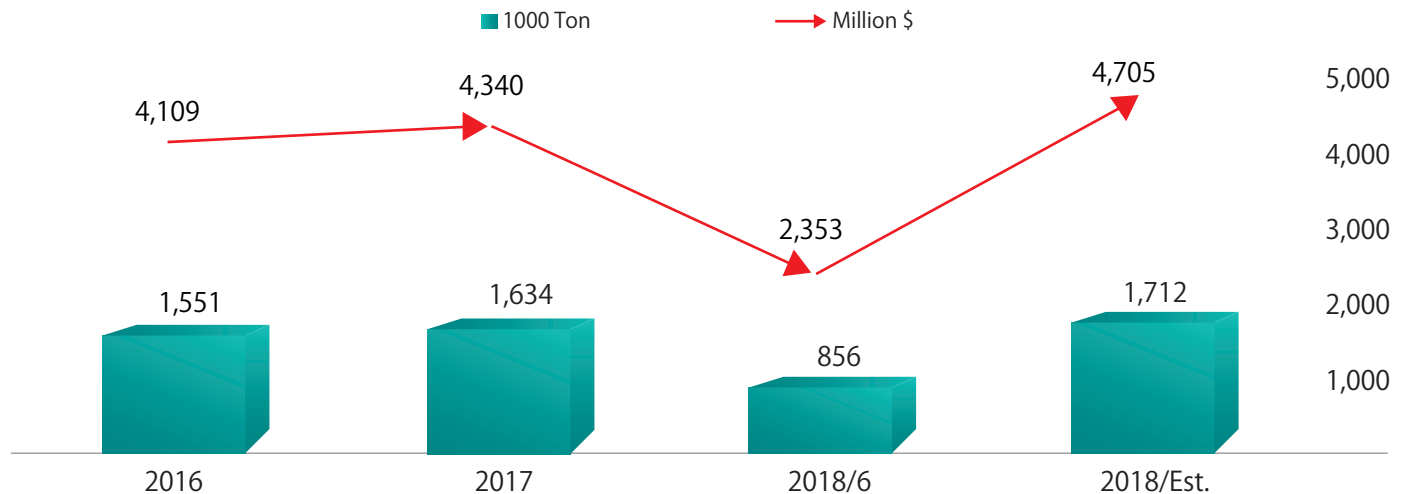
**Graph 10: Plastic Product Exports**

Source: TUIK and ITC Trade Statistics

## 2. PLASTIC PRODUCTS INDUSTRY

If the same trend were to continue, total plastic product imports for 2018 is projected to increase by 4.8% by

quantity and 8.4% by value to reach 1.712 million tons and 4.705 billion dollars.



**Graph 11: Plastic Product Exports**

Source: TUIK and ITC Trade Statistics

In the first 6 months of 2018, the most exported nomenclature numbers (by quantity and value) were 39.20 (Plates, sheets, film, foil and strip, of non-cellular plastics) and 39.23 (Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and

other closures, of plastics). The export of items in these nomenclature numbers accounted for 48% by quantity and 44% by value of all plastic product exports.

HS CODE	DESCRIPTION	1000 Tons	Amount Share %	Million \$	Value - Share %
39.16	Monofilament of which any cross-sectional dimension > 1 mm	81	9	139	6
39.17	Tubes, pipes and hoses, and fittings therefor, e.g. joints, elbows, flanges, of plastics	98	11	274	12
39.18	Floor coverings of plastics, including wall or ceiling coverings	7	1	14	1
39.19	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether or not in rolls	10	1	52	2
39.20	Plates, sheets, film, foil and strip, of non-cellular plastics	210	25	545	23
39.21	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated	74	9	218	9
39.22	Baths, shower-baths, sinks, washbasins and similar sanitary ware, of plastics	14	2	58	2
39.23	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other closures, of plastics	200	23	502	21
39.24	Tableware, kitchenware, other household articles and toilet articles, of plastics	79	9	223	9
39.25	Builders' ware of plastics	41	5	112	5
39.26	Articles of plastics	43	5	215	9
	<b>Total plastic products</b>	<b>856</b>	<b>100</b>	<b>2,353</b>	<b>100</b>

**Table 7: Plastic Product Exports by HS Code (2018/6)**

Source: TUIK and ITC Trade Statistics

## 2. PLASTIC PRODUCTS INDUSTRY

### 2.4.3. IMPORT AND EXPORT BY COUNTRY

Turkey imports plastic products from over 100 countries every year, and exports to nearly 200 countries every year.

In the first half of 2018, imports from the top 10 countries accounted for 71% of the total quantity and 75% of the total value of imports. China was the origin of the largest share of imports, with 28% by quantity and 19% by value. Other major import markets are Germany, Italy, France and South Korea.

In the first half of 2018, exports from the top 10 countries accounted for 47% of the total quantity and 45% of the total value of exports. The top export markets were Iraq, Germany, UK, Israel and France.

Imports					Exports				
Country	1000 Tons	Million \$	Tons - %	\$ - %	Country	1000 Ton	Milyon \$	Ton - %	\$ - %
China	89	296	28.0	19.0	Iraq	97	184	11.3	7.8
Germany	46	296	14.6	19.0	Germany	46	174	5.3	7.4
Italy	24	133	7.6	8.5	UK	46	122	5.4	5.2
France	15	103	4.6	6.6	Israel	50	112	5.8	4.8
S. Korea	18	101	5.7	6.5	France	30	104	3.5	4.4
United States	5	62	1.6	4.0	Italy	31	85	3.6	3.6
UK	8	54	2.4	3.5	Romania	29	81	3.4	3.5
Belgium	9	45	2.8	2.9	Spain	28	68	3.2	2.9
Spain	8	40	2.5	2.6	Bulgaria	23	66	2.7	2.8
Japan	2	33	0.7	2.1	United States	21	60	2.5	2.6
<b>Top 10 countries</b>	<b>223</b>	<b>1,164</b>	<b>70.5</b>	<b>74.6</b>	<b>Top 10 countries</b>	<b>400</b>	<b>1,056</b>	<b>46.7</b>	<b>44.9</b>
<b>Others</b>	<b>93</b>	<b>396</b>	<b>29.5</b>	<b>25.4</b>	<b>Others</b>	<b>456</b>	<b>1,297</b>	<b>53.3</b>	<b>55.1</b>
<b>TOTAL</b>	<b>317</b>	<b>1,559</b>	<b>100.0</b>	<b>100.0</b>	<b>Total</b>	<b>856</b>	<b>2,353</b>	<b>100.0</b>	<b>100.0</b>

**Table 8: Plastic Product Imports and Exports by Country (2018/6)**

Source: TUIK and ITC Trade Statistics



## 2. PLASTIC PRODUCTS INDUSTRY

### 2.4.4. IMPORT AND EXPORT PRICES

Import unit prices of plastic products are always above export unit prices.



**Graph 12: Average Unit Foreign Trade Prices of Plastic Products (\$/kg)**

Source: TUIK and ITC Trade Statistics

In the first 6 months of 2018, the average import unit price of plastic products was 4.92 \$/Kg, and average export unit price was 2.75 \$/Kg,

marking a 1.4% decrease in import prices and 3.5% increase in export prices compared to 2017.

NOMENCLATURE	DESCRIPTION	Import Price			Export Price		
		2017	2018/6	% Increase	2016	2017/9	% Increase
39.16	Monofilament of which any cross-sectional dimension > 1 mm	4.46	4.71	5.5	1.67	1.72	3.1
39.17	Tubes, pipes and hoses, and fittings therefor, e.g. joints, elbows, flanges, of plastics	8.60	8.06	-6.3	2.48	2.81	13.3
39.18	Floor coverings of plastics, including wall or ceiling coverings	3.62	3.16	-12.8	2.15	2.13	-0.7
39.19	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether or not in rolls	5.57	5.63	1.1	5.01	5.27	5.1
39.20	Plates, sheets, film, foil and strip, of non-cellular plastics	3.68	3.47	-5.6	2.54	2.59	2.0
39.21	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated	3.85	3.91	1.4	2.85	2.94	3.2
39.22	Baths, shower-baths, sinks, washbasins and similar sanitary ware, of plastics	9.33	7.19	-23.0	4.05	4.20	3.6
39.23	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other closures, of plastics	4.48	4.75	6.0	2.43	2.51	3.1
39.24	Tableware, kitchenware, other household articles and toilet articles, of plastics	6.62	6.70	1.2	2.82	2.83	0.5
39.25	Builders' ware of plastics	4.39	3.74	-14.7	2.55	2.70	6.2
39.26	Articles of plastics	10.00	9.76	-2.4	5.21	5.05	-3.1
	<b>Average</b>	4.99	4.92	-1.4	2.66	2.75	3.5

**Table 9: Average Unit Foreign Trade Prices of Plastic Products (\$/Ton)**

Source: TUIK and ITC Trade Statistics

## 2. PLASTIC PRODUCTS INDUSTRY

### 2.4.5. FOREIGN TRADE BALANCE

Turkey always has a foreign trade surplus in plastic products. In the first half of 2018, foreign trade surplus quantity increased by 8.3% to 539,000 tons,

while value increased by 29.6% to 793 million dollars in comparison to the same period in 2017.

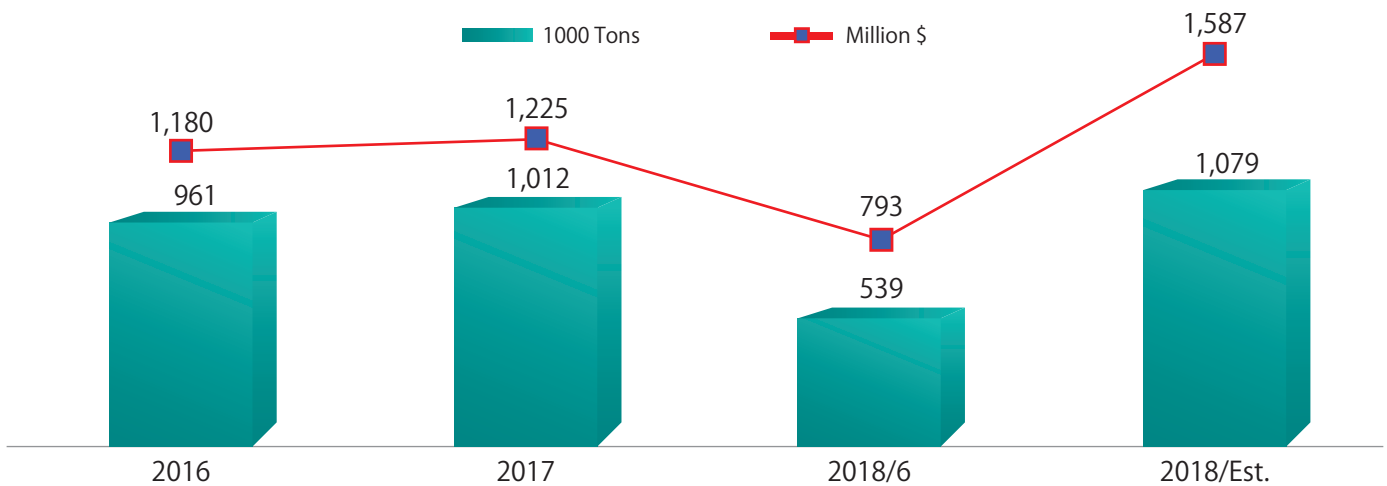
	2017/6	2017	2018/6	2018/Est.	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
1000 Tons	498	1,012	539	1,079	8.3	6.6
Million \$	612	1,235	793	1,587	29.6	28.5

**Table 10: Foreign Trade Balance in Plastic Products**

Source: TUIK and ITC Trade Statistics

If the same trend were to continue, total plastic product foreign trade surplus for 2018 is projected to increase

by 6.6% by quantity and 28.5% by value to reach 1.079 million tons and 1.587 billion dollars compared to 2017.



**Graph 13: Foreign Trade Surplus in Plastic Products**

Source: TUIK and ITC Trade Statistics

### 2.5. DOMESTIC CONSUMPTION

In the first half of 2018, domestic consumption quantity increased by 7.1% to 4,512 million tons, while value

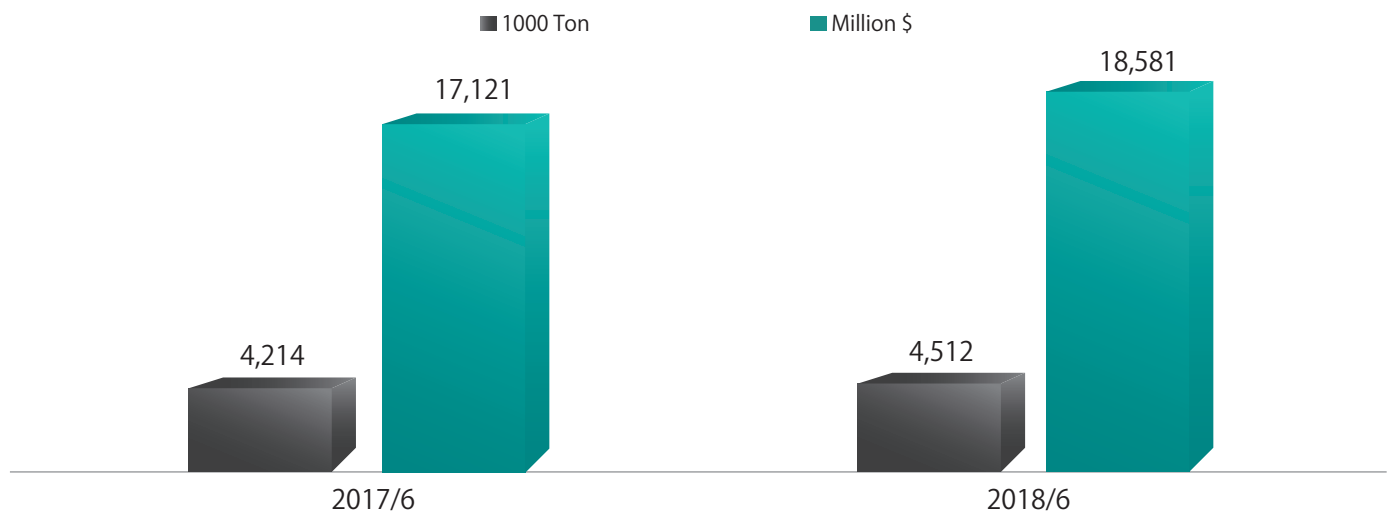
increased by 8.5% to 18,581 million dollars in comparison to the same period in 2017.

	2017/6	2017	2018/6	2018/Est.	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
1000 Tons	4,214	8,612	4,512	9,025	7.1	4.8
Million \$	17,121	35,558	18,581	37,163	8.5	4.5

**Table 11: Domestic Consumption of Plastic Products**

Source: TUIK and ITC Trade Statistics

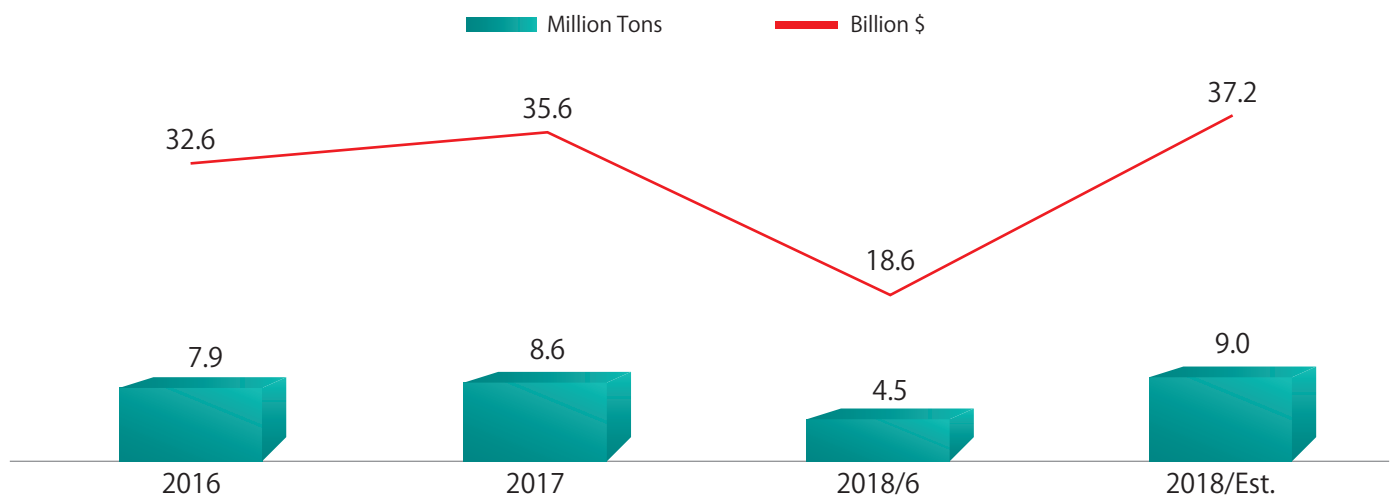
## 2. PLASTIC PRODUCTS INDUSTRY



**Graph 14: YTD Comparison, Plastic Product Domestic Consumption**  
Source: TUIK and ITC Trade Statistics

If the same trend were to continue, total plastic product domestic consumption for 2018 is projected to increase by 4.8% by quantity and 4.5% by value to reach

9.025 million tons and 37.163 billion dollars compared to 2017.



**Graph 15: Domestic Consumption of Plastic Products**  
Source: TUIK and ITC Trade Statistics

Approximately 2 million tons of the 4.5 million tons consumed in the domestic market in the first half of 2018 was indirectly exported in the form of finished

products and semiproducts by the automotive, packaging, construction and electronics industries. 2.5 million tons were directly used by consumers.

## 2. PLASTIC PRODUCTS INDUSTRY

### 2.6. SUPPLY AND DEMAND BALANCE, 2018 EXPECTATIONS

In the first half of 2018, the share of exports in production and the share of imports in domestic consumption of plastic products were 17% and 7%, respectively, **by quantity**.

It is expected that plastic product quantity will increase by 5% compared to 2017 and reach 10.1 million tons, while 634,000 tons of plastic products will be imported, 1.71 million tons will be exported, and 9 million tons will be consumed in the domestic market, achieving a net foreign trade surplus of 1.079 million tons.

	2017/6	2017	2018/6	2018/Est.	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
Manufacturing	4,712	9,624	5,052	10,104	7.2	5.0
Imports	300	622	317	634	5.6	1.8
Exports	798	1,634	856	1,712	7.3	4.8
Domestic Consumption	4,214	8,612	4,512	9,025	7.1	4.8
Foreign Trade Deficit/Surplus	498	1,012	539	1,079	8.3	6.6
Export/Production (%)	17	17	17	17		
Import/Domestic Consumption (%)	7	7	7	7		
Export/Import (%)	266	263	270	270		

**Table 12: Supply and Demand in the Plastic Products Sector (1000 Tons)**

Source: TUIK and ITC Trade Statistics

In the first half of 2018, the share of exports in production and the share of imports in domestic consumption of plastic products were 12% and 8%, respectively, **by value**.

By the end of 2018, it is expected that plastic product manufacturing by value will increase to 38.8 billion dollars. The sector will import 3.1 billion dollars' worth of products and export 4.7 billion dollars for a net foreign trade surplus of 1.6 billion dollars. By the end of 2018, domestic consumption including indirect imports is expected to become 37.1 billion dollars.

	2017/6	2017	2018/6	2018/T	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
Manufacturing	17,733	36,793	19,375	38,750	9.3	5.3
Imports	1,474	3,105	1,559	3,119	5.8	0.4
Exports	2,086	4,340	2,353	4,705	12.8	8.4
Domestic Consumption	17,121	35,558	18,581	37,163	8.5	4.5
Foreign Trade Deficit/Surplus	612	1,235	793	1,587	29.6	28.5
Export/Production (%)	12	12	12	12		
Import/Domestic Consumption (%)	9	9	8	8		
Export/Import (%)	142	140	151	151		

**Table 13: Supply and Demand in Plastic Products (Million \$)**

Source: TUIK and ITC Trade Statistics

## 3. PLASTIC RAW MATERIALS INDUSTRY

### 3.1. MANUFACTURING

The estimated plastic raw material production in the first half of 2018 was 507,000 tons.

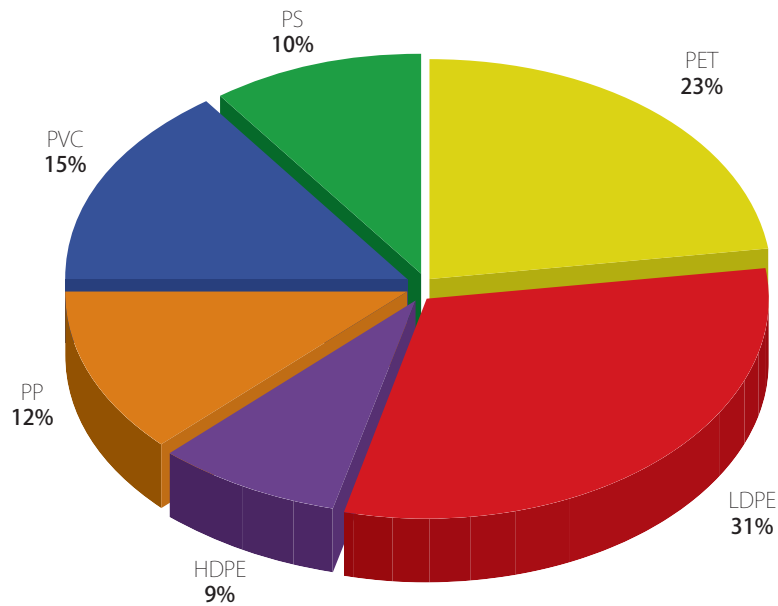
1000 Tons	
LDPE	157
HDPE	45
PE	202
PP	61
PVC	76
PS	51
PET	117
TOTAL PRODUCTION	507

**Table 14: Plastic Raw Materials, Domestic Production (2018/6)**

Source: PETKİM and other manufacturers

Of the total plastic raw material production in Turkey in the first 6 months of 2018, LDPE accounts for 31%,

HDPE for 9%, PVC for 15%, PP for 12%, PS for 10%, and PET for 23%.



**Graph 16: Plastic Raw Material Production (2018/6)**

Source: PETKİM and other manufacturers

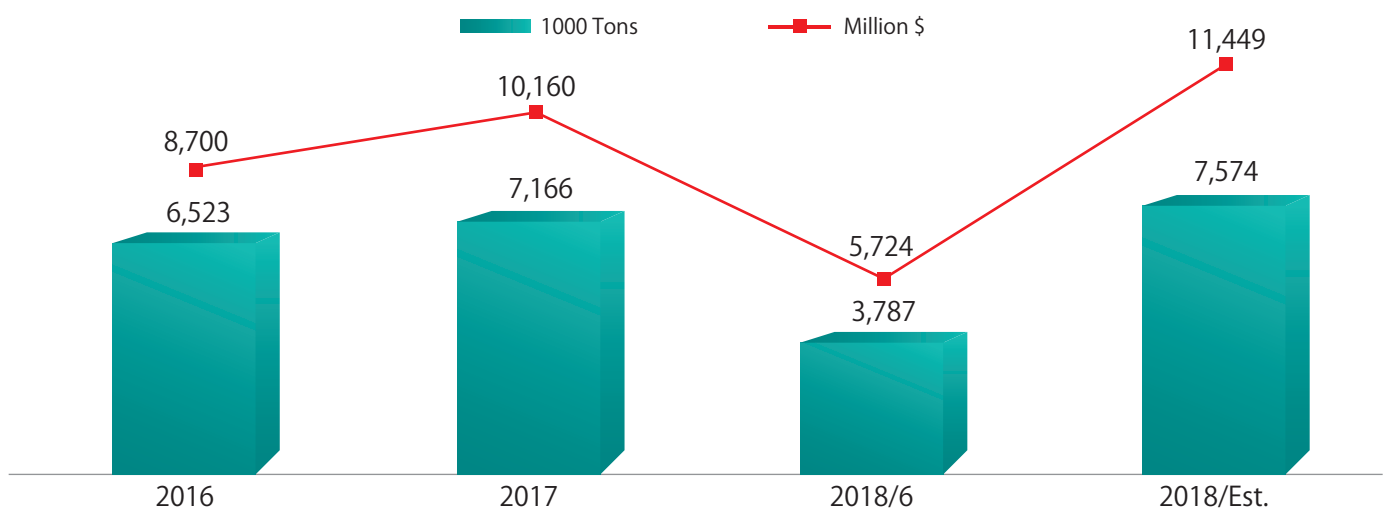
## 3. PLASTIC RAW MATERIALS INDUSTRY

### 3.2. FOREIGN TRADE

#### 3.2.1. IMPORTS

3.787 million tons and 5.724 billion dollars' worth of plastic raw materials were imported in the first 6 months of 2018. If the same trend were to continue,

total plastic raw material imports for 2018 is projected to increase to 7.6 million tons and 11.4 billion dollars.



**Graph 17: Plastic Raw Material Imports**

Source: TUIK and ITC Trade Statistics

In the first 6 months of 2018, the most imported raw materials (by quantity and value) were polyethylene and polypropylene.

These two materials account for 54% of the total quantity and 50% of the total value imported.

### 3. PLASTIC RAW MATERIALS INDUSTRY

HS Code	Plastic Raw Material Definitions	Tons	Quantity -%	Million \$	Value -%
39.01	Polymers of ethylene, in primary forms	918	24	1,261	22
39.02	Polymers of propylene or of other olefins, in primary forms	1,124	30	1,586	28
39.03	Polymers of styrene, in primary forms	264	7	480	8
39.04	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	437	12	451	8
39.05	Polymers of vinyl acetate or of other vinyl esters, in primary forms	24	1	62	1
39.06	Acrylic polymers, in primary forms	111	3	211	4
39.07	Polyacetals, other polyethers and epoxide-alkyd resins, in primary forms	425	11	826	14
39.08	Polyamides, in primary forms	53	1	163	3
39.09	Amino-resins, phenolic resins and polyurethanes, in primary forms	120	3	331	6
39.10	Silicones in primary forms	22	1	101	2
39.11	Petroleum resins, polyterpenes	18	0	56	1
39.12	Cellulose and its chemical derivatives, in primary forms	24	1	101	2
39.13	Natural polymers, modified natural polymers, and derivatives, in primary forms	2	0	15	0
39.14	Ion-exchangers based on polymers, in primary forms	4	0	10	0
39.15	Waste, parings and scrap, of plastics	242	6	70	1
<b>Total Plastic Raw Materials</b>		<b>3,787</b>	<b>100</b>	<b>5,724</b>	<b>100</b>

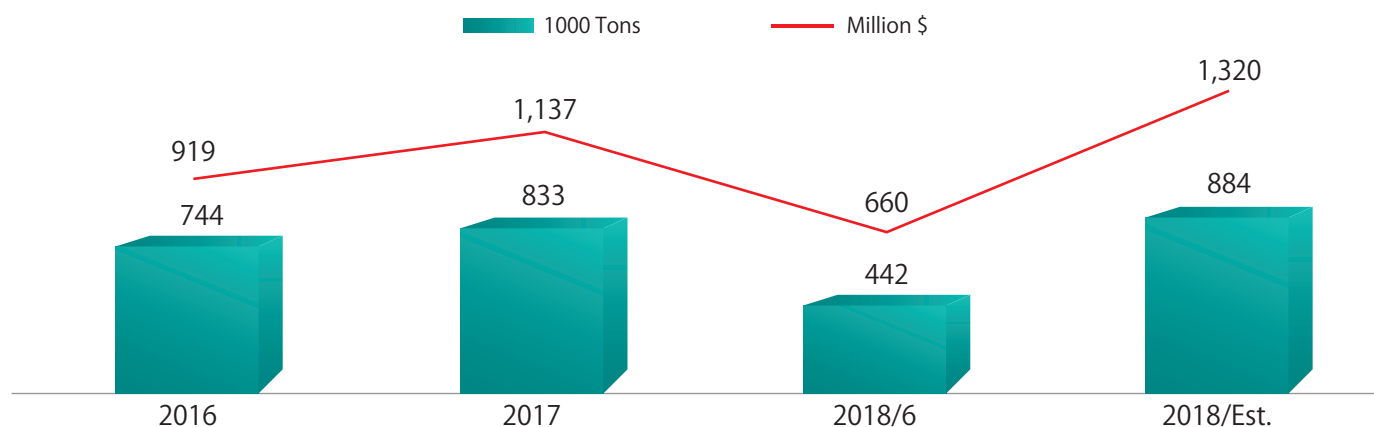
**Table 15: Plastic Raw Material Imports by HS Code (2018/6)**

Source: TUIK and ITC Trade Statistics

#### 3.2.2. EXPORTS

442,000 tons and 660 million dollars' worth of plastic raw materials were exported in the first 6 months of 2018. If the same trend were to continue, total plastic

raw material imports for 2018 is projected to increase to 884,000 tons and 1.32 billion dollars.



**Graph 18: Plastic Raw Material Exports**

Source: TUIK and ITC Trade Statistics

### 3. PLASTIC RAW MATERIALS INDUSTRY

In the first 6 months of 2018, the most exported nomenclature numbers (by quantity and value) were 39.06 and 39.07 (acrylic polymers and polyacetals).

These two nomenclature numbers account for 47% of the total quantity and 52% of the total value exported.

HS Code	Plastic Raw Material Definitions	1000 Tons	Quantity -%	Million \$	Value -%
39.01	Polymers of ethylene, in primary forms	58	13	75	11
39.02	Polymers of propylene or of other olefins, in primary forms	13	3	18	3
39.03	Polymers of styrene, in primary forms	27	6	42	6
39.04	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	8	2	10	2
39.05	Polymers of vinyl acetate or of other vinyl esters, in primary forms	29	7	28	4
39.06	Acrylic polymers, in primary forms	94	21	116	18
39.07	Polyacetals, other polyethers and epoxide-alkyd resins, in primary forms	116	26	223	34
39.08	Polyamides, in primary forms	9	2	21	3
39.09	Amino-resins, phenolic resins and polyurethanes, in primary forms	50	11	72	11
39.10	Silicones in primary forms	3	1	11	2
39.11	Petroleum resins, polyterpenes	1	0	3	0
39.12	Cellulose and its chemical derivatives, in primary forms	26	6	32	5
39.13	Natural polymers, modified natural polymers, and derivatives, in primary forms	0	0	1	0
39.14	Ion-exchangers based on polymers, in primary forms	0	0	0	0
39.15	Waste, parings and scrap, of plastics	8	2	9	1
<b>Total Plastic Raw Materials</b>		<b>442</b>	<b>100</b>	<b>660</b>	<b>100</b>

**Table 16: Plastic Raw Material Exports by HS Code (2018/6)**

Source: TUIK and ITC Trade Statistics

#### 3.2.3. IMPORT AND EXPORT BY COUNTRY

Turkey imports plastic raw materials from over 100 countries, and exports to nearly 100 countries every year.

In the first half of 2018, imports of raw materials from the top 10 countries accounted for 64% of the total quantity and 67% of the total value of imports. The top 3 markets were Saudi Arabia, South Korea and Germany, accounting for 33% of the total quantity and 35% of the total value.

In the first half of 2018, exports of raw materials to the top 10 countries accounted for 48% of the total quantity and total value of exports. The top 3 markets were Germany, Italy and Egypt, accounting for 24% of the total quantity and 22% of the total value.



### 3. PLASTIC RAW MATERIALS INDUSTRY

Countries	Imports				Exports				
	1000 Ton	Million \$	Tons - %	\$ - %	Countries	1000 Tons	Million \$	Tons - %	\$ - %
Saudi Arabia	623	833	16.4	14.6	Saudi Arabia	39	64	8.8	9.7
S. Korea	347	573	9.2	10.0	S. Korea	36	46	8.2	7.0
Germany	269	562	7.1	9.8	Germany	29	36	6.5	5.5
Belgium	242	396	6.4	6.9	Belgium	16	33	3.5	5.0
Iran	214	272	5.6	4.8	Iran	22	31	5.0	4.7
Italy	126	260	3.3	4.5	Italy	10	26	2.3	3.9
Spain	147	241	3.9	4.2	Spain	13	21	2.9	3.2
Netherlands	135	239	3.6	4.2	Netherlands	18	21	4.2	3.1
Egypt	171	223	4.5	3.9	Egypt	16	19	3.6	2.9
France	147	217	3.9	3.8	France	11	19	2.5	2.8
<b>Top 10 Countries</b>	<b>2,422</b>	<b>3,815</b>	<b>64.0</b>	<b>66.6</b>	<b>Top 10 countries</b>	<b>210</b>	<b>316</b>	<b>47.5</b>	<b>47.9</b>
<b>Others</b>	<b>1,365</b>	<b>1,909</b>	<b>36.0</b>	<b>33.4</b>	<b>Others</b>	<b>232</b>	<b>344</b>	<b>52.5</b>	<b>52.1</b>
<b>Total</b>	<b>3,787</b>	<b>5,724</b>	<b>100.0</b>	<b>100.0</b>	<b>Total</b>	<b>442</b>	<b>660</b>	<b>100.0</b>	<b>100.0</b>

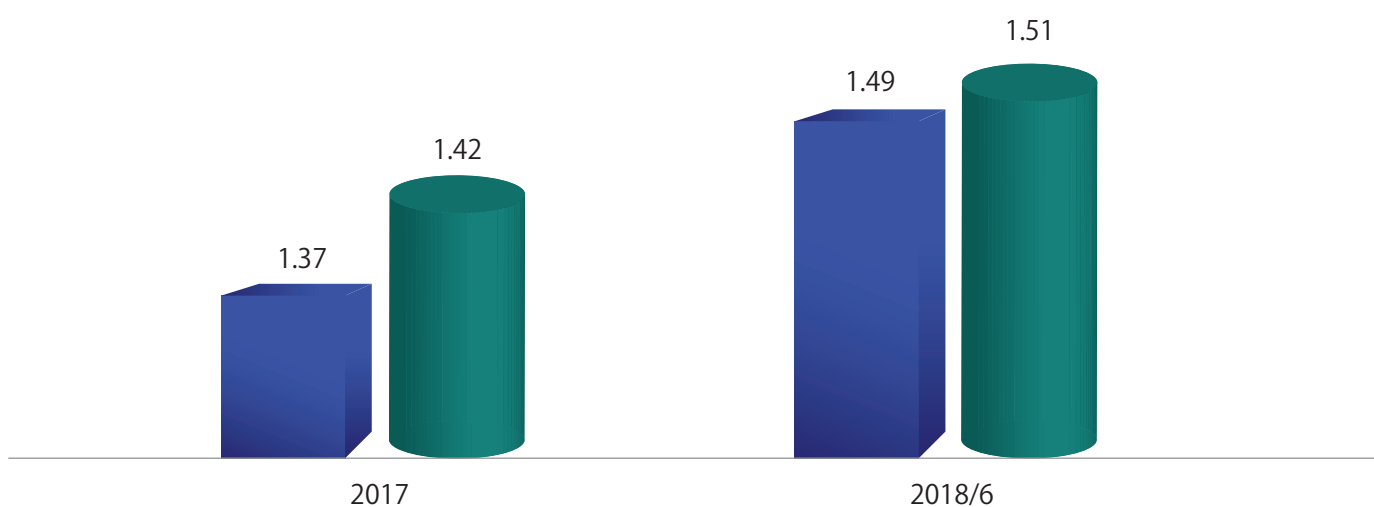
**Table 17: Plastic Raw Material Imports and Exports by Country (2018/6)**

Source: TUIK and ITC Trade Statistics

#### 3.2.4. IMPORT AND EXPORT PRICES

In the first 6 months of 2018, the average import unit price of plastic raw materials was 1.51 \$/Kg, and average export unit price was 1.49 \$/Kg, marking a

6.6% increase in import prices and 9.3% increase in export prices compared to 2017.



**Graph 19: Average Unit Foreign Trade Prices of Plastic Raw Materials**

Source: TUIK and ITC Trade Statistics

### 3. PLASTIC RAW MATERIALS INDUSTRY

HS Code	Import Price			Export Price		
	2017	2018/6	% Increase	2017	2018/6	% Increase
39.01	1.35	1.37	2.1	1.28	1.28	0.2
39.02	1.27	1.41	10.8	1.30	1.40	7.9
39.03	1.65	1.82	10.4	1.39	1.55	12.0
39.04	1.05	1.03	-1.8	1.10	1.21	9.1
39.05	2.36	2.58	9.4	0.79	0.96	21.8
39.06	1.62	1.90	17.1	1.16	1.23	6.7
39.07	1.69	1.95	15.2	1.64	1.92	16.8
39.08	2.66	3.05	14.7	1.98	2.43	22.8
39.09	2.36	2.76	17.4	1.47	1.43	-3.1
39.10	3.87	4.68	20.9	3.20	4.00	25.0
39.11	2.82	3.06	8.4	2.82	2.95	4.8
39.12	3.82	4.13	8.3	1.12	1.26	12.7
39.13	6.74	7.38	9.5	6.05	4.45	-26.6
39.14	2.30	2.75	19.2	4.37	2.72	-37.7
39.15	0.29	0.29	-1.0	1.10	1.12	2.3
Ortalama	1.42	1.51	6.6	1.37	1.49	9.3

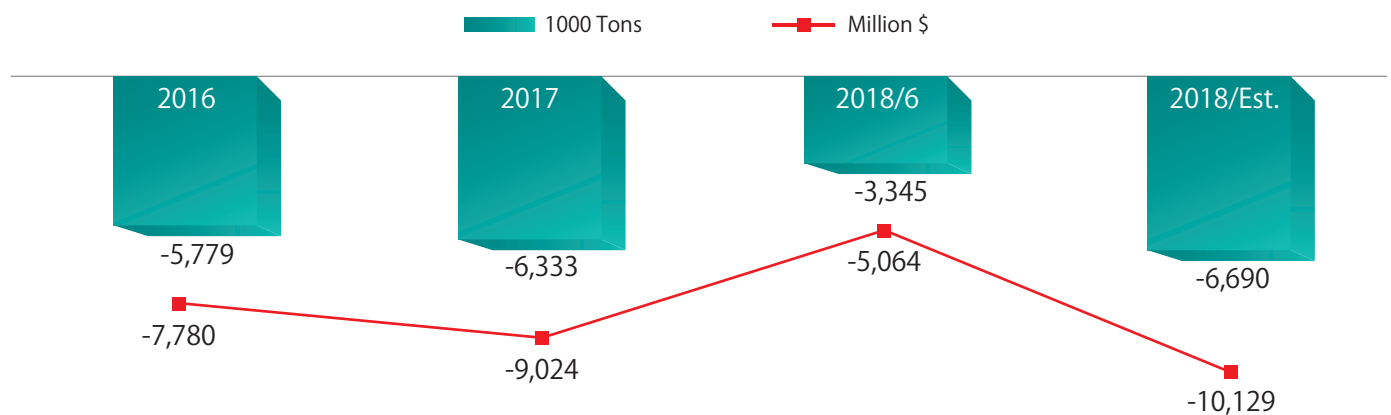
**Table 18: Average Import and Export Unit Prices of Plastic Raw Materials by HS Code (\$/Kg)**

Source: TUIK and ITC Trade Statistics

#### 3.2.5. FOREIGN TRADE BALANCE

Turkey has a constant foreign trade deficit in plastic raw materials. The foreign trade deficit in raw materials was 3.345 million tons and 5.064 billion dollars in the first 6 months of 2018.

If the same trend were to continue, total plastic raw material foreign trade deficit for 2018 is projected to increase to 6.7 million tons and 10.1 billion dollars.



**Graph 20: Foreign Trade Deficit in Plastic Raw Materials**

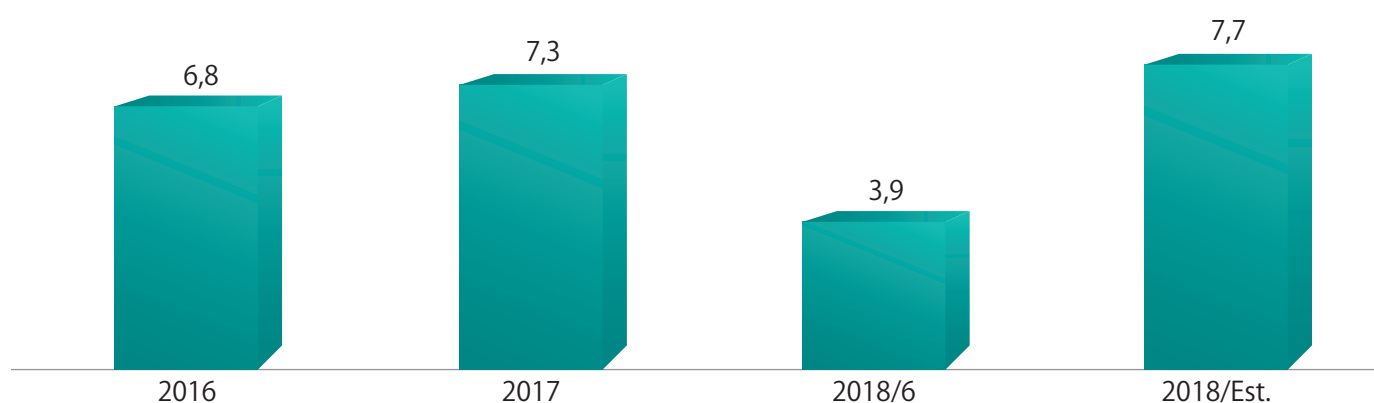
Source: TUIK and ITC Trade Statistics

## 3. PLASTIC RAW MATERIALS INDUSTRY

### 3.3. DOMESTIC CONSUMPTION

In the first half of 2018, the domestic consumption quantity of plastic raw materials was 3.9 million tons.

If the same trend were to continue, total plastic raw material domestic consumption for 2018 is projected to increase to 7.7 million tons.



**Graph 21: Domestic Consumption of Plastic Raw Materials (1,000 Tons)**

Source: TUIK and ITC Trade Statistics

### 3.4. SUPPLY-DEMAND BALANCE AND 2018 EXPECTATIONS

In the first half of 2018, plastic raw material imports increased by 8.3%, exports by 8.1%, domestic consumption by 7.1%, and foreign trade deficit by 8.3% compared to the same period last year.

By the end of 2018, plastic raw material imports are expected to reach 7.6 million tons, exports 884,000 tons, and domestic consumption 7.7 million tons. It is expected that the share of exports in production will continue at 87%, and the share of imports in total supply at 88%.

	2017/6	2017	2018/6	2018/Est.	% increase 2018/2017 (6 months)	Estimated % Increase 2018/2017
Manufacturing	507	1,014	507	1,014	-	-
Imports	3,498	7,166	3,787	7,574	8.3	5.7
Exports	409	833	442	884	8.1	6.2
Domestic Consumption	3,596	7,347	3,852	7,704	7.1	4.8
Foreign Trade Deficit/Surplus	-3,089	-6,333	-3,345	-6,690	8.3	5.6
Export/Production (%)	81	82	87	87		
Import/Total Supply (%)	87	88	88	88		
Export/Import (%)	12	12	12	12		

**Table 19: Supply and Demand in Plastic Raw Materials (1,000 Tons)**

Source: TUIK and ITC Trade Statistics



## 4. CONCLUSION

The Turkish plastics industry develops rapidly and gains share in global markets. The 2023 vision of the industry is to account for at least 17 billion dollars of the 50 billion dollar export target for the chemicals industry. Under the circumstances, this appears to be a tall order. To achieve this, not only do the issues related to the growth of the sector must be addressed, but also measures must be implemented to improve the rather low unit export price of less than 3 \$/Kg and bring it closer to the developed country average of 4.5 \$/Kg, and investment incentives must be utilized in full.

The greatest issue in the Turkish plastics industry, namely high taxes imposed on raw material imports, remains unresolved as of the tenth plan. More important is the ability to produce high-value raw materials in Turkey. The industry even imports conventional raw materials like polypropylene and polyethylene due to unavailability in the local market, and import duties have an adverse effect on competitiveness. When these hurdles are overcome, it is certain that the plastics industry will make even greater contributions to the Turkish economy.

The fundamental vision of the plastics industry is to become a driving industry that creates technology, offers it to global markets, and has the largest plastic processing capacity in Europe by 2023.

However, the following prerequisites must be met if this is to be achieved:

- I. Stable and sustainable economic growth;
- II. Development of a specific strategy for the sector and adoption at the government level;
- III. Encouraging direct foreign investment in plastic raw materials and high-value items through incentives;
- IV. Refinery-petrochemical integration;
- V. Priority and incentives for R&D and product development efforts; increasing average export price from 3 \$/kg to 4.5 \$/kg;
- VI. Saving costs without compromising quality to gain competitive superiority in global markets;
- VII. Resolving the issue of qualified personnel;
- VIII. Improving recycling infrastructure.

The key strategic objectives and policies of the industry to achieve this vision are:

- I. Reduce import dependency in raw materials;
- II. Invest in future technologies to increase value added;
- III. Improve competitiveness;
- IV. Provide better training in the industry;
- V. Build an economic foundation to develop the sector and attract foreign investment.

Only 389 (6%) of the 6500 companies in the plastics industry have foreign partners, which shows that foreign investment in the industry is very low. The sector has an investment potential that must be used.

Downturns in the global and Turkish economies make it difficult to compete against stagnant or even regressive prices in the plastics industry, and cause profit margins to shrink.

Another issue of the sector is its inability to create added value. There are two main paths to achieving high added value in production and exports: making high-value, innovative products, and/or cutting costs without compromising quality to improve profit margins. It is imperative that the manufacturing practices of the industry are compliant with European standards and kind to the environment in order to achieve competitiveness on a global scale.

Companies that cannot compete using only price changes must resort to "cost competition". To create a difference in costs that will improve competitiveness, cost-saving techniques in a changing world must be implemented as conventional methods no longer work.

Research and product development should be prioritized while the value chain is focused on customer satisfaction. Faced with increasing global competition, the only way to develop an advantage is to manage the costs of today and the future, and to establish a new cost management system. Incentives must be revised as technology and R&D investments are needed for transitioning to high-value products and improving the value generated by the industry.



## 4. CONCLUSION

Actions should be taken to make Turkey a hub for producing advanced plastics that simplify life. Conventional manufacturing methods that do not provide value should be converted to the production of advanced plastics.

Although the industry can supply only 15% of its raw material demand from the domestic market, import duties are imposed to protect domestic manufacturers, which deprives the sector of lower raw material costs. This reduces competitive export opportunities for the market in the name of protecting domestic raw material manufacturers.

Domestic manufacturers should be protected not by import duties, but by incentives that reduce production and investment costs. If plastic raw material production does not meet demand, import restrictions must be lifted. The plastics industry must be included in strategic investments regardless of foreign trade figures, and a minimum investment threshold of 5 million dollars should be set.

Since local operations are more rational in plastic product manufacturing, the plastics industry must be supported in at least one province in each geographical region. Measures must be implemented to attract more qualified employees to the sector.



## 5. PAGEV PROJECTS

As the "uniting force" of the plastics industry, PAGEV develops various projects to address the above issues. The two leading initiatives are the "PAGEV Plastics Center of Excellence" and "International Regional Plastic Production Hub".

### 5.1. PAGEV PLASTICS CENTER OF EXCELLENCE

Plastics are used in every aspect of life and are quick to replace other materials due to their outstanding properties. Plastics are gaining currency in all sectors and are set to become the indispensable material of the 21st century. Although the Turkish plastics industry is young, it is quick to grow, and is already the 2nd largest in Europe and 6th largest in the world. Striving to become a leader in Europe, the Turkish plastics industry aims to achieve certification on more products and improve added value. As the "uniting force" of the plastics industry, PAGEV leads the industry to achieving this target with the "PAGEV Plastics Center of Excellence". The planned mission of the PAGEV Plastics Center of Excellence will include the following activities:

- Research and Development
- Testing and Laboratory Services
- Certification
- Training
- Competent Consultancy

The Center of Excellence will provide testing and laboratory services, eliminating the current high costs, customs procedures and long waiting times associated with sending samples abroad for testing.

PAGEV Plastics CoE will develop platforms needed for sharing information and knowhow across the industry, and in-depth training curricula will be offered to the industry's benefit. The CoE will work on the latest technologies while cooperating with industrial companies, universities, research institutions, professional associations and nongovernmental organizations with an ultimate purpose of making the Turkish plastics industry a global leader.

Supported by the Ministry of Industry and Technology, the PAGEV Plastics Center of Excellence will help to train industrial skills and talent that will provide the foundation of national projects, providing a boost to the plastics industry in particular, and the Turkish economy in general. The PAGEV Plastics Center of Excellence will be a product of strategic partnership which will encourage scientific research with traceable objectives and a high potential for commercialization in order to accelerate the growth of the plastics industry. The CoE is under construction next to the PAGEV Vocational and Technical High School in Küçükçekmece, Istanbul, and when complete, it will have over 30,000 square meters of space. The PAGEV Plastics Center of Excellence will make Turkey the hub of plastic production in the world and develop innovative projects.

The Center will also act as a controlling body for export products, which will ensure that plastic products made in Turkey will enjoy better trust and reputation in global markets. Another benefit of the Center will be tests performed on imported plastics before they are admitted through customs, which will prevent non-standard products of poor quality from entering the market.

The Center will be a more cost-effective and faster provider of certification, accelerate the development of the industry through R&D efforts, improve the competitive strength of Turkish companies, and focus on the development of product and manufacturing technologies.

The Center will follow developments in the global plastics industry to create innovative ideas, and offer consultancy services from determining appropriate input materials to designing process optimization to improve the competitive ability of the industry.



## 5. PAGEV PROJETS

### 5.2. INTERNATIONAL REGIONAL PLASTIC PRODUCTION HUB

Although the Turkish plastics industry is the 2nd largest in Europe and 6th largest in the world with a production capacity of nearly 9 million tons, over 85% of the raw materials it requires is still imported. One key advantage of the Turkish plastics industry is its location between Middle Eastern countries which produce petroleum and other plastic raw materials, and Europe, which is the main consumer of plastic goods.

To turn geographical location into an advantage, PAGEV plans to build a plastic production hub of international presence in the Southeast Anatolia region of Turkey, where the plastic raw material production potential of Middle Eastern countries will serve the product manufacturing skill and knowledge available in Turkey. Built on a win-win approach, the hub will enable raw material producers to access a large and reliable market, while the Turkish plastics industry will benefit from inexpensive and reliable raw material supply, growing even more, and taking advantage of lower costs to compete in global markets.

# CONNECTING POWER OF PLASTICS INDUSTRY



**PAGEV**

PAGEV is member of;

**PlasticsEurope**  
Association of Plastics Manufacturers



[www.pagev.org](http://www.pagev.org)

Halkalı Caddesi No: 132/1 Tez-İş İş Merkezi Kat: 4 Sefaköy- İstanbul  
Tel. +90 (212) 425 13 13 Fax. +90 (212) 624 49 26 E-Mail. [pagev@pagev.org](mailto:pagev@pagev.org)