



**PAGEV**

**TURKISH PLASTIC PACKAGING MATERIALS INDUSTRY  
FOLLOW-UP REPORT  
2017**



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## 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 and the annual growth of 12% for the last 10 years.

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 "Connecting 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 researches. 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 of 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 of 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 EROGLU  
PAGEV President**

# CONTENTS

## EXECUTIVE SUMMARY

|  |                 |
|--|-----------------|
| <b>1. THE FUNCTIONS OF PACKAGING</b>                   | <b>01</b>       |
| <b>2. TYPES OF PACKAGING</b>                           | <b>01-02-03</b> |
| 2.1. WOOD PACKAGING                                    | 01              |
| 2.2. GLASS PACKAGING                                   | 01              |
| 2.3. PAPER AND PAPERBOARD PACKAGING                    | 02              |
| 2.4. COMPOSITE PACKAGING                               | 02              |
| 2.5. METAL PACKAGING                                   | 02              |
| 2.6. PLASTICS PACKAGING                                | 02              |
| 2.6.1. PET (POLYETHYLENE TEREPHTHALATE) PACKAGING      | 02              |
| 2.6.2. PVC (POLYVINYL CHLORIDE) PACKAGING              | 03              |
| 2.6.3. PP (POLYPROYLENE) PACKAGING                     | 03              |
| 2.6.4. PS (POLYSTYRENE) PACKAGING                      | 03              |
| 2.6.5. PE (POLYEETHYLENE) PACKAGING                    | 03              |
| 2.6.6. HDPE (HIGH DENSITY POLYETHYLENE) PACKAGING      | 03              |
| 2.6.7. LPDE (LOW DENSITY POLY ETHYLENE) PACKAGING      | 03              |
| 2.6.8. PC (POLYCARBONATE) PACKAGING                    | 03              |
| <b>3. TURKISH PLASTIC PACKAGING MATERIALS INDUSTRY</b> | <b>04-05-06</b> |
| <b>4. FOREIGN TRADE</b>                                | <b>06-13</b>    |
| 4.1. IMPORTS   | 07              |
| 4.2. IMPORTS BY COUNTRIES                              | 09              |
| 4.3. EXPORTS   | 09              |
| 4.4. EXPORTS BY COUNTRIES                              | 11              |
| 4.5. FOREIGN TRADE SURPLUS                             | 12              |
| 4.6. IMPORTS AND EXPORT PRICES                         | 13              |
| <b>5. DOMESTIC CONSUMPTION</b>                         | <b>14</b>       |
| <b>6. 2017 ESTIMATES</b>                               | <b>14-15</b>    |
| <b>7. PAGEV PROJECTS</b>                               | <b>16-17</b>    |

# EXECUTIVE SUMMARY

Production of plastic packaging products share between 40–53% in total plastics products manufacturing of leading countries. This ratio is about 40% in Turkey, while the World average is 46% respectively. More than 1/3 of all products in developed countries is packaged with a plastic materials so that after the paper and cardboard is having the biggest market share. In terms of volume, 55% of the packaging is flexible and 45% is rigid. However, this position is reversed in terms of value. Annual consumption value of rigid packaging is 30 billion euros in the European while flexible packaging shares the value of around 10 billion euros.

Plastic packaging products at the end of 2017 compared to 2016 on amount basis; it is estimated that production will increase by 6.3%, imports by 5%, exports by 2.6%, domestic consumption by 7.1% and foreign trade surplus by 0.2%. 23% of total production will be exported, 14% of the domestic consumption will be met by imports and the export coverage ratio of imports is expected to be as 196%.

In the plastics packaging materials industry at the end of 2017 comparing with 2016 and on amount basis; production is expected to increase by 9.4%, imports by 7.9%, exports by 4.2% domestic consumption by 10.7%, foreign trade surplus by 0.5% , export share in total production is expected to be 23% and import share in total domestic consumption to be 13% and export coverage of imports to be as 194%.

On the other hand on value base; increase of 7.6% in production, 5.7% in imports, 3% in exports, 8.2% in domestic consumption, 6.5% decrease in foreign trade surplus is expected. In this period 18% of the total production to be exported, 15% of domestic sales to be met by imports and and export – import coverage ratio to realise as 125% is expected.

World packaging industry is very large and big industries and the plastic packaging industry has an important place in the economies of the countries. In parallel with the rapid development of plastic packaging, plastic industry has become an essential part of our daily lives. Key to this success, is the best way to maintain supply capability and low weight due to the cost savings as a result.

Plastics, through innovative technologies, are becoming increasingly sophisticated, lightweight, versatile and has replaced the traditional packaging materials such as glass and paper in many areas.

Previously, classical materials such as paper, glass and traditional packaging materials such as wood, cellulose acetate and cellophane transparent cellulose film were used, plastic packaging materials placed with polyethylene in the 1950's and has been widely used. Rapid increase in the use of plastics has been realized with the development of polystyrene, polypropylene, PVC, polyester and polyethylene copolymers.

Despite the size and economic importance of the industry (especially SMEs) of the plastic packaging industry is currently under significant pressure two. On the one hand to determine the price of plastic raw material suppliers, notably in the food industry as well others, great pressure is applied to the lowering of prices by customers. In addition, in many countries especially in Eastern Europe, particularly if they have a quality manufacturer of extrusion and printing facilities at lower costs and therefore competition in these countries are known to increase rapidly. Competition from others, especially from the Far East side barrier material and printing technology is a growing field.

Food packaging, which accounts for 54% of the total market in terms of product areas and is the largest area of the entire packaging industry, is known to be the most important growth market for plastic packaging. The growth of the market contributes to demographic developments such as the increase in the number of homes and aged one or two people live.

Innovation is also an important factor in its success in this sector. Companies that use R&D intensively in the plastic packaging industry to develop new products that are easy to use for the market will have a strategic advantage compared to their competitors. In developed countries, the plastic packaging industry makes use of R&D to open new markets both in the packaging sector and in similar areas.

In recent years there has been a reduction in the volume of plastics used for packaging by an average of close to 30%, with 78% of films used for palletizing and 27% of containers of yellow oil products falling during the same period. Looking to the future, it is predicted that the efficiency of multi-material processes will continue to open new horizons in areas such as breathable packages for packaging plastics.

# 1. THE FUNCTIONS OF PACKAGING

The packaging materials which wrapping, storing, carrying and selling by reliable and in a most hygienic way, are defined as the elements that increase the added value of products. From this point of view, the development and increasing per capita consumption of packaging industry in general and the sophistication of packaging consumption is one of the most important indicators of the development of the country.

The functions of the packaging are outlined as follows;

- Protection function,
- Carrying function,
- Providing information function,
- Advertising to function,
- Storage function,
- Ease of usage function,
- Quantity function,
- Sales increase function.

# 2. TYPES OF PACKAGING

The packaging types can be divided into 6 section according to the materials used in manufacturing;

- I. Wood Packaging
- II. Glass Packaging
- III. Paper and Paperboard Packaging
- IV. Composite Packaging
- V. Metal Packaging
- VI. Plastic Packaging

- Pet (Polyethylene Terephthalate) Packaging
- PVC (Polyvinyl Chloride) Packaging
- PP (Polypropylene) Packaging
- PS (Polystyrene) Packaging
- PE (Polyethylene) Packaging
- HDPE (High Density Polyethylene) Packaging
- LDPE (Low Density Polyethylene) Packaging
- PC (Polycarbonate) Packaging

## 2.1 WOOD PACKAGING

The wooden packing packaging materials as the world's oldest packaging are widely used in the packaging of fresh fruits and vegetables due to the hardness, durability heavy burden of fragile and the ventilation features. Today, the wood is no longer used as a packing small production units in a simple manner.

## 2.2 GLASS PACKAGING

Glass packages have structure of bright, smooth and easy to clean. Therefore it does not contain germs. They are economical packaging materials since can be used repeatedly. The glass packaging materials are preferred by the food, drugs and perfumery manufacturers due to the no chemicals reaction, high barrier properties and ease of sterilization. The disadvantages of glass packaging are weight problems and fragility.

## 2. TYPES OF PACKAGING

### 2.3 PAPER AND PAPERBOARD PACKAGING

Paper and paperboard materials are highly preferred in packaging due to the ease and economics of manufacturing. This kind of packaging materials are subjected to various treatments because of stiffness, explosion protection, humidity and not enough water barrier characteristics.

### 2.4 COMPOSITE PACKAGING

Composite packaging materials are obtained by combining the full surface of at least two different materials. The main reason to use of different materials is to increase the durability and flexibility by combining the unique properties of the materials. For example; plastic-aluminum composite packaging, cardboard-polyethylene composite packaging, paper-polyethylene composite packaging, paper-plastic aluminum composite packaging, paper-aluminum composite packaging. These packages are usually used in our homes for ready soup, fruit juices. They are cheaper and lighter and also have variety of manufacturing covers.

### 2.5 METAL PACKAGING

Metals are used for the packaging of paint and chemicals. The various organic coatings are developed for the deterioration materials inside. The cans manufactured by aluminum and steel metal are used in the packaging of gas and non-carbonated beverages. Metal packaging creates a strong barrier against light, air and water and they are sufficiently strong and resistant for insects and rodents. Although the use of metal is increasing in beverage and food packaging, it began its place to plastics in the household and automotive industry.

### 2.6 PLASTICS PACKAGING

Plastic packaging materials are usually obtained by processing the petrochemical plants of various products from oil refineries. Plastics are preferred in packaging materials production since more packages can be produced with lower plastics and its easy shaping characteristics.

Plastic packaging is not only practical and safe, but at the same time it is much more efficient. The exact amount of improvement in the past is stated in a study conducted by GVM, (a German market research institute on packaging) comparing the packaging produced in 2013 with the packaging produced in 1991. The striking result of the work is that in Germany, only 2.76 million tons of plastic is consumed instead of 3.7 million tons for packaging, which almost equates to a million tonnes of savings. This material savings has been achieved despite tighter legal requirements for innovative packaging solutions, trade and consumers 'increased demands for food products' fragmentability and durability.

Approximately 63% of all consumer goods in the EU are sold in plastic packaging. By contrast, plastic packaging accounts for only 24% of the total package weight. This clearly demonstrates the high material yield of the plastic as a packaging tool.

#### 2.6.1. PET (POLYETHYLENE TEREPHTHALATE) PACKAGING

It is a thermoplastic material of polyester family. It is available in amorphous (transparent) and semi-crystalline (opaque and white) materials, depending on the heat treatment. The most important advantage is that it can be completely recycled. It can be semi-rigid and rigid depending on thickness. It's too light. It is used as a good gas and humidity bar. It is rigid and resistant to impact. It is naturally colorless and transparent. When produced as a thin film, PET is often coated with aluminum; reflective and opaque. PET bottles are excellent barrier material and have a very wide area especially for soft drinks. In various sizes, drinking water, carbonated beverages, fruit juice and vegetable oil bottles, peanut oil jar, microwave food tray cover, salad containers are the main areas used.

## 2. TYPES OF PACKAGING

### 2.6.2. PVC (POLYVINYL CHLORIDE) PACKAGING

There are two types of rigid and flexible PVC materials. Pipes and window frames vegetable oils and shampoo bottles, bleach and transparent liquid detergent containers, liquid motor oil bottles, artificial lees, window cleaning products, fresh meat containers, ketchup bottles, soft toys, electrical insulation, roofing materials are made of PVC

### 2.6.3. PP (POLYPROPYLENE) PACKAGING

Chemical substances are resistant to heat and extreme fatigue. They are plastic with moderate hardness and brilliance. Margarine tubes, ketchup bottles, sticks, caps, chips and biscuits, microwave food trays, medicinal bottles, yogurt containers, chairs, suitcases, carpets, ropes and some containers and covers are made of polypropylene plastic. It is the lowest density plastic used in packaging.

### 2.6.4. PS (POLYSTYRENE) PACKAGING

It can be rigid and foam. It is a versatile and purpose-built plastic. It is a very hard, brittle and shiny plastic. It is a very inexpensive resin with a relatively low melting point. Protective packaging is made from polystyrene plastic. Examples are egg cartons, coolers, trays, fast food packaging containers, coffee containers, yogurt containers, video and audio cassette containers, cutlery, cups, caps, small boots and dog containers

### 2.6.5. PE (POLYETHYLENE) PACKAGING

It's a kind of plastic we use the most in our homes. There are many uses such as bleach, detergent and shampoo bottles, motor oil bottles, garbage bags. Detergent bottles, trash cans and similar products are made from recycled PE.

### 2.6.6. HDPE (HIGH DENSITY POLYETHYLENE) PACKAGING

It is a very solid and economical material. Naturally, the milk is in the color look. For this reason, it is not used in products where clarity is important. It is one of the most used plastics. It has a wide range of usage due to its low cost, easy formability and resistance to breakage. Milk, water, fruit juices, liquid detergents, engine oils, laundry waters, shampoos, perfume and lotion containers are made of HDPE, such as plastic tubes, waste bags, casings, cable insulations, buckets, thin carrier bags.

### 2.6.7. LDPE (LOW DENSITY POLYETHYLENE) PACKAGING

It is semi-transparent or color. Medium hard and durable plastic. It is a flexible, soft, easily cuttable and wrinkle-resistant plastic. Because LDPE plastics are smooth, flexible and relatively transparent, they are mostly used as film raw materials. LDPE plastics are milk-white if pigment is not added. It is also used in the construction of flexible closures of various jars such as sacks, shirring and stretching shirts, film bags, garbage bags, bread and sandwich bags, various food bags, food boxes, deep freezing bags, cheap kitchenware, grocery bags, margarine tubes and various jars are the most idly uses.

### 2.6.8. PC (POLYCARBONATE) PACKAGING

Processing, molding and thermoforming of this kinds are easy. Such plastics are plastics which are widely used in the modern manufacturing sector. Polycarbonate is a very durable material, used in making bullet-proof glass. In addition, this polymer is very transparent and light-transmitting structure. It has a better light transmission characteristic than most glass types. The bottles that we use at home are also produced from polycarbonate materials. It is the best feature of this material that it is resistant to bumps.

### 3. TURKISH PLASTIC PACKAGING MATERIALS INDUSTRY

Plastic packaging is not only practical and safe, but also much more efficient. The exact amount of improvement in the past is stated in a study conducted by GVM, comparing the packaging produced in 2013 with the packaging produced in 1991 (a German market research institute on packaging). The striking result of the work is that in Germany, only 2.76 million tons of plastic is consumed for packaging instead of 3.7 million tons, which equates to a million tons savings. This material savings has been achieved despite tighter legal requirements for innovative packaging solutions, trade and consumers 'increased demands for food products' fragmentability and durability.

Approximately 63% of all consumer goods in the EU are transported in plastic bags. By contrast, plastic packaging accounts for only 24% of the total package weight. This clearly demonstrates the high material yield of the plastic as a packaging tool.

#### 3.1. PRODUCTION CAPACITY

In plastic packaging industry, lots of companies manufacture lots of different products and manufacturing capacities of companies in terms of products cannot be defined over a certain unit. According to the TOBB database, total manufacturing capacity of 1854 registered companies is defined as: (1,188,208 tons + 2,626,400,207 m<sup>2</sup> + 421,630,400 meters + 4,497,991 pieces)

Turkish plastic packaging industry is made up of flexible plastic by 67%, textile plastics by 18%, and hard plastic packaging products by 15%.

| Products           | No of Companies | Ton              | m <sup>2</sup>       | Meter              | 1000 Unit        |
|--------------------|-----------------|------------------|----------------------|--------------------|------------------|
| Plastic Film       | 205             | 200,639          | 1,036,345,507        | 421,630,400        |                  |
| Sheets             | 137             | 128,243          | 342,572,240          |                    |                  |
| Bottles and Cans   | 235             | 86,589           |                      |                    | 2,008,991        |
| Storage Containers | 543             | 279,737          |                      |                    | 1,648,000        |
| Packing Bag        | 734             | 493,000          | 1,247,482,460        |                    | 841,000          |
| <b>TOTAL</b>       | <b>1,854</b>    | <b>1,188,208</b> | <b>2,626,400,207</b> | <b>421,630,400</b> | <b>4,497,991</b> |

**Table 1: Installed Capacity of Plastics Packaging Industry**

Source: TOBB (The Union of Chambers and Commodity Exchange of Turkey)

According to PAGEV data base, about 1450 companies are operating in plastics packaging materials industry, 61% of which located in Istanbul.

More than 10 companies that operate in 14 the provinces 14 account for 83% of total companies.

### 3. TURKISH PLASTIC PACKAGING MATERIALS INDUSTRY

| Province       | No of Companies | % Share        |
|----------------|-----------------|----------------|
| İstanbul       | İstanbul        | İstanbul       |
| İzmir          | İzmir           | İzmir          |
| Konya          | Konya           | Konya          |
| Ankara         | Ankara          | Ankara         |
| Bursa          | Bursa           | Bursa          |
| Gaziantep      | Gaziantep       | Gaziantep      |
| Kocaeli        | Kocaeli         | Kocaeli        |
| Adana          | Adana           | Adana          |
| Denizli        | Denizli         | Denizli        |
| Mersin         | Mersin          | Mersin         |
| Kayseri        | Kayseri         | Kayseri        |
| Manisa         | Manisa          | Manisa         |
| Samsun         | Samsun          | Samsun         |
| Antalya        | Antalya         | Antalya        |
| Others         | Others          | Others         |
| Total Industry | Total Industry  | Total Industry |

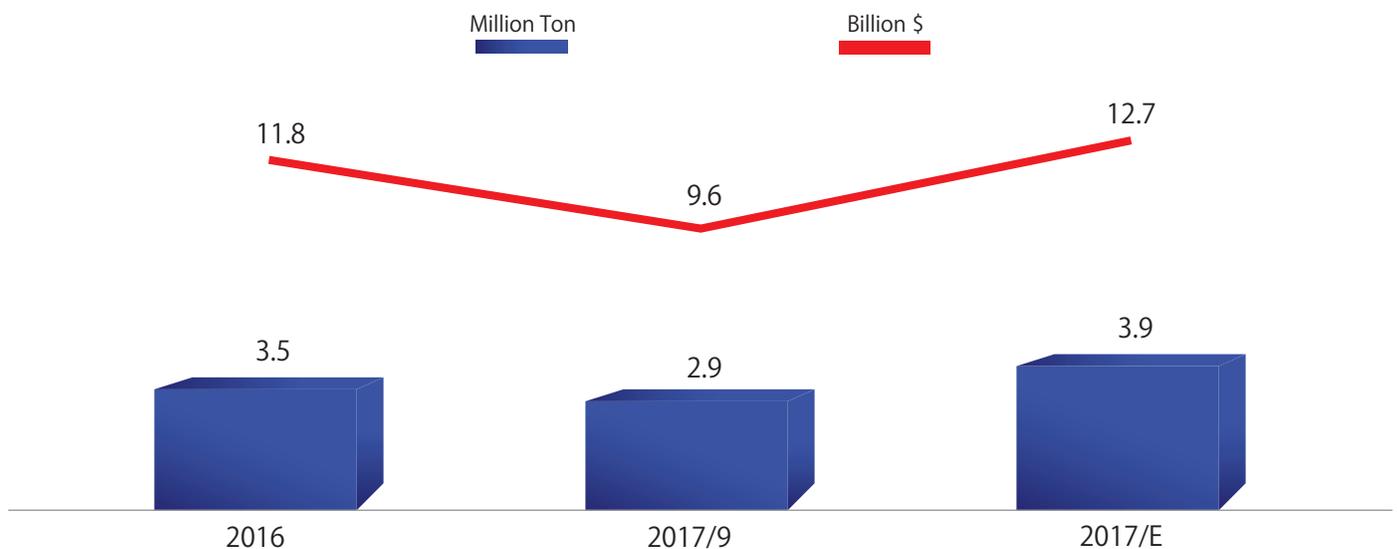
**Table 2: Plastics Packaging Materials Manufacturers by Provinces**

Source : PAGEV Data Base

#### 3.2. PRODUCTION

In the January – September period of 2017, 2.9 million tons and 9.6 billion dollars of plastics packaging materials has been produced.

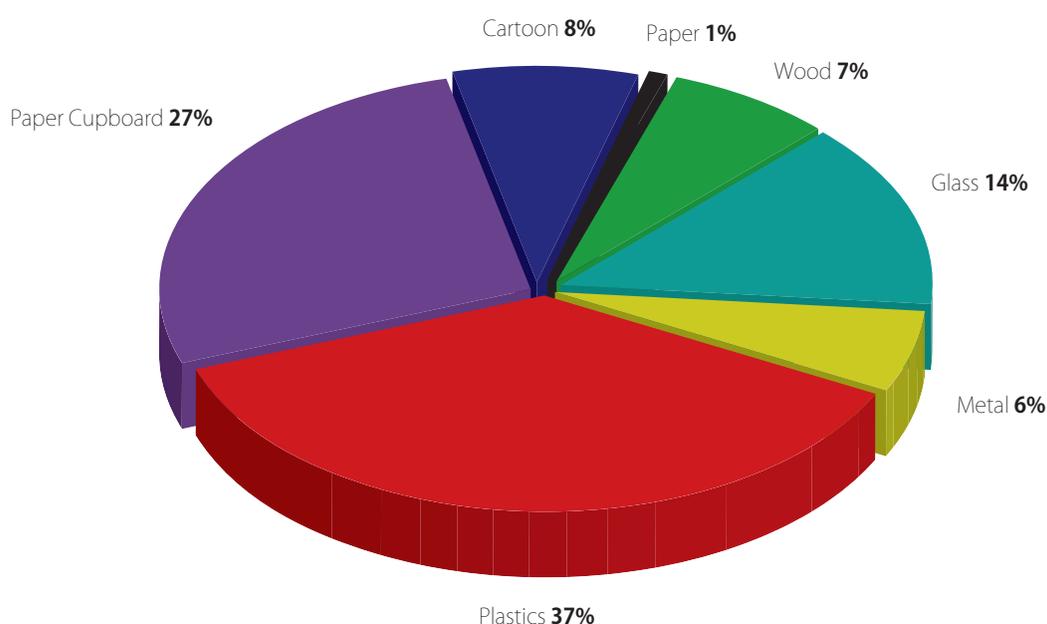
Total production is estimated to reach to 3.9 million tons and 12.7 billion dollars at the end of 2017 increasing by 9.4% on amount and 7.6% on value basis.



**Graphic 1: Plastics Packaging Materials Production**

### 3. TURKISH PLASTIC PACKAGING MATERIALS INDUSTRY

The highest share in total packaging production in Turkey is plastic materials with 37%.



Graphic 2: Shares of Materials in Total Packaging Production in Turkey

### 4. FOREIGN TRADE

Plastics packaging foreign trade can be examined by 5 custom duty code numbers specified as follows with HS Codes of 39.19, 39.20, 39.21 ve 39.23.

| HS CODE | Definitions   |
|---------|---|
| 3919    | Adhesive plate, sheet, strip, slide, etc. from plastic; flat    |
| 3920    | Other plate, sheet, pellicule and slides from plastic           |
| 3921    | Other plates, sheets, pellicules, foils and slides from plastic |
| 3923    | Plastic products for moving furniture, tap, cap, capsule        |

Table 3: Plastics Packaging Industry by HS Codes

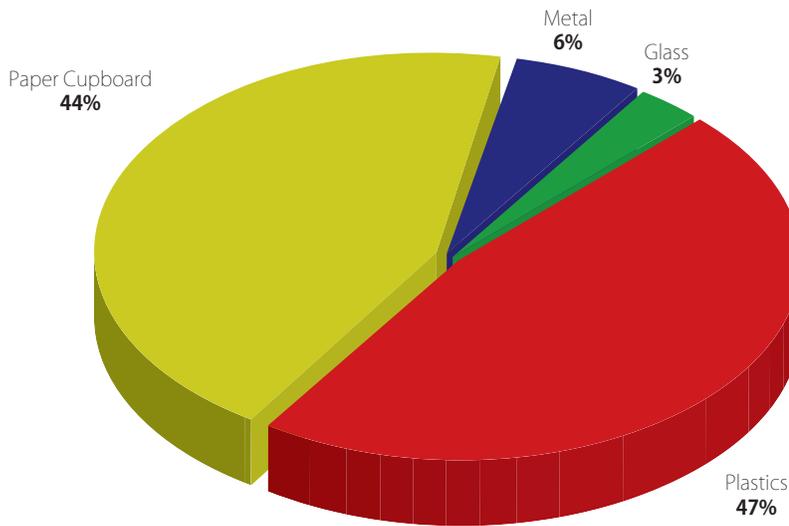
Source: TurkStat and ITC Trade Statistics

## 4. FOREIGN TRADE

### 4.1. IMPORTS

Although Turkish plastics packaging is sufficient to meet the requirements of requirements of the domestic manufacturing industry with its structural and technological aspects, the materials are imported come with their own packaging materials.

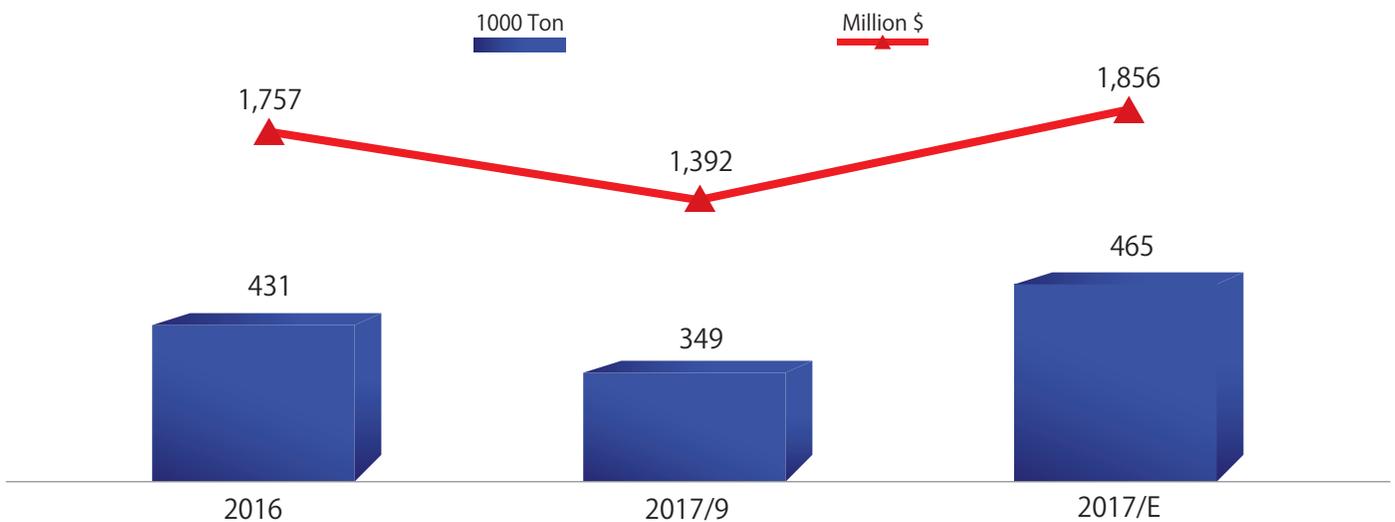
As new products begin to be manufactured in Turkey, their packaging materials will be produced in Turkey and market volume will grow accordingly. The share of total imports of plastics packaging industry is 47% in total packaging imports.



Graphic 3: Shares of Materials in Total Packaging Imports in Turkey

The imports of plastics packaging materials realized as 349 thousand tons and stood at 1 billion and 392 million dollars in January – September period of 2017 and expected to increase to 465 thousand tons and

1.86 billion dollars by the end of the year increasing by 7.9% on amount and 5.7% on value basis compared to 2016.



Graphic 4: Plastics Packaging Material Imports

Source: TurkStat and ITC Trade Statistics

## 4. FOREIGN TRADE

The imports of all plastics packaging materials are expected to increase both on amount and value bases by the end 2017 compare to 2016.

| HS Code | 2016 | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|------|--------|--------|--------------------------|
| 3919    | 58   | 46     | 61     | 5.8                      |
| 3920    | 249  | 203    | 271    | 8.7                      |
| 3921    | 64   | 52     | 70     | 9.3                      |
| 3923    | 61   | 48     | 64     | 4.9                      |
| Total   | 431  | 349    | 465    | 7.9                      |

**Table 4: Plastics Packaging Material Imports (1000 Ton)**

Source: TurkStat and ITC Trade Statistics

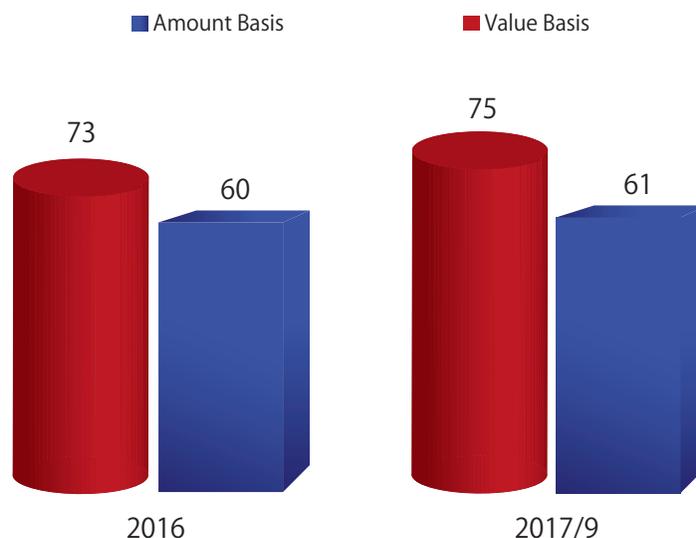
| HS Code | 2016  | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|-------|--------|--------|--------------------------|
| 3919    | 331   | 311    | 249    | -3.4                     |
| 3920    | 907   | 907    | 733    | 2.8                      |
| 3921    | 250   | 250    | 197    | -0.3                     |
| 3923    | 269   | 269    | 213    | 7.0                      |
| Total   | 1,757 | 331    | 249    | 1.9                      |

**Table 5: Plastics Packaging Material Imports (USD Million)**

Source: TurkStat and ITC Trade Statistics

While, plastics packaging materials imports shared 73% of total plastics industry's imports on amount and received 60% share on value basis in 2016, it's share

increased to 75% on amount and 61% on value basis in January – September period of 2017.



**Graphic 5: Share of Plastics Packaging Imports in Total Plastics End Products Imports (%)**

## 4. FOREIGN TRADE

### 4.2. IMPORTS BY COUNTRIES

Plastic packaging materials are imported from more than 80 countries. The share of 10 countries in total imports amounted to 72% on amount and 74% on value basis in January-September of 2017.

Germany, China, S. Korea, Italy and France made up the first 5 countries with 59% share in the total imports of the plastics packaging materials in the January - September period of 2017.

| Countries    | 1000 Ton | Million \$ | Ton -% | \$ -% |
|--------------|----------|------------|--------|-------|
| Germany      | 52       | 250        | 15     | 18    |
| China        | 85       | 238        | 24     | 17    |
| S. Korea     | 25       | 139        | 7      | 10    |
| Italy        | 32       | 125        | 9      | 9     |
| France       | 14       | 68         | 4      | 5     |
| USA          | 8        | 54         | 2      | 4     |
| UK           | 8        | 48         | 2      | 3     |
| Belgium      | 10       | 46         | 3      | 3     |
| Spain        | 9        | 33         | 3      | 2     |
| Egypt        | 9        | 25         | 3      | 2     |
| 10 Countries | 251      | 1,025      | 72     | 74    |
| Other        | 98       | 367        | 28     | 26    |
| Total        | 349      | 1,392      | 100    | 100   |

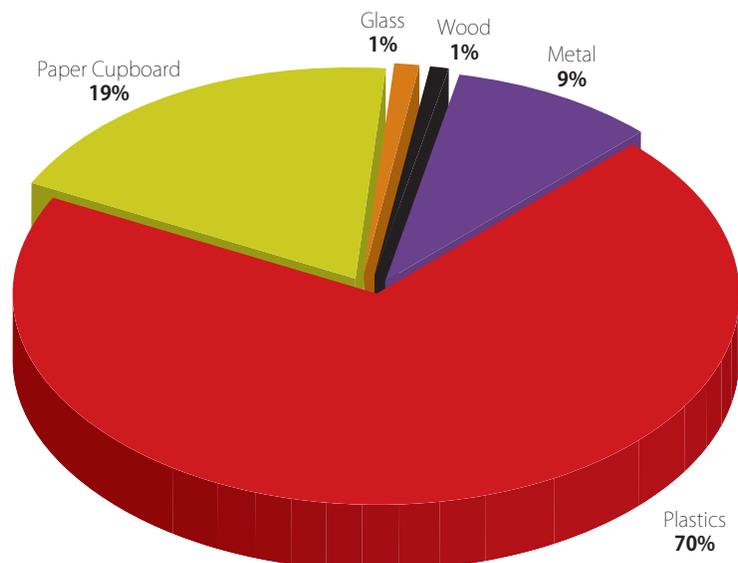
**Tablo 6: The first 10 Countries in Plastics Packaging Materials Imports (2017/9)**

Source: TurkStat

### 4.3. EXPORTS

According to the ASD - Packaging Manufacturers Association records, the share of total exports of plastics

packaging industry is 70% in total packaging imports.

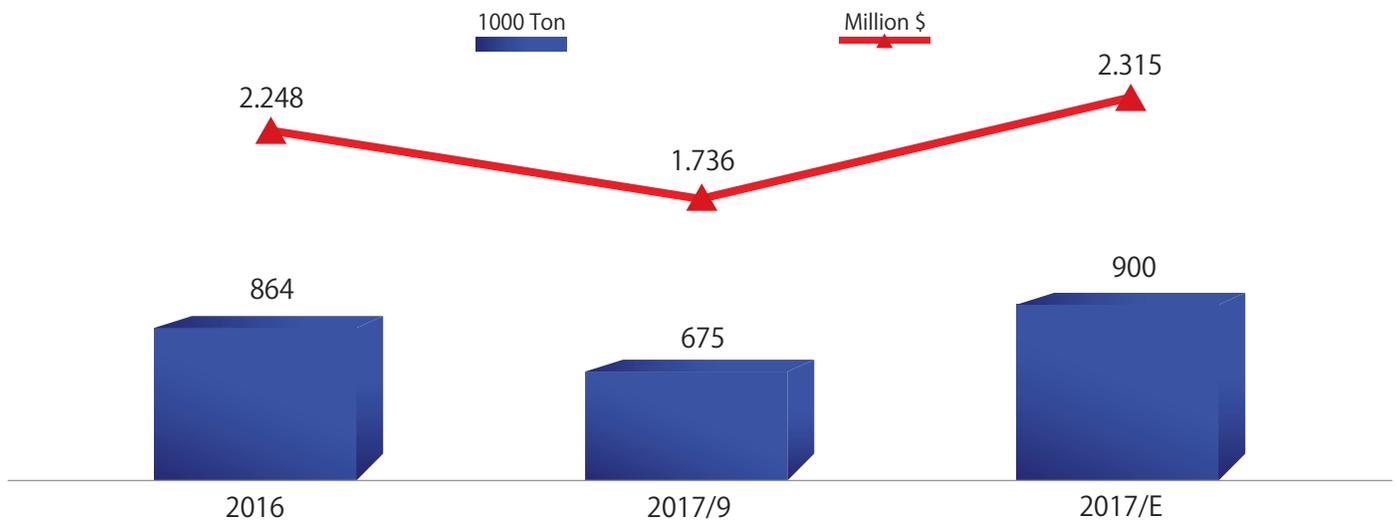


**Graphic 6: Share of Plastics in Total Packaging Materials Exports**

## 4. FOREIGN TRADE

Plastics packaging materials exports in the January – September period of 2017 realized as 675 thousand tons and 1.74 billion dollars and expected to be 900

thousand tons and 2.32 billion dollars by the end of the year increasing by 4.2% on amount and decreasing by 3% on value base compared to 2016.



**Graphic 7: Plastics Packaging Materials Exports**

Source: TurkStat and ITC Trade Statistics

| HS Code | 2016 | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|------|--------|--------|--------------------------|
| 3919    | 20   | 14     | 19     | -2.4                     |
| 3920    | 369  | 282    | 376    | 1.8                      |
| 3921    | 140  | 106    | 141    | 0.9                      |
| 3923    | 335  | 272    | 363    | 8.6                      |
| Total   | 864  | 675    | 900    | 4.2                      |

**Table 7: Plastics Packaging Materials Exports (1000 Ton)**

Source: TurkStat and ITC Trade Statistics

| HS Code | 2016  | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|-------|--------|--------|--------------------------|
| 3919    | 113   | 72     | 96     | -15.1                    |
| 3920    | 923   | 710    | 947    | 2.6                      |
| 3921    | 402   | 300    | 399    | -0.6                     |
| 3923    | 809   | 654    | 872    | 7.8                      |
| Total   | 2,248 | 1,736  | 2,315  | 3.0                      |

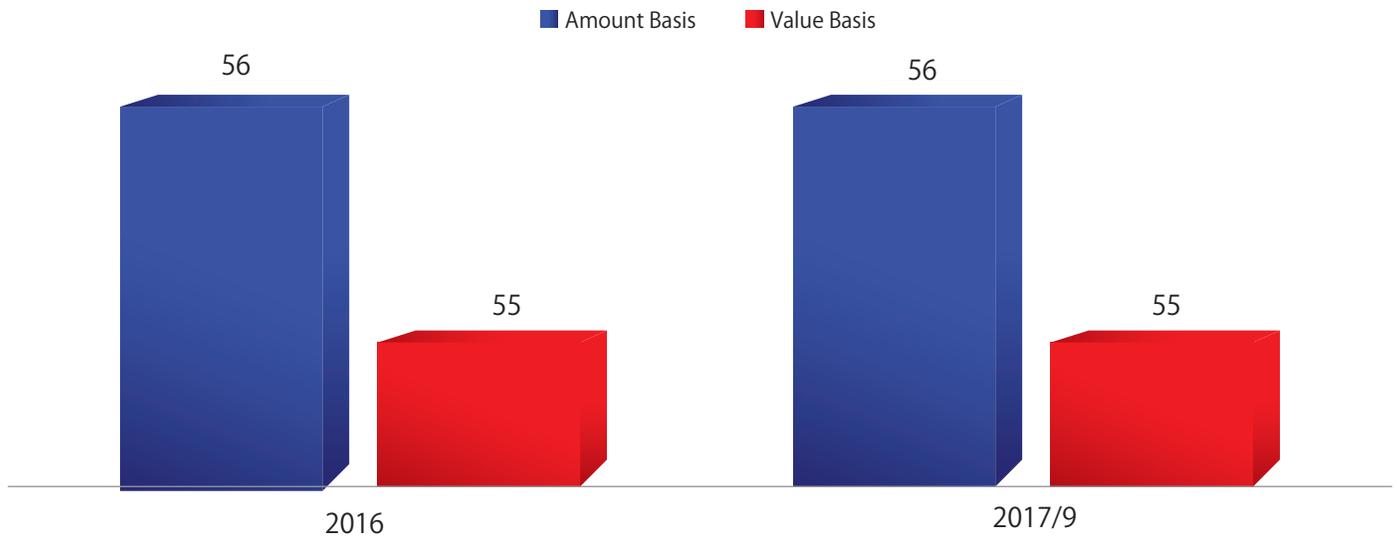
**Table 8: Plastics Packaging Materials Exports (USD Million)**

Source: TurkStat and ITC Trade Statistics

## 4. FOREIGN TRADE

Share of plastic packaging materials exports in total plastics industry exports stayed at the same level of

56% and 55% in January – September period of 2017.



**Graphic 8: Share of Plastics Packaging Exports in Total Plastics End Products Exports (%)**

Source: TurkStat and ITC Trade Statistics

### 4.4. EXPORTS BY COUNTRIES

Turkey exports plastic packaging products to more than 150 countries and 10 major export partners had 49% on amount and 47% share on value base in January – September period of 2017.

In this period, Germany, Iraq, UK, Italy and Israel kept their status of top 5 markets with 30% share, to which Turkey exported plastic packaging products most.

| Countries          | 1000 Ton | Million \$ | Ton -% | \$ -% |
|--------------------|----------|------------|--------|-------|
| Germany            | 44       | 144        | 7      | 8     |
| Iraq               | 73       | 128        | 11     | 7     |
| UK                 | 49       | 118        | 7      | 7     |
| Italy              | 31       | 74         | 5      | 4     |
| Israel             | 34       | 72         | 5      | 4     |
| France             | 23       | 70         | 3      | 4     |
| USA                | 24       | 57         | 4      | 3     |
| Netherlands        | 17       | 57         | 3      | 3     |
| Iran               | 15       | 53         | 2      | 3     |
| Romania            | 18       | 49         | 3      | 3     |
| 10 Countries Total | 327      | 820        | 49     | 47    |
| Others             | 347      | 916        | 51     | 53    |
| Total              | 675      | 1,736      | 100    | 100   |

**Table 9: Major Export Partners For Plastics Packaging Materials (2017/9)**

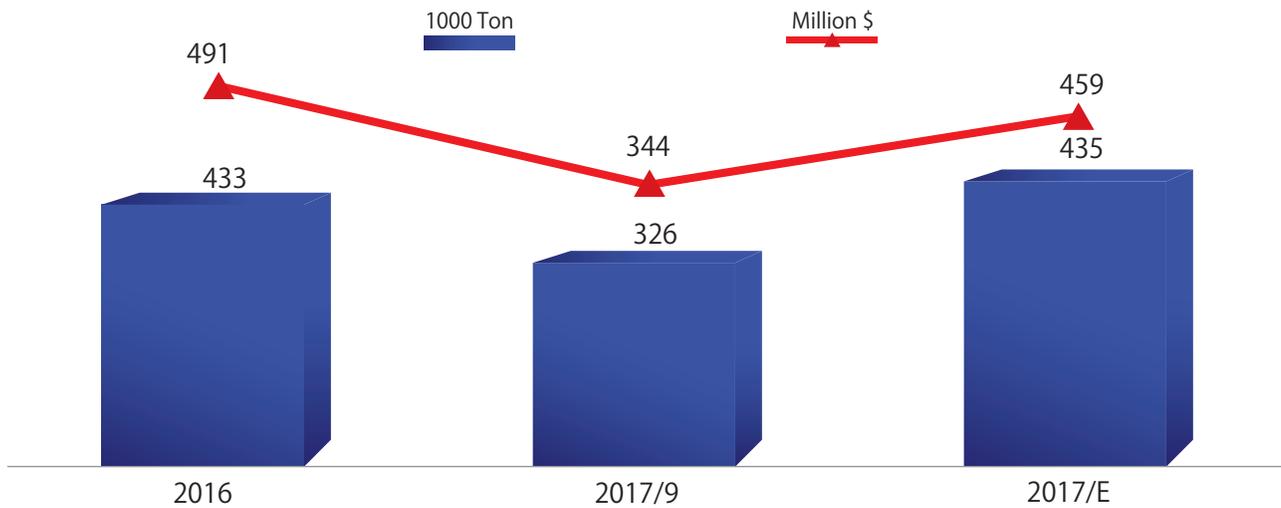
Source: TurkStat and ITC Trade Statistics

## 4. FOREIGN TRADE

### 4.5. FOREIGN TRADE BALANCE

Turkey has foreign trade surplus in terms of amount and value in total foreign trade of plastic packaging products. The foreign trade surplus realized as 326 thousand tons and 344 million dollars in January – September period of 2017.

The foreign trade surplus is expected to be 435 thousand tons and 459 million dollars at the end of 2017, increasing by 0.5% on amount and decreasing by 6.5% on value basis compared to 2016.



**Graphic 9: Plastics Packaging Materials Foreign Trade Surplus**

Source: TurkStat and ITC Trade Statistics

| HS Code | 2016 | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|------|--------|--------|--------------------------|
| 3919    | -38  | -31    | -42    | 10.1                     |
| 3920    | 121  | 79     | 106    | -12.4                    |
| 3921    | 76   | 54     | 71     | -6.2                     |
| 3923    | 274  | 225    | 300    | 9.4                      |
| Total   | 433  | 326    | 435    | 0.5                      |

**Table 10: Plastics Packaging Materials Foreign Trade Surplus (1000 Ton)**

Source: TurkStat and ITC Trade Statistics

| HS Code | 2016 | 2017/9 | 2017/E | % Increase 2017/2016 (E) |
|---------|------|--------|--------|--------------------------|
| 3919    | -218 | -176   | -235   | 8.0                      |
| 3920    | 16   | -23    | -31    | -291.4                   |
| 3921    | 152  | 102    | 136    | -10.5                    |
| 3923    | 540  | 442    | 589    | 9.0                      |
| Total   | 491  | 344    | 459    | -6.5                     |

**Table 11: Plastics Packaging Materials Foreign Trade Surplus (USD Million)**

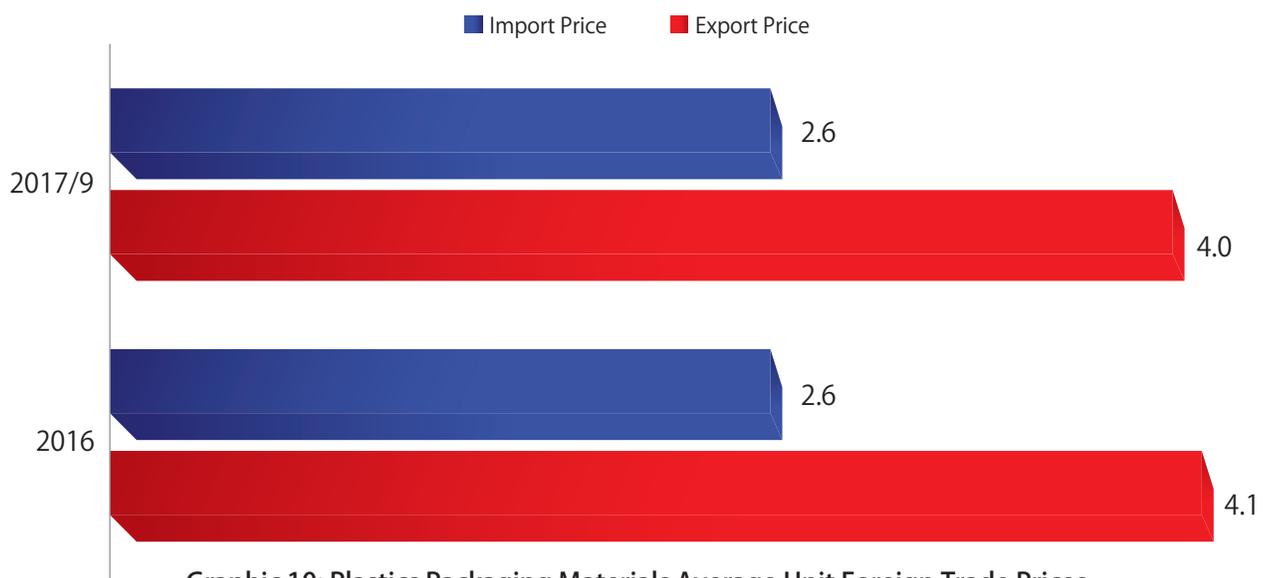
Source: TurkStat and ITC Trade Statistics

## 4. FOREIGN TRADE

### 4.6. IMPORT AND EXPORT PRICES

Average import prices of plastic packaging products have been over the average export prices in Turkey since 2000. This shows that Turkey imports plastic packaging products with higher added-value while exporting products with lower added-value.

Average import price realized as 4 \$/kg and average export unit price 2.6 \$/kg for plastic packaging materials in January – September period of 2017. The import prices decreased by 2% and export price declined by 1.1% compared to 2016.



Graphic 10: Plastics Packaging Materials Average Unit Foreign Trade Prices

Import and export prices of all plastics packaging materials declined in the first half of 2017.

| HS Code | Import Price |        |            | Export Price |        |            |
|---------|--------------|--------|------------|--------------|--------|------------|
|         | 2016         | 2017/9 | % Increase | 2016         | 2017/9 | % Increase |
| 3919    | 5.8          | 5.4    | -5.4       | 5.8          | 5.0    | -13.0      |
| 3920    | 3.6          | 3.6    | -0.9       | 2.5          | 2.5    | 0.8        |
| 3921    | 3.9          | 3.8    | -3.6       | 2.9          | 2.8    | -1.5       |
| 3923    | 4.4          | 4.5    | 0.7        | 2.4          | 2.4    | -0.7       |
| Average | 4.1          | 4.0    | -2.0       | 2.6          | 2.6    | -1.1       |

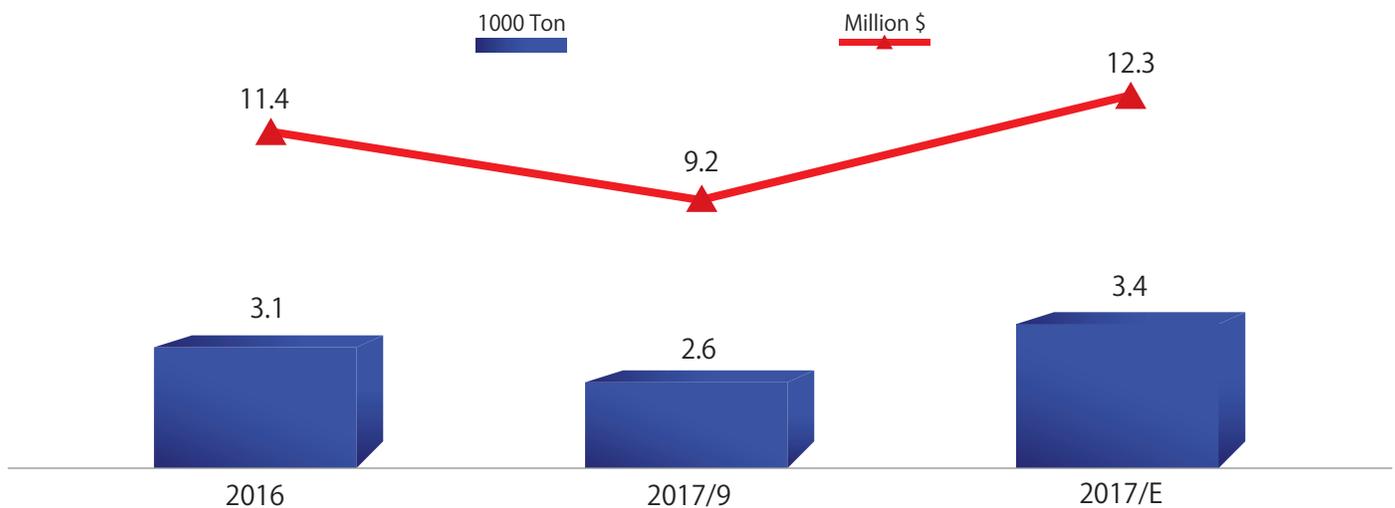
Table 12: Plastics Packaging Materials Average Unit Foreign Trade Prices

Source: TurkStat and ITC Trade Statistics

## 5. DOMESTIC CONSUMPTION

Domestic consumption for plastic packaging products in the January-September period of 2017 amounted to 2.6 million tons and 9.2 billion dollars. It is expected that, 3.4 million tons and 12.3 billion dollars will be

consumed by the end of 2017 with an increase of 10.7% on amount and 8.2% on a value basis with respect to 2016.



Graphic 11: Plastics Packaging Materials Domestic Consumption

## 6. 2017 ESTIMATES

Turkey, shows a faster development than the EU Countries the economies of which are more developed and relatively sophisticated packaging markets have reached saturation points.

Growing urbanization trend, the lengthening of the average life expectancy, women's increasing population of working life, the contribution of consumption habits and the expectations of consumers; developed the self-service in the central and consumer direct selling hypermarket, promotes the spread of supermarkets and supermarket chains in the entire country.

This support the development of use of retail systems packaging. Likewise, consumers in markets achieve the possibility of finding with many more varieties of cheap but good quality and reliable products, price and quality.

Apart from customer service, sale promotions, special discounts, free product coupons directs customers preferably to purchase from the store.

To sum up; the chain of shopping malls and retail sales racks and feed the order accordingly packaged product demand. \* Soruce: ASD

In the plastics packaging materials industry at the end of 2017 comparing with 2016 on amount basis;

- Production is expected to increase by 9.4%, imports by 7.9%, exports by 4.2% domestic consumption by 10.7%, foreign trade surplus by 0.5%,
- Export share in total production is expected to be 23% and import share in total domestic consumption to be 13% and export coverage of imports to be as 194%.

On the other hand on value base;

- Increase of 7.6% in production, 5.7% in imports, 3% in exports, 8.2% in domestic consumption,
- 6.5% decrease in foreign trade suplus is expected,
- In this period 18% of the total production to be exported, 15% of domestic sales to be met by imports and export – import coverage ratio to realise as 125% is expected.

## 6. 2017 ESTIMATES

|                                  | 1000 Ton |        |        |                           | 1000 Million |        |        |                           |
|----------------------------------|----------|--------|--------|---------------------------|--------------|--------|--------|---------------------------|
|                                  | 2016     | 2017/9 | 2017/T | % Increase<br>(2017/2016) | 2016         | 2017/9 | 2017/T | % Increase<br>(2017/2016) |
| Production                       | 3,547    | 2,910  | 3,881  | 9.4                       | 11,844       | 9,555  | 12,741 | 7.6                       |
| Imports                          | 431      | 349    | 465    | 7.9                       | 1,757        | 1,392  | 1,856  | 5.7                       |
| Exports                          | 864      | 675    | 900    | 4.2                       | 2,248        | 1,736  | 2,315  | 3.0                       |
| Domestic Consumption             | 3,114    | 2,584  | 3,446  | 10.7                      | 11,353       | 9,211  | 12,282 | 8.2                       |
| Foreign Trade Deficit/Surplus    | 433      | 326    | 435    | 0.5                       | 491          | 344    | 459    | -6.5                      |
| Exports / Production (%)         | 24       | 23     | 23     |                           | 19           | 18     | 18     |                           |
| Imports/Domestic Consumption (%) | 14       | 13     | 13     |                           | 15           | 15     | 15     |                           |
| Exports / Imports (%)            | 200      | 194    | 194    |                           | 128          | 125    | 125    |                           |

**Table 13: Supply and Demand Equilibrium in Plastics Packaging Materials Industry**

The raw materials and machinery and raw materials suppliers enter into closer global cooperation in the plastic packaging industry. Plastics packaging industry in the coming years;

- Increased globalization in the world plastic packaging industry will result for especially small and medium-sized plastic processors in particular, the merger of the companies and even go to more and more cooperation,
- It will also create opportunities for the companies that develop new products and manufacture them will offer more added value,
- The plastics packaging industry comes increasingly into a service industry with international services, timely delivery and e-commerce. Outsourcing for customers and full service packages is being more important in the plastics packaging industry.

Export of plastic packaging products in 2023 is expected to reach USD billion of 5.5. In order to achieve this goal, target markets and of products to be exported to these market (traditional and larger value-added) must be identified, conducting market researches for these products, the presentations of the selected product in the target market, making B2B meetings, delegation visits and active participation in fairs to be obtained as the main actions.

In 2023, in order to achieve the export target of \$ 5.5 billion, the creation of strategic alliances should be discussed as another strategy. To this end, exporting or less exporting companies to be gathered, establishment of plastic packaging industrial foreign trade company, to cut costs with joint purchasing and secure raw materials and additives to ensure supply, creating partner portals, establishing technical and commercial infrastructure, develop and expand the cluster activities to ensure increased efficiency in production and create a synergy actions in major plastic specialized organized industrial zones.

Another strategy is to become a global center of excellence in producing innovative products in Turkey. The main actions that can be done for this purpose are;

To produce technological products, to set priorities on R&D investments, create development policies, take best practices of the leading countries and organizations in the packaging industry as a model, develop mechanisms to encourage mergers to increase the international competitiveness, to identify the R&D needs of the plastic packaging industry to establish scientific works in universities to increase innovative activities.

## 7. PAGEV PROJECTS

PAGEV which is the "Unifying Power" of the Turkish Plastics Industry develops different projects aiming to solve the problems outlined above. These are in summary: "PAGEV Plastics Center of Excellence" and "International Regional Plastics Production Center".

### 7.1. PAGEV PLASTICS CENTER OF EXCELLENCE

Plastic materials, used in all areas of life, are rapidly taking place of other alternative products, because of their superior properties. In Turkey as well as in all over the world, plastics which useage in all sectors increasing is becoming an indispensable material for the 21<sup>st</sup> century.

Turkish Plastics Industry which is one of the fastest growing sectors in our country despite being young, is the 6<sup>th</sup> in the world and the 2<sup>nd</sup> in Europe. Growing with the goal of leadership in Europe, the Turkish Plastics Sector aims to increase the certification and added value of its products.

PAGEV, "Unifying Power" of the Turkish Plastics Industry, is leading the industry with the "PAGEV Plastics Excellence Center" for realizing this purpose. The mission of the PAGEV Center for Plastics Excellence will include the following activities,

- Research and Development
- Test and Laboratory Services
- Certification
- Training
- Competent Consulting

With the Center of Excellence, the test and laboratory support that the plastic industry needs will be provided to the industry. So, many problems that lead to loss of time and energy such as high test costs, overseas shipping, customs clearance, long test times will be removed.

The platforms that will provide information to and knowledge sharing in the industry will be developed by the Center and detailed training programs will be prepared and presented for the benefit of the industry. While working on the newest technologies, the Center of Excellence will work together with industry organizations, universities, research institutes, professional associations and non-governmental organizations to work for the Turkish Plastics Industry to be the world leader with R&D and innovation based work.

Established with the support of the Ministry of Science, Industry and Technology, PAGEV Plastics Center of Excellence will provide to the plastics industry and Turkish economy, especially the development of industrial skills and capabilities that will form the basis of Turkey's national projects.

Upon completion, the Center of Excellence, which will have an area of over 30 thousand m<sup>2</sup>, rises right beside PAGEV Vocational and Technical Anatolian High School in Küçükçekmece, Istanbul. PAGEV Plastics Center of Excellence, which will make Turkey the center of plastic production in the world, will carry out innovative projects.

In addition to this, the Center will create a control mechanism for the products exported abroad. The Center will also contribute to the preservation of the reliability and reputation of the plastic products produced in Turkey. On the other hand, the introduction of poor quality and non-standard goods into the country will be prevented by determining the technical suitability of the plastic products imported from abroad without any definite importation in the laboratories.

With its superior information infrastructure, the Center of Excellence will present the important documents required by the players of the sector more economically and quickly.

By accelerating the development, we will focus on the development of products and production technologies that will increase the competitive power of our firms.

The Center of Excellence, which will develop innovative ideas by following the developments in the world plastic sector, will increase the competitive power of our firms by providing many field consultancy services from the determination of appropriate input materials to the optimization of production process.

## 7. PAGEV PROJECTS

### 7.2. INTERNATIONAL REGIONAL PLASTIC MANUFACTURING CENTER

Although the Turkish Plastics Sector, with its process capacity reaching 9 million tons, has the 6<sup>th</sup> largest plastics production capacity in the world and 2<sup>nd</sup> in Europe, imports more than 85% of the plastic raw material it needs.

One of the most important advantages of the plastics industry in Turkey is that it is located between the Middle East countries which are the main petroleum and plastic raw material producer and the European market which is the main plastic consumer.

PAGEV aims to unify the plastic raw materials potential of Middle East countries with the Turkish Plastics Industry's competent production capability and experience at the international regional plastic production center, which Turkey aims to establish in South East Anatolia Region.

In the center, to be established with the win-win principle, the plastics raw materials producer countries will be supplying cheap and reliable raw materials having a large volume and reliable market while Turkish Plastics Industry will have greater competition possibilities in the global markets with its growing production capacity and falling costs.

# CONNECTING POWER OF PLASTICS INDUSTRY



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