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# PACKAGING SECTOR STRATEGY

STRATEGY AND ACTION PLAN TO ENHANCE THE  
COMPETITIVENESS OF THE PACKAGING SECTOR IN JORDAN

Final Report

August 2008

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Final Report

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# 1.0 EXECUTIVE SUMMARY

## 1 JORDAN PACKAGING INDUSTRY OVERVIEW

Packaging is an important industry both in Jordan and the world. It is one of the most prominent sectors within the manufacturing sector in Jordan and its importance comes from the nature of packaging being intertwined with all industries, both large and small, which makes it an integral part of other sectors such as food, pharmaceuticals, fresh fruits and vegetables, chemicals and other sectors to survive.

The role of packaging is vital to the success of products as it offers product protection, information and, in many times, plays a key marketing role.

### Market size and Industry Structure

The packaging industry plays a significant role in the manufacturing sector of the Jordanian economy. Below are a few key facts and figures about its size, growth and composition.

- The value of packaging produced in Jordan was JOD million 223.154 in 2006<sup>1</sup>.
- Value added of that production was JOD million 73.41, representing 33% of gross production output in 2006<sup>2</sup>.
- Plastic packaging is the largest sub-sector in terms of contribution to the overall manufacturing sector's<sup>3</sup> gross output as it has the lion's share with 70.1% of the industry's overall output in 2006. Paper and paperboard packaging comes in second place with a share of 27.7% of the packaging industry's gross output in 2006, followed by metal packaging and wood packaging with shares of 1.6% and 0.6% respectively.<sup>4</sup>
- Metal packaging has been the most rapidly growing among the rest of the packaging industry's subsectors with an average growth rate of 23.1% over the (2002-2006) period, followed by the wood packaging subsector which recorded an average growth rate of 15.4% to land in second place among packaging subsectors growth in gross output, slightly ahead of the paper and paperboard packaging and the plastic packaging subsectors which recorded average growth rates of 13.2% and 11.1% over the same five year period respectively.<sup>5</sup>
- The packaging sector in Jordan is comprised of nearly 884 establishments representing 4.4% of the total number of establishments operating in the overall manufacturing sector in 2006. Plastic packaging sub-sector establishments represent 53% of the total number of packaging sector establishments, whereas paper and

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<sup>1</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>2</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>3</sup> The manufacturing sector referred to in this profile includes all industrial sub-sectors that involve manufacture of goods, and it excludes those of mining and quarrying industries, as well as production, collection and distribution of electricity.

<sup>4</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>5</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

paperboard packaging has 36%, followed by metal packaging and wood packaging with shares of 7% and 4% respectively.<sup>6</sup>

- The packaging industry in Jordan had 5,989 employees in 2006, representing 3.53% of the overall employment in the manufacturing sector in Jordan. Males represent about 94% of total employment in the sector.<sup>7</sup>
- The plastic packaging sub-sector has the lion's share of nearly 73% of total employment in the packaging industry. The remaining 27% are distributed among paper and paperboard packaging with a share of 20% of the sector's employment, followed by metal packaging and wood packaging with shares in sector's employment of 4.7% and 2.3% respectively.<sup>8</sup>
- The food and fresh fruits and vegetables sectors in Jordan have the largest market share of packaging consumption (39.5%), followed by the pharmaceuticals sector with a share of 14.61, then the cement industries with a share of 10.6%, followed by beverages, cosmetics, and chemicals manufacturing sectors with shares of 10.5%, 8.8%, and 2.4% respectively (2006)<sup>9</sup>.
- Jordan's total packaging exports amounted to JOD 111,074,000 in 2007 constituting 3.04% of Jordan's total exports value compared to JOD 27,430,000 in 2003 with an increase of 305%. The main exported packaging article is metal packages with a share of 58.6% followed by the plastic packaging articles constituting 23.5% of total exported packaging articles. The growth rate of exported packaging articles is the highest for plastic packaging with a growth rate of 50.2% in 2007, followed by the growth rates of paper and paperboard packaging, and metal packaging which were 29.9% and 10.6% respectively.<sup>10</sup>
- In 2007, Jordan's total packaging imports amounted to JOD 107,409,000 constituting 1.33% of Jordan's total imports of all goods compared to JD 39,392,000 in 2003 with an increase of 172.7%. The main imported packaging article is plastic packages with a share of 28.7% followed by the paper and paperboard articles which constitute 26.8% of total imported packaging articles. The growth rate of imported packaging articles is the highest for the wood packaging with a growth rate of 1051% in 2007, followed by the growth rates of plastic packaging, and metal packaging which were 35.4% and 31.8% respectively.<sup>11</sup>

## 2 SECTOR'S COMPETITIVENESS

### Factor Conditions

There are several weaknesses in various factor conditions of the packaging sector in Jordan:

*Labor (skilled and unskilled levels):*

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<sup>6</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>7</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>8</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>9</sup> These market share figures have been arrived at by calculating each manufacturing sector's consumption of packing materials out of the same sector's intermediate consumption of all goods and materials, then the market shares were calculated based on the manufacturing sector's overall consumption of packing materials in 2006. Source of data: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>10</sup> Source: ITC Trade Map (UNCTAD/WTO) – [www.trademap.org](http://www.trademap.org)

<sup>11</sup> Source: ITC Trade Map (UNCTAD/WTO) – [www.trademap.org](http://www.trademap.org)

- The packaging industry currently suffers from a shortage of both skilled and non-skilled workers, and there is a lack of supply of graduates of packaging specializations.
- There is no training for skilled labor to have practical, specialized knowledge in the production of packaging. Moreover, the local labor force in the packaging sector, which is anyway relatively limited in number, also lacks the specific scientific background experience in the production of packaging.
- The skills of the Jordanian labor force in general emanated from actual practice and not based on scientific methods.

#### *Raw materials:*

- Jordan is not well endowed with packaging raw materials. Therefore, Jordanian packaging industry is almost entirely reliant on imported sources due to the scarcity of the raw materials used in different types of packaging in Jordan.

#### *Infrastructure and Utilities:*

- The primary issue that most packaging converters face regarding utilities is the cost of electric power, which has increased sharply in the last couple of years compared to energy costs in neighboring countries and is expected to rise by 40%. This was voiced by packaging converters who attended the focus groups as one of the primary concerns facing the industry along with the quality of labor issue.

### **Demand Conditions**

#### *Home Demand Conditions:*

- End-consumers' tastes and preferences are evolving because of their increased exposure to imported products that have modern packaging as far as design and materials used in the packaging of these products. However, because the domestic market is small in size, converters are unable to meet increased demands for customized packaging because of small demand volumes and production economies of scale.

#### *Foreign Demand Conditions:*

- The export performance of the Jordanian industry in most sectors is limited. There are many reasons. The most important is the lack of export readiness of most Jordanian manufactured products. These products do not meet the export market access requirements, especially those related to quality and other factors that influence the competitiveness of those products in the export markets.

### **Industry Strategy and Rivalry**

- Weak end customer focus.
- Minimal attention is being given to Research and Development (R&D).
- Most Jordanian companies working in the packaging field lack clear business and marketing strategies.
- Competition is largely price-oriented.

## **Related and Supporting Services and Industries**

The level of clustering in the Jordanian packaging industry is low and the degree of integration between related and supporting services and industries is not strong as related and supporting industries do not seem to make a significant contribution towards the competitiveness of the packaging sector. Consolidation and utilization of synergies is rarely seen amongst the players in the packaging industry in Jordan, which weakens the industry's overall complementary strengths and decreases Jordan's global market share potential.

## **3 INDUSTRY BENCHMARKING**

### **Benchmarking In Terms Of Competitiveness Factors and International Best Practices**

#### **Workforce Skills and Availability**

Quality of packaging recruits in Jordan is an issue as packaging is not seen as an attractive career prospect for graduates. The same case applies to the UK and probably to other countries where there is lack of intermediate level of vocational skills. The lack of specialized knowledge and experience and poor skills of the Jordanian workforce hold back the performance of the packaging sector. In addition, there is shortage in local workforce as The National Employment and Training Company is attracting much of the available workforce.

#### **Education and Training**

Jordan has no specialized higher education in packaging. In contrast, The UK is well endowed with Higher Education resources and research institutes in the core technologies needed by the industry

#### **Specialized Services**

Jordan lacks technological center that undertakes package testing, providing consultancy and information among other services in addition, Jordan lacks brand design consultancies. UK has technology centers at some universities and the School of Packaging. Brand design consultancies exist and focus on creating and differentiating the brand image.

#### **Innovation and Imitation**

Generally the Jordanian designs are highly imitative and lack innovation in shapes, designs, functions among other differentiating elements. UK designs on the other hand, are generally innovative and the country enjoys the benefits of registration of designs and patents

#### **R&D Capacity**

The Jordanian Packaging Industry do not expenditures on R&D. On the contrary, UK average R&D spending is about GBP 3.236 million albeit the UK R&D activity is limited to few large converters or suppliers.



## **Networks and Alliances**

Although Jordan has some associations such as the Printing Association and JCI has committees for certain types of packaging, but the influence of the associations and the committees and their advocacy role are not clear. While UK has several influential associations such as the British Print Industry, Metal Packaging Manufacturers Association, British Plastics Federation, Faraday Packaging Partnership and others.

## **4 THE PACKAGING SECTOR STRATEGY**

### **Strategy Recommendations**

#### **1. Regulatory Framework**

Review the current legislations (mainly tariffs, energy costs and exports incentives) to ensure that competitiveness of the industry is not adversely affected. Harmonize local packaging standards with international standards and enforce the standards.

#### **2. Employment**

Identify real needs of the industry in terms of employment of all level of skills. Conduct a campaign to improve the recruitment process. Identify the skills and training needs of the packaging industry through a skills mapping project.

#### **3. Image**

Conduct a survey to evaluate the extent of the problem and to recommend 'best practice' for dealing with this issue.

#### **4. Technical Assistance**

Technical assistance is needed in areas such as design Branding assessment of primary, secondary and tertiary packaging of export oriented products.

#### **5. R&D**

Promotion of R&D in packaging.

#### **6. Data**

Survey each of the packaging targeted sub-sectors to collect the necessary data and then analyzed to identify where the industry.

#### **7. Sub-sectors Unions**

Work with the government for the benefits of enhancing the competitiveness of their sub-sector.

#### **8. Packaging Technology Center**

Establish a packaging technology center that would provide information, training, technology transfer, laboratory testing and technical support.

#### **9. Communications**

Communicate the strategic plan of the packaging sector needs to the sector through a series of seminars.

#### **10. Training**

Training include among other training areas: branding, marketing, specifications, requirements of export markets, design, fundamentals of

packaging, safety, good manufacturing practices GMP, quality assurance and control, innovation, and distribution packaging

### **Strategy Recommendations**

- 1- Review current legislations (tariffs, energy costs and exports incentives)
- 2- Harmonize and mandate standards
- 3- Resolve the lack of local skilled and un-skilled labor shortages issue for all target sub-sectors
- 4- Make available vocational training and academic education related to packaging technology
- 5- Improve the image of the Jordanian packaging related to target sub-sectors.
- 6- Targeted packaging sub-sectors have all needed technical expertise
- 7- At least three scientific research centers are interested in packaging R&D (paper, plastics and metals) Collecting missing and inaccurate information related to the sector.
- 8- Establish Union for each of the targeted sub-sectors
- 9- Establishing a Jordanian Packaging Technology Center
- 10- Communicate the strategic plan to all targeted sub-sectors and gain their support.
- 11- Assess training needs of packaging converters, manufacturers and supporting industries, prioritize needed training and allocate suitable experts locally or internationally.

# 2.0 INTERNATIONAL MARKET ANALYSIS

## 2.1 GLOBAL MARKET TRENDS

Packaging has become an essential element of everyday item, with its usage growing broadly in line with the global economy. As such, the health of the packaging industry is linked to that of the world economy as a whole.

### 2.1.1 ECONOMIC TRENDS

The state of world economies is one of the most important factors which directly impact the world's consumption of packaging product. The level of economic activity has a fairly direct influence on the demand for packaging in particular, and indirectly provides the right or wrong climate for investment into packaging material research and development.

In recent years, the progression of the world economy has been uneven, with rising oil prices, political uncertainty and other factors. At the turn of 2004/5, the US economy was moving ahead strongly, but there was a slowdown in the fast-growing economies of Eastern Asia and growth remained quite weak on the continent of Europe. Business confidence fell back at the turn of the year in developed economies, despite a relatively stable political climate and strong year of world trade. This was principally as a result of hikes in oil prices, which had a real impact upon incomes and consumer confidence. However, business investment did pick up as the year progressed and oil prices came down again, and with this in mind the OECD has forecast above-trend levels of growth for the full year 2005.<sup>12</sup>

### 2.1.2 DEMOGRAPHIC TRENDS AND LIFESTYLE ISSUES

Demographic factors often have direct influence on packaging demand trends as evident by the special attention which companies operating in various business sectors worldwide devote to ensure that their product offerings meet the demand of particular demographic market segments. Such marketing attention is often illustrated by customized packaging standards which those companies use to communicate marketing values to end consumers of different demographic segments.

The population of the world currently stands at 6.47 billion 2007,<sup>13</sup> up from 4.07 billion people in 1975, and set to grow to around 9.08 billion by 2050 taking the average of UN forecasts. By the same measure, the population of Africa will more than double to 1.94 billion, while that of Asia will grow by around one third to 5.2 billion. The population of Europe, meanwhile, is forecast to decline, from 728 million to 653 million, with the population of the world's more developed regions set to rise only slightly, from 1.21 billion to 1.24 billion.

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<sup>12</sup> Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

<sup>13</sup> Based on UN estimates.

China is currently the world's most populous nation with a population of 1.32 billion, ahead of India at 1.1 billion and the USA at 298 million. India is set to overtake China by 2050, when its population will have risen to 1.59 billion versus China's 1.39 billion.

Consumers are becoming increasingly demanding and time conscience. The expectations of the packaging quality in terms of design, material and reliability are rising and growing awareness of health and other issues present new challenges to packaging suppliers.

### **2.1.3 THE EVOLVING ROLE OF PACKAGING AS A KEY ENHANCEMENT / PRODUCT DIFFERENTIATION ELEMENT**

Kotler defines packaging as "all the activities of designing and producing the container for a product".<sup>14</sup> The significance of packaging has come to be increasingly recognized as an integral part of the branding and marketing communications processes as it plays a significant role in communicating the image and identity of a company and its product and/or service offerings.

According to the American Marketing Association, a brand is a: *"name, term, sign, symbol or design, or a combination of them intended to identify the goods and services of one seller and to differentiate them from those of competition."* Essentially a brand represents much more than purely a physical product. It also embodies a whole set of emotional associations that are built up in the minds of consumers over time.

These emotional associations or the *brand's identity* are developed by using a combination of the five elements of the *marketing mix* (product, price, place, promotion and packaging). A strong brand identity in the marketplace helps to differentiate a product from its competitors and thus provide a source of competitive advantage for the company.

### **2.1.4 ENVIRONMENTAL TRENDS**

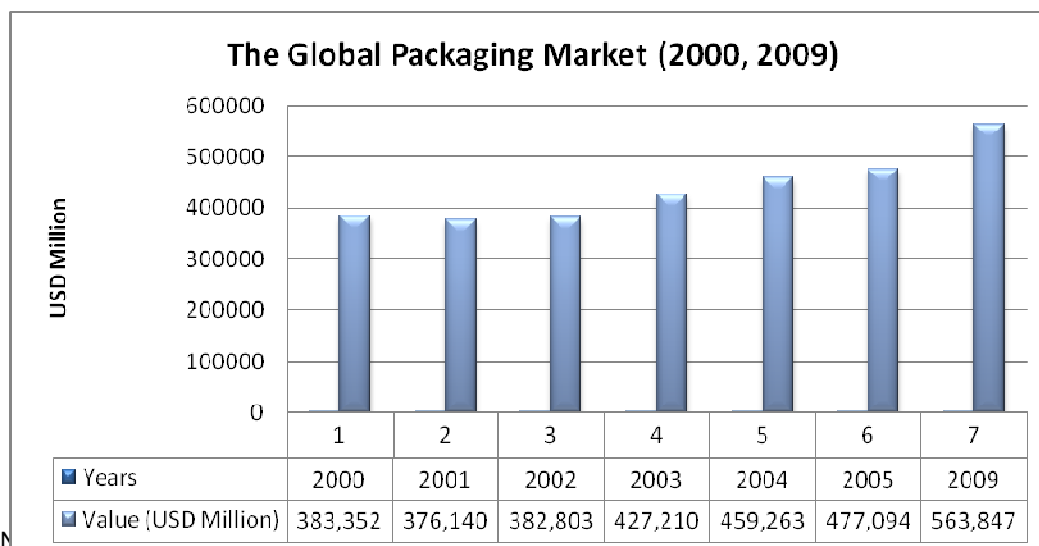
Environmental concerns have led governments throughout Western Europe to take steps to deal with the issue of packaging products waste and recycling. Recent packaging directives from the European Commission, for example, have led to the imposition of challenging targets for recycling, and national governments are also examining new ways to discourage packaging waste. The world packaging industry has taken steps to address the environmental question, but this has been more of a function of cooperation with government rather than strictly a marketing issue, although some consumers will seek out environmentally-friendly packaging and products as well.

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<sup>14</sup> Source: Philip Kotler (1999) Marketing Management.

## 2.2 GLOBAL MARKET SIZE AND STRUCTURE

According to the World Packaging Organization's (WPO) statistics, the packaging industry has been growing at an average annual growth rate of 3.5% since the beginning of the decade, turning over around USD 500 billion in 2006 (including packaging machinery). In 2003, the world packaging market recorded a drastic leap in growth by 12%, which was largely due to the retraction of the US dollar value against European, Asian and other currencies in 2003.<sup>15</sup>



Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

The North American markets including USA, Canada and Mexico, dominate the global packaging market with a share of 32%, ahead of Western Europe (26%) and Asia (26%). The largest single national packaging market during the same year was the USA with sales of USD 113 billion. Japan ranked second with sales of USD 49 billion, ahead of China at USD 32 billion, Germany at USD 21 billion and France at USD 19 billion.<sup>17</sup>

Packaging encompasses a wide range of material types across paper, board, plastic, metal, glass, wood and other materials. According to the WPO global market statistics, the largest share of global packaging is accounted for paper and board packaging with sales of USD 165 billion in 2003.<sup>18</sup> Equating to 38% of the market. Paper and board will remain the single largest element of the market into 2009,<sup>19</sup> growing at an annual rate of around 4% in real

<sup>15</sup> Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

<sup>16</sup> 2009 figures were estimated by Pira Int'l Ltd based on average annual growth rate.

<sup>17</sup> Source: 2006, Market Statistics and Future Trends in Global Packaging, World Packaging Organization (WPO)).

<sup>18</sup> Latest data available at WPO.

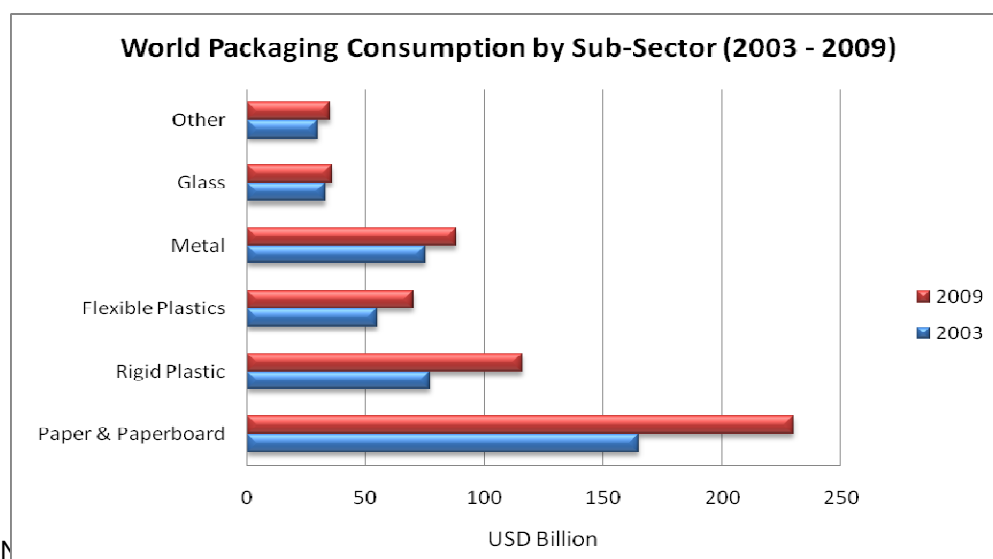
<sup>19</sup> Predictions of 2009 as made by Pira International Ltd. Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

terms, driven on the one hand by rising demand in fast-growth national markets as well as steady growth in secondary / bulk packaging across the globe.

Plastic packaging accounted for 30% of sales, with rigid plastics alone taking an 18% share of the market. Rigid plastics was the fastest growing sector of the market during the period of 1999-2003 growing at an annual rate of 6.2% to USD 77.2 billion. This was driven by several factors:

1. The rising demand for PET bottles in soft drink and bottled water markets;
2. The consistent substitution of traditional metal, glass and sometimes paper-based materials in food and other markets;
3. The increasing incursions by packaging as a whole into food markets, particularly in the case of meat, fish and poultry products; and rising consumption of ready-meals and other convenience-oriented products.

Rigid plastic packaging will continue to be the fastest growing sector of the market, with consumption forecasts of progressing at an annual average rate of 6.5% in to 2009 to reach USD 116 billion, with consumption of flexible plastic packaging also set to grow at an above-average rate, driven by rising demand in fast-growth markets in Asia and other emerging regions.<sup>20</sup>



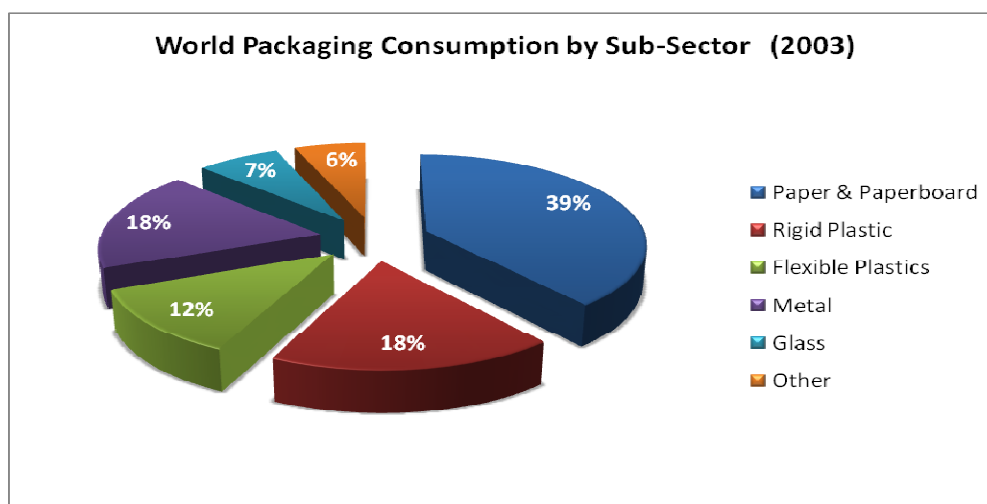
Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

At USD 165 billion, paper and board packaging accounted for the largest share of global packaging sales in 2003 with 39% of the total. Plastic packaging accounted for 30% of sales, with rigid plastics alone taking an 18% share of the market, with metal packaging accounting for 18% and glass packaging a further 7%. Other packaging products accounted for the

<sup>20</sup> Source: 2006, Market Statistics and Future Trends in Global Packaging, World Packaging Organization (WPO)

remaining 6% of the market, principally attributable to wooden pallets and containers but also textiles and other materials.

The fastest growing sector of the market during the period of 1999-2003 was rigid plastic packaging, with consumption growing at an annual rate of 6.2% to USD 77.2 billion. A trend towards PET and other plastics and away from competing, more traditional materials, is ongoing. The market has also been driven by the growing usage of packaging across a range of food area, particularly in the case of meat, fish and poultry products, as well as rising consumption of ready-meals and other convenience-oriented products.<sup>21</sup>



Note: constant 2004 prices from 2005 onwards

Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008).

Paper and board packaging will remain the single largest element of the market into 2009, with a 38% share at USD 216 billion – growing at an annual rate of 4.2% in real terms, driven on the one hand by rising demand in fast-growth national markets as well as steady growth in secondary/ bulk packaging in developed markets in line with overall industrial activity. Rigid plastic packaging will continue to be the fastest growing sector of the market, with consumption forecast to progress at an annual average rate of 6.5% in the period to 2009 to reach USD 116 billion. Flexible plastic packaging sales are set to grow at an annual rate of over 4%, driven by rising demand in major Asian markets such as India and China, as well as to an extent by the rising incidence of pack substitution in developed markets from cans, etc. to stand-up pouches<sup>22</sup>.

Across other sectors, metal packaging sales are set to grow steadily, but will lose further share to plastics in beverage markets. Food cans is also expected to lose share, and container glass will lose share across food, beverage, healthcare and other key end-use sectors.

<sup>21</sup> Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008)

<sup>22</sup> Source: World Packaging Organization (WPO) Global Market Statistics / Pira International Ltd (2008)

## 2.3 GLOBAL EXPORTS

### 2.3.1 GLOBAL EXPORTS OF PLASTIC PACKAGING

The calculation of export values shown in the table below is based on HS Code (3923 – plastic packaging goods). [Table \(A.1\) in Appendix A – \(Global Exports of Plastic Packaging\)](#) shows that global export values (2003-2007) of plastic packaging articles increased with an annual growth rate of 8%. Export values during 2007 reveal that the *top five exporters* of plastic packaging articles were Germany, Czech Republic, Belgium, Canada and France. For a more detailed analysis, see [Table \(A.1\) in Appendix A – \(Global Exports of Plastic Packaging\)](#).

### 2.3.2 GLOBAL EXPORTS OF PAPER AND PAPERBOARD PACKAGING

The calculation of export values is based on HS Code (4819 – packing containers of paper and paperboard). [Table \(A.2\) in Appendix A – \(Global Exports of Paper and Paperboard Packaging\)](#) shows that global export values (2003-2007) of plastic packaging articles increased with an annual growth rate of 9.65%. Export values during 2007 reveal that the *top five exporters* of plastic packaging articles were Germany, USA, China, Italy and Netherlands. For a more detailed analysis, see [Table \(A.2\) in Appendix A – \(Global Exports of Paper and Paperboard Packaging\)](#).

### 2.3.3 GLOBAL EXPORTS OF METAL PACKAGING

The calculation of export values is based on the sum of HS Codes (7310 – Iron and steel tank, cask, drum can, boxes, 7311 – containers for compressed or liquefied gas, of iron or steel, 7612 - Aluminum containers, and 7613 – Aluminum containers for compressed or liquefied gas). [Table \(A.3\) in Appendix A – \(Global Exports of Metal Packaging\)](#) shows that global export values (2003-2007) of metal packaging articles increased with an annual growth rate of 15.5%. Export values during 2007 reveal that the *top five exporters* of metal packaging articles were Germany, USA, France, Italy and China. For a more detailed analysis, see [Table \(A.3\) in Appendix A – \(Global Exports of Metal Packaging\)](#).

It is noteworthy to mention that Jordan ranks twentieth among the world top exporters of metal packaging exporters, with total exported value of USD 83,696,000 and an export market of 0.74% of the world metal packaging exports.

### 2.3.4 GLOBAL EXPORTS OF WOOD PACKAGING

The calculation of export values is based on HS Code (4415 – packaging materials of wood). [Table \(A.4\) in Appendix A – \(Global Exports of Wood Packaging\)](#) shows that global export values (2003-2007) of wood packaging articles increased with an annual growth rate of 16.1%. Export values during 2007 reveal that the *top five exporters* of metal packaging articles were Germany, Czech Republic, Belgium, Canada and France. For a more detailed analysis, see [Table \(A.4\) in Appendix A – \(Global Exports of Wood Packaging\)](#).



## 2.4 GLOBAL IMPORTS

### 2.4.1 GLOBAL IMPORTS OF PLASTIC PACKAGING

The calculation of import values is based on HS Code (3923 – plastic packaging goods). [Table \(B.1\) in Appendix B – \(Global Imports of Plastic Packaging\)](#) shows that global import values (2003-2007) of plastic packaging articles increased with an annual growth rate of 12.8%, reaching USD billion 33,872,864 in 2006.

Import values during 2007 reveal that the *top five importers* of plastic packaging articles were the United States, Germany, France, Mexico, and the United Kingdom. The import value of the largest importer, the United States, was more than two times as high as that of the second largest importer, Germany in 2007. The differences in total value between the other top five importers for the five-year period are small in comparison. For a more detailed analysis, see [Table \(B.1\) in Appendix B – \(Global Imports of Plastic Packaging\)](#).<sup>23</sup>

### 2.4.2 GLOBAL IMPORTS OF PAPER AND PAPERBOARD PACKAGING

The calculation of import values is based on HS Code (4819 – packing containers of paper and paperboard). [Table \(B.2\) in Appendix B – \(Global Imports of Paper and Paperboard Packaging\)](#) shows that global import values (2003-2007) of paper and paperboard packaging articles increased with an annual growth rate of 9.14%, reaching USD billion 14,413,581 in 2006.

Import values during 2007 reveal that the *top five importers* of paper and paperboard packaging articles were the United States, France, Mexico, Germany and the United Kingdom. The differences in total value between the other top five importers for the five-year period are relatively small in comparison. For a more detailed analysis, see [Table \(B.2\) in Appendix B – \(Global Imports of Paper and Paperboard Packaging\)](#).

### 2.4.3 GLOBAL IMPORTS OF METAL PACKAGING

The calculation of import values is based on the sum of HS Codes (7310 – Iron and steel tank, cask, drum can, boxes, 7311 – containers for compressed or liquefied gas, of iron or steel, 7612 - Aluminum containers, and 7613 – Aluminum containers for compressed or liquefied gas). [Table \(B.3\) in Appendix B – \(Global Imports of Metal Packaging\)](#) shows that shows that global import values (2003-2007) of metal packaging articles increased with an annual growth rate of 13.76%, reaching USD billion 10,177,035 in 2006.

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<sup>23</sup> All import and export figures are based on calculated data obtained from the International Trade Center (ITC) Trade Map (UNCTAD/WTO).

Import values during 2007 reveal that the *top five importers* of metal packaging articles were the United States, France, Germany, Belgium and the Netherlands. The differences in total value between the other top five importers for the five-year period are small in comparison. For a more detailed analysis, see [Table \(B.3\) in Appendix B – \(Global Imports of Metal Packaging\)](#).

#### 2.4.4 GLOBAL IMPORTS OF WOOD PACKAGING

The calculation of import values is based on HS Codes (4415 – packaging materials of wood). [Table \(B.4\) in Appendix B – \(Global Imports of Wood Packaging\)](#) shows that global import values (2003-2007) of wood packaging articles increased with an annual growth rate of 6.6%, reaching USD billion 2,108,694 in 2006.

Import values during 2007 reveal that the *top five importers* of wood packaging articles were Germany, France, Belgium, USA and Italy. The differences in total value between the top five importers for the five-year period are varied in comparison, as evident by the import value of the largest importer, Germany, which was almost double as high as that of the second largest importer, France, and more than two times as high as that of the third largest importer, Belgium, in 2007. For a more detailed analysis, see [Table \(B.3\) in Appendix B – \(Global Imports of Wood Packaging\)](#).

## 2.5 RECENT R&D TRENDS AND INVESTMENT OPPORTUNITIES IN THE PACKAGING INDUSTRY

Some of the key areas of current research and development areas, which may constitute lucrative investment opportunities in the packaging industry, include<sup>24</sup>:

### ***Pack minimization***

The trend of pack minimization (weight and size reduction) continues. This process has been influenced by the requirement for cost reduction and improved environmental performance. Nanotechnology is a new science which involves making materials ‘from the bottom up’, building them from atoms and molecules. The use of this technology will help the minimization process through enabling better performing materials to be developed.

### ***Shelf-life prolongation***

Consumer expectations of product quality and changes in the distribution chain means increasing shelf-life which requires new and improved barrier materials and techniques.

### ***Active and intelligent concepts***

In addition to tagging, all kinds of indicators and product monitors will come to market to provide more product information and the means of ensuring product quality, especially those with short shelf-lives as well as product and pack security and verification.

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<sup>24</sup> Source: Packaging in the 3<sup>rd</sup> Millennium: Competitiveness Study for the Packaging Sector in the UK.

### ***Improved functionality***

There will be continuing development of pack formats to meet changing consumer demands. Many developments will come from the transfer of technologies from other categories and other industry sectors. Pack functionality and added convenience will be a focus for development.

### ***New printing technologies***

There will be more integration and automation of systems and processes enabling greater customization and reducing supply chain costs. These are likely to become commonplace, especially in the short term, as a way of gaining the advantages of high quality conventional print combined with the variable imaging capability of digital print.

### ***Biodegradables***

Research will continue into developing packaging materials which are degradable or compostable. These may be polymer-based or starch-based or a combination of both. Many of the challenges facing the packaging industry – across all sections – would be significantly better met with investment in new research and development. Overall the industry has tended to be pre-occupied with the issues of today and has sacrificed long-term development for immediate survival. This is particularly the case for opportunities arising from current consumer trends. As far as the packaging industry is concerned these are positive trends which can lead to substantial new opportunities. In particular there are very attractive margins for supply chains which can provide high consumer benefits, or more specifically:

- Emotional appeal and image to meet consumer values and aspirations
- Enhanced convenience of delivery of products
- Enhanced product quality
- Value for money

Whilst all these can be partially met by current technology, the major winners will be those who invest in developments which can deliver radical, 'step change' innovation. This will require investing in technological development which might otherwise be seen as the domain of other, more attractive sectors.

# 3.0 JORDAN PACKAGING SECTOR ANALYSIS

## 3.1 OVERVIEW OF THE PACKAGING INDUSTRY LANDSCAPE IN JORDAN'S ECONOMY

The Jordanian national economy's GDP is JOD billion 9.997 (in current market prices, 2006)<sup>25</sup>, with total exports valued at JOD billion 3.658 and imports accounting for a total of JOD billion 8.1 (2006)<sup>26</sup>.

The packaging sector in Jordan represents around 0.73% of GDP (2006, latest available data based on sector's value added and GDP in current prices) and 3.81% of the overall value added of the manufacturing sector<sup>27</sup> in Jordan in 2006<sup>28</sup>.

### 3.1.1 GROSS OUTPUT OF THE JORDANIAN PACKAGING INDUSTRY

The production gross output of the packaging industry in Jordan is growing at a healthy rate. This is evident by the fact that the industry's gross output rose from JOD million 209 to JOD million 223.15 during (2005-2006) reflecting an average growth of 6.8% and representing 3.45% of the overall manufacturing sector's gross production output in 2006 which amounted to JOD billion 6.473 (2006)<sup>29</sup>. In addition, the industry has been growing at an average growth rate of 11.7% over the five year period during (2002-2006) in terms of gross output. The following table shows the evolution of production gross output of each sub-sector within the packaging industry over the (2002-2006) period.

<b>Table 1: Gross Output</b>					
<b>Gross Production Output of Packaging Industry in JOD thousand (2002 – 2006)</b>					
<b>ISIC</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
2023 (Wood)	791.4	871.4	1,214.50	1,203.00	1,358.50
2102 (Paper & Paperboard)	37,833.10	40,637.40	50,698.40	56,688.30	61,788.60
2520 (Plastic)	103,585.00	106,398.60	127,702.70	149,067.20	156,350.20
2812 (Metal)	2,190.50	3,165.30	1,846.40	2,050.00	3,656.40
<b>Gross Output</b>	<b>144,400.00</b>	<b>151,072.70</b>	<b>181,462.00</b>	<b>209,008.50</b>	<b>223,153.70</b>
<b>Growth Rate</b>	<b>N/A</b>	<b>4.6%</b>	<b>20.1%</b>	<b>15.2%</b>	<b>6.8%</b>

From the figures stated in table (1) above it can be noted that metal packaging has been the most rapidly growing among the rest of the packaging industry's subsectors with an average growth rate of 23.1% over the (2002-2006) period, followed by the wood packaging subsector which recorded an average growth rate of 15.4% to land in second place among packaging subsectors growth in gross output, slightly ahead of the paper and paperboard

<sup>25</sup> Source: Central Bank of Jordan (CBJ) – [www.cbj.gov.jo](http://www.cbj.gov.jo)

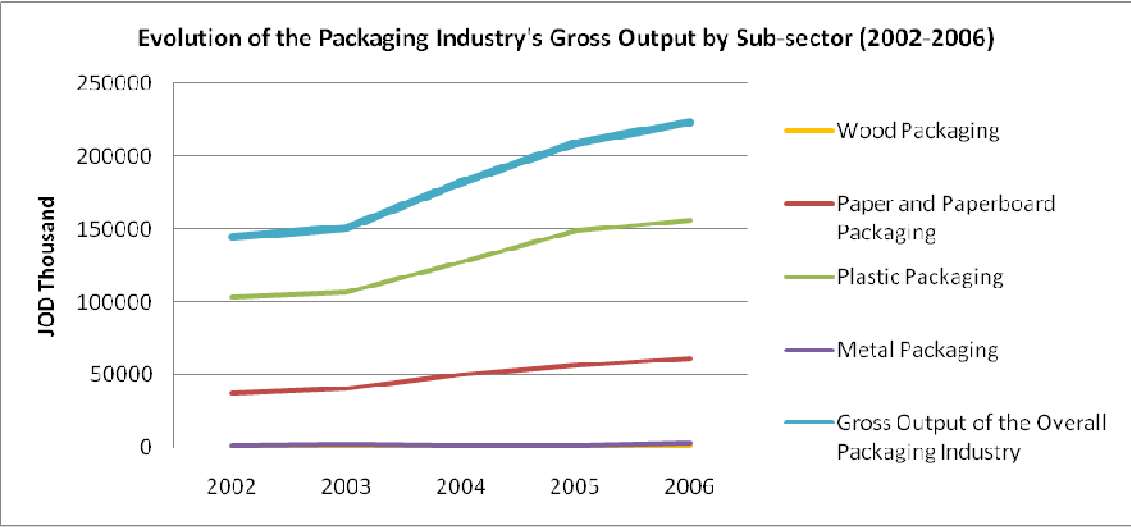
<sup>26</sup> Source: ITC Trade Map (UNCTAD/WTO) – [www.trademap.org](http://www.trademap.org)

<sup>27</sup> The manufacturing sector referred to hereby includes all industrial sub-sectors that involve manufacture of goods, and it excludes those of mining and quarrying industries, as well as production, collection and distribution of electricity.

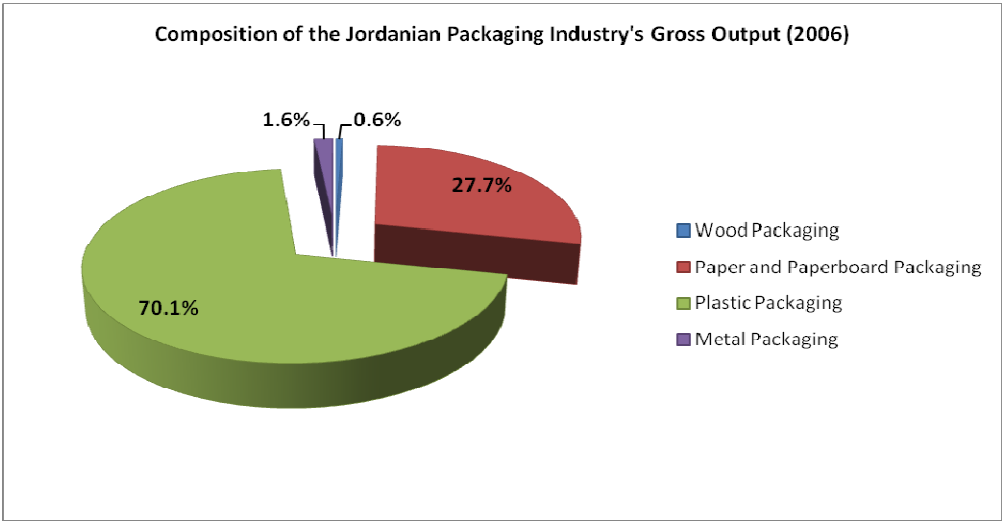
<sup>28</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

<sup>29</sup> Source: Department of Statistics (DOS) – [www.dos.gov.jo](http://www.dos.gov.jo)

packaging and the plastic packaging subsectors which recorded average growth rates of 13.2% and 11.1% over the same five year period respectively. On the whole, the packaging industry has been steadily growing in terms of production gross output at an average growth rate of 14.7% over the (2002-2006) period as illustrated in the graph below:



However, plastic packaging remains the largest sub-sector in terms of contribution to the overall industry's gross output as it has the lion's share with 70.1% of the industry's overall output in 2006. Paper and paperboard packaging comes in second place with a share of 27.7% of the packaging industry's gross output in 2006, followed by metal packaging and wood packaging with shares of 1.6% and 0.6% respectively as illustrated in the graph below.

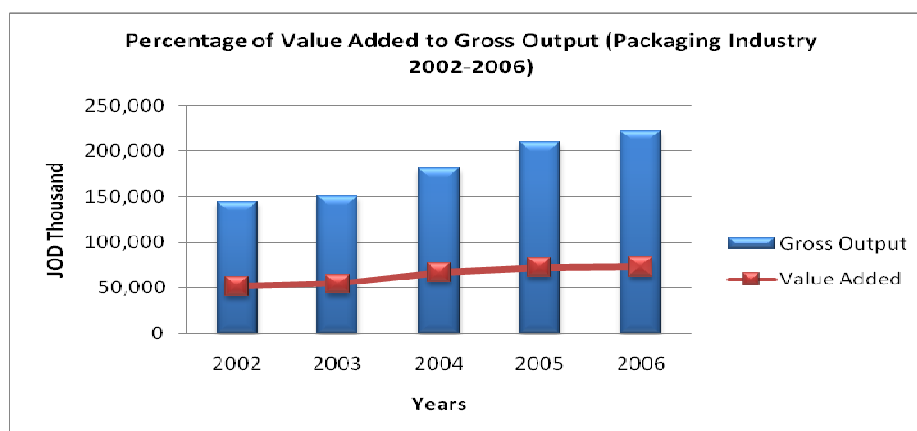


### 3.1.2 GROSS VALUE ADDED OF THE JORDANIAN PACKAGING INDUSTRY

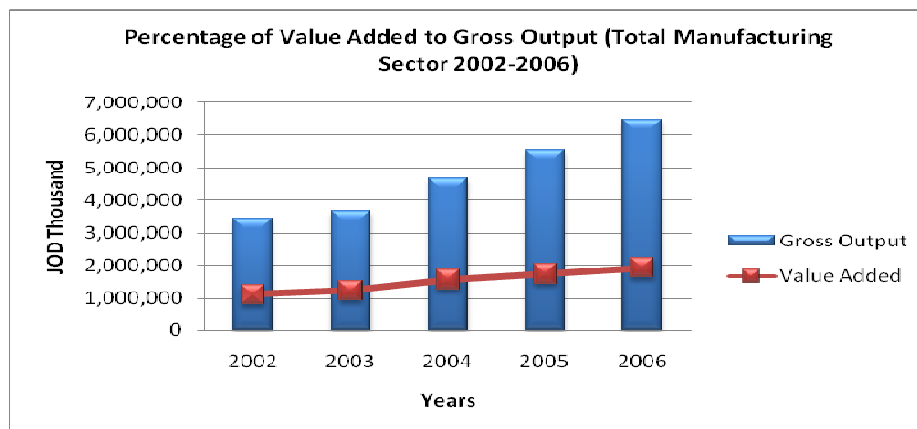
By looking at gross value added, which - in microeconomic terms - refers to the additional value of a commodity over the cost of commodities used to produce it from the previous stage of production, it can be seen that the packaging industry's gross value added has been growing at an average growth rate of 9.6% over the (2002-2006) period. The table below shows that the industry's gross value added rose from JOD million 72.638 to JOD million 73.409 during (2006-2006), reflecting an annual growth rate of 10.6%.

**Table 2: Value Added**  
Value Added of the Packaging Industry in JOD thousand (2002 – 2006)

Value added per employee (JOD, 2006)	2002	2003	2004	2005	2006
12,257	51,484.30	54,218.60	66,985.30	72,638.10	73,409.00



The graph above shows at the packaging industry's gross value added compared to its gross output over the five year period during (2002-2006). The value added to gross output ratio for the packaging industry has been slightly fluctuating around an average of 35.2% during (2002-2006) which is considered as a healthy ratio compared to the overall manufacturing sector in Jordan. The below graph shows the value added to gross output ratio for the overall manufacturing sector in Jordan over the same (2002-2006) period, which has been slightly fluctuating around an average of 32.1% over the same period. In fact, the packaging industry's value added represented 32.9% of its gross output in 2006, whereas the value added of the manufacturing sector declined to represent only 29.7% of the manufacturing sector's gross output in the same year.



This indicates that the packaging industry in Jordan has been economically efficient in utilizing its production inputs of land, capital, human resources, raw materials, utilities and other factor conditions<sup>30</sup> compared to the overall manufacturing sector in Jordan.

### 3.1.3 SECTOR STRUCTURE: NUMBER OF ESTABLISHMENTS AND EMPLOYEES

The packaging sector is comprised of nearly 884 establishments (2006) representing 4.4% of total number of establishments operating in the manufacturing sector. The packaging sector establishments are mainly attributed to the following sub-sectors:

- ISIC 2023 – Manufacture of wooden containers
- ISIC 2102 – Manufacture of corrugated paper and paperboard and of containers of paper and paperboard.
- ISIC 2520 – Manufacture of plastics products.<sup>31</sup>
- ISIC 2812 – Manufacture of tanks, reservoirs and containers of metal.

There are no glass packaging manufacturers in Jordan according to Jordanian official data sources.

**Table 3: Number of Establishments**  
Breakdown of the number of enterprises by sub-sector

ISIC	Number of Establishments (2006)	Distribution
2023 (Wood)	35	4.0%
2102 (Paper & Paperboard)	321	36.3%
2520 (Plastic)	466	52.7%
2812 (Metal)	62	7.0%
<b>Total</b>	<b>884</b>	<b>100%</b>

\*Source: Department of Statistics

The sector employs a total number of 5,989 employees (2006), a figure which accounts for 3.53% of the overall employment in the manufacturing sector in Jordan.<sup>32</sup>

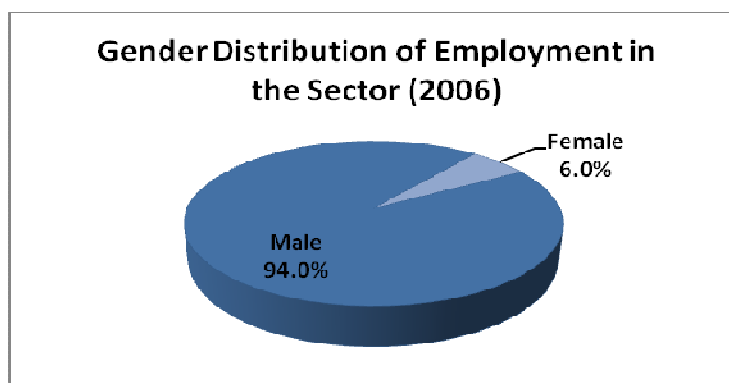
ISIC	2002			2003			2004			2005			2006		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
2023	168	0	168	178	0	178	210	0	210	180	0	180	140	0	140
2102	798	65	863	875	85	960	973	70	1043	1020	97	1117	1115	91	1206
2520	4098	431	4529	4008	369	4377	3908	337	4245	3942	276	4218	4096	266	4362
2812	319	0	319	506	0	506	274	0	274	306	0	306	280	1	281
<b>Total</b>	<b>5,383</b>	<b>496</b>	<b>5,879</b>	<b>5,567</b>	<b>454</b>	<b>6,021</b>	<b>5,365</b>	<b>407</b>	<b>5,772</b>	<b>5,448</b>	<b>373</b>	<b>5,821</b>	<b>5,631</b>	<b>358</b>	<b>5,989</b>

<sup>30</sup> According to Michael Porter, each industrial sector has its own factors of production, which are the inputs necessary for production, such as labor, natural resources (with focus on production raw materials), capital and infrastructure. Those are referred to as Factor Conditions in Porter's Competitiveness Diamond Model and they basically represent production inputs.

<sup>31</sup> Plastic production figures include all production under the ISIC code 2520, which is not limited to plastic packaging only.

<sup>32</sup> Source: Department of Statistics (DOS).

\*Source: Department of Statistics



**Table 4: Compensation of Employees**

Total compensation paid to employees (2006)

ISIC	Total Compensation to Employees in JOD thousand (2006)
2023	227.1
2102	2,030.7
2520	12,013.8
2812	294.1

## 3.2 EXTERNAL TRADE ANALYSIS OF JORDAN'S PACKAGING SECTOR

### 3.2.1 ANALYSIS OF JORDANIAN EXPORTS OF PACKAGING ARTICLES

Jordan's total packaging exports amounted to JOD 111,074,000 in 2007 constituting 3.04% of Jordan's total exports value compared to JOD 27,430,000 in 2003 with an increase of 305%. The main exported packaging article is metal packages with a share of 58.6% followed by the plastic packaging articles constituting 23.5% of total exported packaging articles. The growth rate of exported packaging articles is the highest for plastic packaging with a growth rate of 50.2% in 2007, followed by the growth rates of paper and paperboard packaging, and metal packaging which were 29.9% and 10.6% respectively.

### Composition of Exports

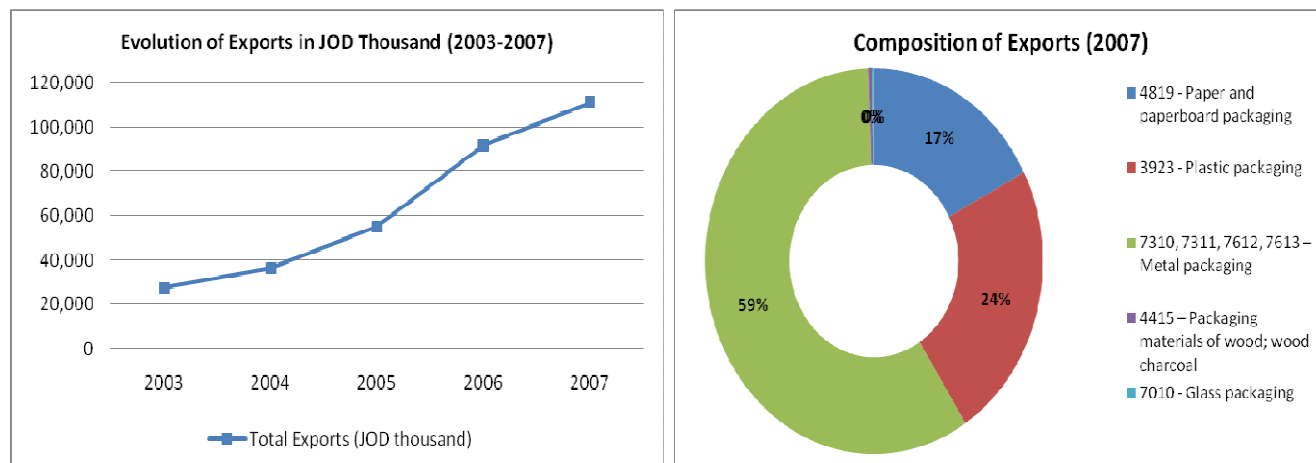
Exported Value in JOD thousand (2003 – 2007)

HS Code	2003	2004	2005	2006	2007
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	9,738	9,028	11,317	14,886	19,338
3923 - Plastics and articles thereof	6,041	9,059	12,157	17,357	26,071
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	11,152	17,427	29,837	58,862	65,114
4415 – Packaging materials of wood; wood charcoal	135	187	842	317	332



7010 - Glass bottles and other containers of glass	364	624	767	353	219
<b>Total Exports (JOD thousand)</b>	<b>27,430</b>	<b>36,325</b>	<b>54,920</b>	<b>91,775</b>	<b>111,074</b>
<b>Growth Rate</b>	<b>N/A</b>	<b>32.43%</b>	<b>51.19%</b>	<b>67.11%</b>	<b>21.03%</b>

\*Source: ITC Trade Map (UNCTAD/WTO)



**Table 5: Main Export Markets of Packaging Articles**  
Distribution of Market Shares of Top Ten Export Markets (2007)

HS Code	Top Five Export Markets (2007)	Exported Value in 2007 (JOD thousand)	Share of Exports (2007)
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	Saudi Arabia	7,656	39.6%
	Iraq	2,715	14%
	Yemen	2,033	10.5%
	UAE	1,961	10.1%
	Egypt	1,571	8.1%
	Sudan	1,021	5.3%
	UK	738	3.8%
	Free Zones	684	3.5%
	Israel	314	1.6%
	Lebanon	280	1.4%
3923 - Plastics and articles thereof	Iraq	19,728	75.7%
	Saudi Arabia	2,871	11%
	Free Zones	773	3%
	USA	338	1.3%
	Algeria	297	1.1%
	UAE	267	1.0%
	Qatar	262	1.0%
	Israel	238	0.9%
	Egypt	189	0.7%
	Oman	167	0.6%
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	Iraq	31,623	48.6%
	Free Zones	11,012	16.9%
	Lebanon	10,506	16.1%
	Syria	5,207	8.0%
	Egypt	2,175	3.3%
	Saudi Arabia	923	1.4%
	Sudan	726	1.1%
	Turkey	555	0.9%
	UAE	502	0.8%
	Iran	437	0.7%
4415 – Packaging materials of wood; wood charcoal	Free Zones	160	48.3%
	Iraq	115	34.6%
	Saudi Arabia	28	8.5%
	Sudan	20	6.0%

7010 - Glass bottles and other containers of glass	Lebanon	5	1.5%
	Palestine	1	0.4%
	Israel	1	0.4%
	Egypt	1	0.2%
	Free Zones	130	58.8%
	Algeria	50	22.8%
	Iraq	23	10.3%
	Lebanon	18	8%
	Palestine	1	0.01%

The below chart shows that the most important export destinations are as follows:



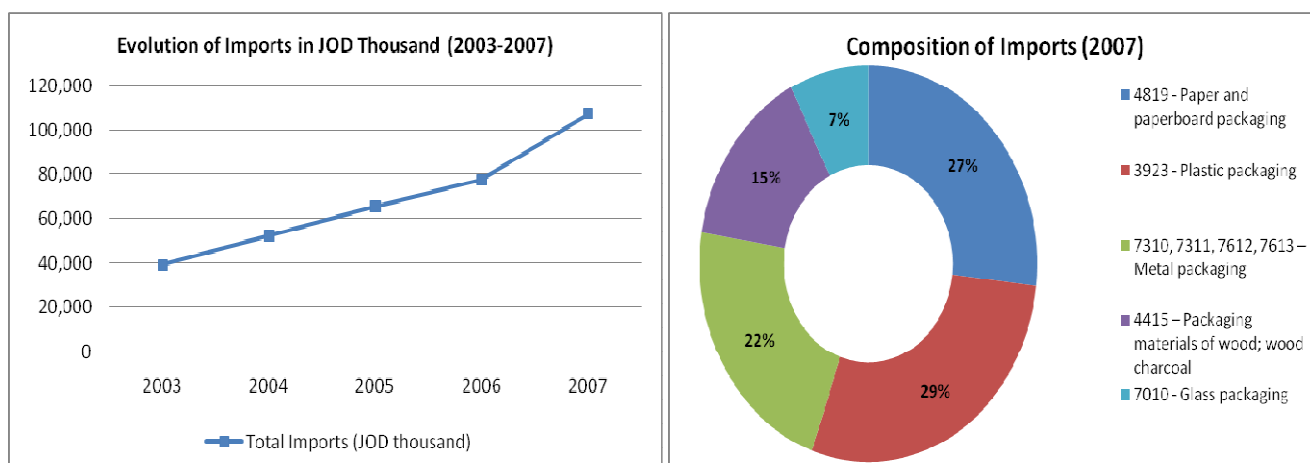
### 3.2.2 ANALYSIS OF JORDANIAN IMPORTS OF PACKAGING ARTICLES

In 2007, Jordan's total packaging imports amounted to JOD 107,409,000 constituting 1.33% of Jordan's total imports of all goods compared to JD 39,392,000 in 2003 with an increase of 172.7%. The main imported packaging article is plastic packages with a share of 28.7% followed by the paper and paperboard articles which constitute 26.8% of total imported packaging articles. The growth rate of imported packaging articles is the highest for the wood packaging with a growth rate of 1051% in 2007, followed by the growth rates of plastic packaging, and metal packaging which were 35.4% and 31.8% respectively.

**Table 6: Composition of Imports**  
Imported Value in JOD thousand (2003 – 2007)

HS Code	2003	2004	2005	2006	2007
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	15,689	24,383	24,140	27,294	28,779
3923 - Plastics and articles thereof	9,122	14,124	20,060	22,732	30,769
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	8,928	6,682	11,844	18,016	23,746
4415 – Packaging materials of wood; wood charcoal	75,7	648	1,273	1,387	15,970
7010 - Glass bottles and other containers of glass	5,653	6,859	8,301	8,247	8,145
<b>Total Imports (JOD thousand)</b>	<b>39,392</b>	<b>52,696</b>	<b>65,618</b>	<b>77,676</b>	<b>107,409</b>
<b>Growth Rate</b>	<b>N/A</b>	<b>33.77%</b>	<b>24.52%</b>	<b>18.38%</b>	<b>38.28%</b>

\*Source: Department of Statistics (DOS) and the ITC Trade Map (UNCTAD/WTO)



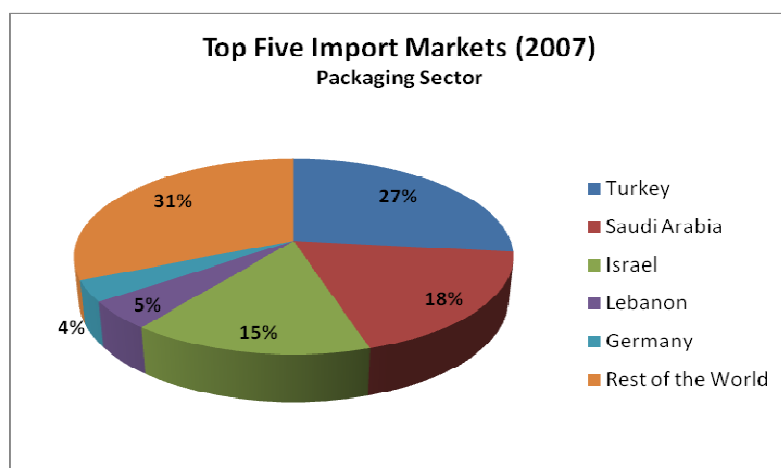
The table below lists the top five import sources of packaging articles per sub sector in 2007.

**Table 7: Main Import Markets of Packaging Articles**  
Distribution of Market Shares of Top Five Supplying Markets (2007)

HS Code	Top Five Import Markets (2007)	Imported Value in 2007 (JOD thousand)	Share of Imports (2007)
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	Israel	11,933	41.5%
	Saudi Arabia	5,807	20.2%
	Germany	2,760	9.6%
	Lebanon	1,874	6.5%
	Turkey	1,086	3.8%
	China	1,066	3.7%
	Bahrain	596	2.1%
	Syria	570	2.0%
	UK	532	1.8%
	Italy	487	1.7%
3923 - Plastics and articles thereof	Saudi Arabia	9,572	31.1%
	Israel	2,877	9.4%
	Turkey	2,518	8.2%
	Lebanon	2,133	6.9%
	France	1,708	5.6%
	China	1,632	5.3%
	UK	1,049	3.4%
	Bahrain	1,026	3.3%
	Italy	992	3.2%
	USA	835	2.7%
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	Turkey	11,346	47.8%
	Saudi Arabia	3,571	15.0%
	Israel	1,578	6.6%
	China	1,134	4.8%
	Germany	1,073	4.5%
	Lebanon	897.7	3.8%
	Denmark	825.5	3.5%
	Iraq	765.3	2.7%
	Italy	640.7	2.7%
	Austria	274.0	1.2%
4415 – Packaging materials of wood; wood charcoal	Turkey	13,813	86.5%
	Brazil	1,860	11.6%
	India	173	1.1%
	Italy	25	0.2%
	Israel	23	0.1%
	Syria	22	0.14%
	Germany	18	0.11%
	Sweden	10	0.06%

7010 - Glass bottles and other containers of glass	Egypt	9	0.06%
	Australia	6	0.04%
	France	1,295	15.9%
	Lebanon	995	12.2%
	Kuwait	976	12%
	China	945	11.6%
	Saudi Arabia	827	10.2%
	Egypt	689	8.5%
	Iran	643	7.9%
	Italy	513	6.3%
	Turkey	374	4.6%
	Germany	290	3.6%

\*Source: ITC Trade Map (UNCTAD/WTO)



### 3.2.3 TRADE BALANCE ANALYSIS

The balance of trade (or *net exports*, sometimes symbolized as *NX*) is the difference between the monetary value of exports and imports in an economy, or a certain sector, over a certain period of time. A positive balance of trade is known as a trade surplus and consists of exports being greater than imports; a negative balance of trade is known as a trade deficit or, informally, a trade gap.

**Table 8: Trade Balance of Packaging Articles**

Balance in terms of Value in JOD thousand (2003 – 2007)

HS Code	2003	2004	2005	2006	2007
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	-5,951	-15,355	-12,823	-12,408	-9,441
3923 - Plastics and articles thereof	-3,081	-5,065	-7,903	-5,375	-4,698
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	2,224	10,745	17,993	40,846	41,368
4415 – Packaging materials of wood; wood charcoal	60	-461	-431	-1070	-15638
7010 - Glass bottles and other containers of glass	-5,289	-6,235	-7,534	-7,894	-7,926
<b>Total Trade Balance (JOD thousand)</b>	<b>-12,037</b>	<b>-16,371</b>	<b>-10,698</b>	<b>14,099</b>	<b>3,665</b>

The table above illustrates the Jordanian packaging sector's balance of trade during the period of 2003 – 2007. The Jordanian packaging industry's external trade performance projected a negative balance of trade during the period 2003 – 2005, but it turned positive starting from 2006 achieving a trade surplus of JOD 14,099,000. However, this positive leap soon retracted in 2007 but the trade balance remained positive with a JOD 3,665,000 trade surplus. This positive surplus means that the sector's external trade activity is showing signs of growth and improvement, since it reflects that exports are greater than imports.

However, in order to verify the assumption that the recent positivity of the sector's trade balance is real and not solely due to other factors that may not be necessarily relevant to actual improvement in export's performance, such as increased inflation for example, it was important to examine the growth in volume of exports and imports, rather than value, over the 2003 – 2007 period.

The table below shows the sector's balance of trade in terms of the volume of exports and imports per sub sector.

**Table 9: Trade Balance of Packaging Articles**  
Balance in terms of Quantity in Tons (2003 – 2007)

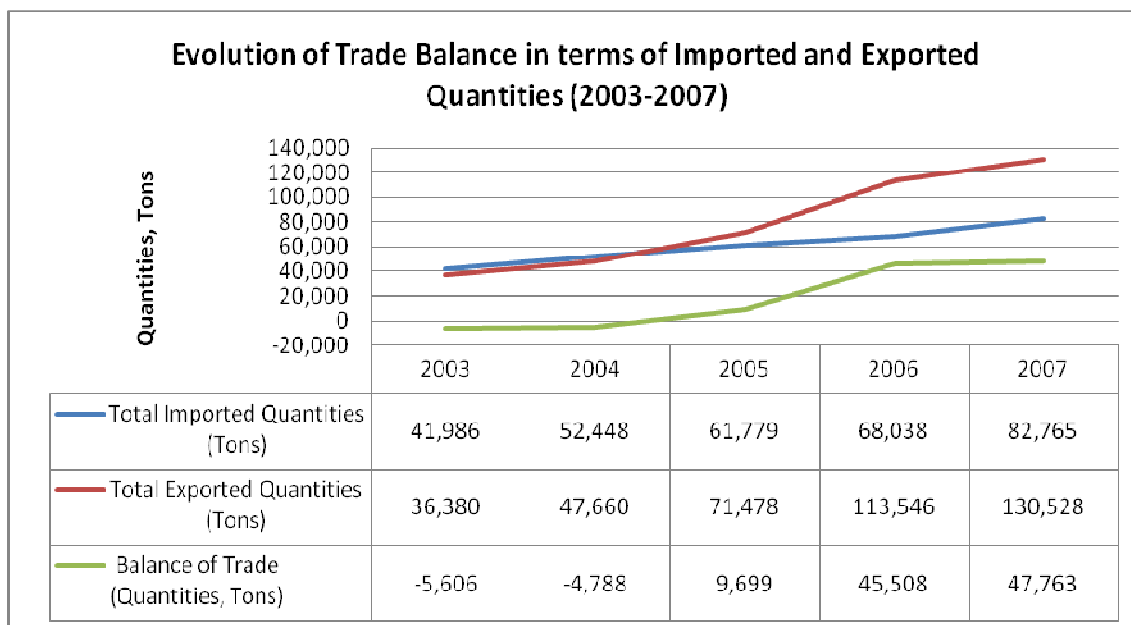
HS Code	2003	2004	2005	2006	2007
4819 - Paper and paperboard; articles of paper pulp, of paper or of paper board	529	-5,633	-2,816	-2,168	821
3923 - Plastics and articles thereof	153	1,067	382	-1,188	-538
7310, 7311, 7612, 7613 – Packaging materials of iron or steel; and Aluminum containers and articles thereof	7,015	18,824	31,609	68,452	77,401
4415 – Packaging materials of wood; wood charcoal	265	-1116	-1377	-2358	-12302
7010 - Glass bottles and other containers of glass	-13,568	-17,930	-18,099	-17,230	-17,619
<b>Total Trade Balance (Ton)</b>	<b>-5,606</b>	<b>-4,788</b>	<b>9,699</b>	<b>45,508</b>	<b>47,763</b>
<b>Growth Rate (%)</b>	<b>N/A</b>	<b>15%</b>	<b>303%</b>	<b>369%</b>	<b>5%</b>

The table above shows that paper and paperboard packaging trade balance was positive in 2003 but retracted to negative during the 2004 – 2006 period. However, exported quantities increased and the trade balance became positive in 2007. This is not the case for plastic packaging, where the trade balance failed to maintain a healthy exports-to-imports balance, lead to a trade deficit in 2006, which slightly improved in 2007 but remained negative, nevertheless.

The wood packaging exports are fluctuating but due to the fact that imported quantities are increasing every year, this sub-sector's trade balance remains negative.

However, the overall trade balance of the packaging sector in Jordan is improving and heading towards an increased trade surplus (see the chart below which illustrates the positive growth of trade balance in terms of volume). This can be explained by the relative

strength of exports of the metal packaging sector in Jordan, which were five times higher than imported quantities in 2007. It is noteworthy to mention hereby that Jordan ranks twentieth among the world's leading exporters of metal packaging articles with a total exported value of JOD 65,114,000 in 2007, with the Iraqi market having the lion share (almost 50%) of total Jordanian exports of metal packaging articles in 2007.



### 3.3 ASSESSMENT OF THE JORDANIAN PACKAGING SECTOR'S STATE OF COMPETITIVENESS: PORTER'S DIAMOND MODEL

#### 3.3.1 THEORITICAL BACKGROUND

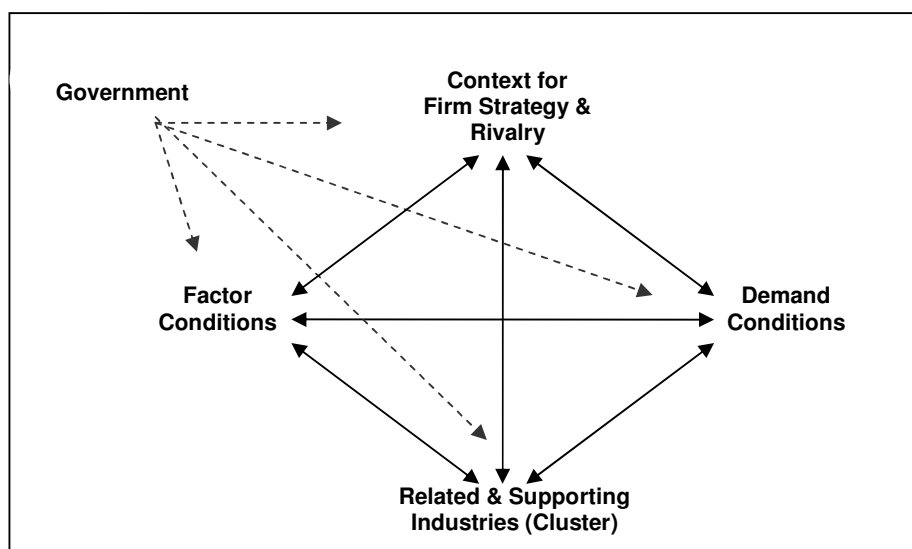
The competitiveness of countries in general and industrial sectors in particular increasingly depends on their innovative ability. Clusters can be innovation drivers and are therefore key to economic development. The term "cluster"<sup>33</sup> was coined by Porter<sup>34</sup>, who describes this as a geographical concentration of sector-specific companies, suppliers, service providers and associated institutions (e.g. universities, research institutes, funding bodies) all of which are interlinked and interconnected.

Porter's theory of national competitive advantage can help clear the structure and dynamics of clusters. Porter suggests that four broad attributes of a nation shape the environment in which local firms compete (Porter's Diamond Model):

<sup>33</sup> This articles does not discuss different concepts of clusters. We refer in this case to clusters as Michael Porter defines them.

<sup>34</sup> Michael E. Porter is a leading authority on competitive strategy, the competitiveness and economic development of nations, states, and regions, and the application of competitive principles to social problems such as health care, the environment, and corporate responsibility. Professor Porter is generally recognized as the father of the modern strategy field, as has been identified in a variety of rankings and surveys as the world's most influential thinker on management and competitiveness.

- **Factor conditions**; basic factors such as natural resources and advanced factors such as production facilities and machinery, transportation infrastructure, sophisticated and skilled labor, and technological capabilities;
- **Firm strategy**; different management ideologies, structure and rivalry (competition);
- **Related and supporting industries (Cluster)**;
- **Demand conditions**; sophisticated customers in the home market create pressure for innovation and quality.
- **Government**; the Government's role in enhancing competitiveness.



These five determinants promote or impede the creation of competitive advantage and constitute the so-called diamond which is a mutually reinforcing system, where the effect of one determinant is contingent on the state of others, which means that the four determinants affect each other and the weakness of every determinant will impede industrial upgrading and the potential of innovation.

Porter's Diamond Model was used in this study to determine the main competitiveness factors of the packaging sector in Jordan and assess the present status of those factors. This section sheds light on the impacts of those factors on the competitiveness of the Jordanian packaging sector from a strategic perspective in order to set a strategy in place that would enhance the sector's overall competitiveness.

### 3.3.1.1 FACTOR CONDITIONS

Each country possesses specific conditions that determine its comparative advantages. The inter-relations among these factor conditions contribute to the competitiveness of the sector in a positive or a negative manner. Each industrial sector has its own factors of production, which are the inputs necessary for production, such as labor, natural resources (with focus on production raw materials), capital and infrastructure.

## A. Raw Materials<sup>35</sup>

The Jordanian packaging industry is almost entirely reliant on imported sources due to the scarcity of the raw materials used in different types of packaging in Jordan. The main imported materials are the plastics with an amount of JD 112,694,671 in 2006 which constitutes about 64% of the total imported packaging raw materials. The growth in imports of plastic packaging raw materials is about 4% in 2006.

**Table 10: Imports of Plastic Packaging Raw Materials**

For the period (2002 – 2006)

Year	Import (JOD)	Growth Rate
2002	44,029,189	NA
2003	54,404,411	24%
2004	90,986,069	67%
2005	108,736,180	20%
2006	112,694,671	4%
<b>Average</b>	<b>82,170,104</b>	<b>28%</b>

The next share is taken by the imports of paper and paperboard with an amount of JD 60,592,147 in 2006 and a share of 34% with a growth rate of 13% followed by metals with a share of 2% and a growth rate of 98%. There are no imports of glass raw materials since Jordan does not have a glass factory and the wood raw material is not indicated since the wood used to make pallets and cases are from wood imported for other uses.

**Table 11: Imports of Paper Packaging Raw Materials**

For the period (2002 – 2006)

Year	Import (JOD)	Growth Rate
2002	33,786,260	NA
2003	36,973,524	9%
2004	47,517,194	29%
2005	53,582,213	13%
2006	60,592,147	13%
<b>Average</b>	<b>46,490,268</b>	<b>16%</b>

<sup>35</sup> Source: Packaging Sector Profile and Market Assessment by Alan James / DAI, Matthew Lorence / DAI, Samer Abu Manneh / To Excel under a project commissioned by the Economic Development Program (SABEQ), February 2008.



**Table 12: Imports of Metal Packaging Raw Materials**

For the period (2002 – 2006)

Year	Import (JOD)	Growth Rate
2002	5,275,955	NA
2003	6,624,026	26%
2004	10,860,788	64%
2005	1,739,101	-84%
2006	3,440,331	98%
<b>Average</b>	<b>5,588,040</b>	<b>26%</b>

**Table 14: Total Imports of All Packaging Raw Materials**

For the period (2002 – 2006)

Year	Import (JOD)	Growth Rate
2002	83,091,404	NA
2003	98,001,961	18%
2004	149,364,051	52%
2005	164,057,494	10%
2006	176,727,149	8%
<b>Average</b>	<b>134,248,412</b>	<b>22%</b>

- *Plastic Packaging Raw Materials*

Jordan does not have petroleum, which is the basis for the plastics industry. As a result, all of its polymers are imported from oil-producing countries in the Middle East, especially the Kingdom of Saudi Arabia (KSA) and other Asian Arab Countries. Jordan also imports plastic materials from Western Europe. See Appendix (C) for further analysis.

- *Metal Packaging Raw Materials*

Metal packaging materials include tinplate; steel and aluminum are also unavailable in Jordan. The materials used for the metal packaging industry are imported from Western Europe and Asian Non-Arab Countries. See Appendix (C) for further analysis.

- *Glass Packaging Raw Materials*

There are no glass making factories in Jordan and all of its glass packages are imported from the Middle East and Asia as well as Western Europe. Most food and beverage companies referenced their suppliers as companies located in Syria and the EU including France and Italy among others.<sup>36</sup>

<sup>36</sup> Source: Packaging Sector Profile and Market Assessment by Alan James / DAI, Matthew Lorence / DAI, Samer Abu Manneh / To Excel under a project commissioned by the Economic Development Program (SABEQ), February 2008.

- *Flexible Packaging Raw Materials*

Jordan has few flexible packaging converters and these firms mainly import the raw materials (films) for laminates including aluminum foil and metalized films.

- *Carton and Paperboard Packaging Raw Materials*

Raw materials for the paperboard industry are also imported as Jordan lacks paperboard mills. Paperboard is imported from the Middle East and Asia as well as Western Europe (primarily Scandinavia). As for the corrugated paper industry, some Jordanian converters produce liners and recycle paper but do not produce paper directly from wood and wood pulp. The industry primarily depends on imported craft paperboard. See Appendix (C) for further analysis.

- *Wood Packaging Raw Materials*

The wood packaging industry relies mainly on waste wood to make wooden boxes and pallets. Jordan does not have a significant wood packaging industry and the major share of output goes to producing pallets.

## B. Human Resources

The sector employs a total number of 5,989 employees (2006), a figure which accounts for 3.53% of the overall employment in the manufacturing sector in Jordan.<sup>37</sup>

In general, the local workforce lacks specialized packaging knowledge, experience and skills across functions. Much of the knowledge comes from hands-on practice. Advanced knowledge and skills are limited to a select few.

The packaging industry currently suffers from a shortage of both skilled and non-skilled workers because many experienced workers leave Jordan for neighboring countries in search for better pay. At the un-skilled or semi-skilled level, Jordanian packaging industry workers who learn on the job soon discover that they can obtain higher wages working in the Gulf and other markets. Machine operators and engineers who manage highly advanced equipment also go this route. In fact, many packaging companies are working at reduced production rates because they have insufficient workers. Of course, full capacity is relative since lower levels of consumer demand mean lower sales and thus lower production needs. However, the industry still needs to be able to assure full capacity in the event that demand for local products could increase.

Managing the labor challenge will no doubt be an ongoing debate in Jordan especially with high unemployment. Feedback from factory owners and managers consistently pointed to

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<sup>37</sup> Source: Department of Statistics (DOS).

the difficulty of convincing ordinary Jordanian workers to accept local wages and performance standards.

### **C. Utilities and Infrastructure**

The utilities and infrastructure for the packaging industry is available and packaging firms are generally located within industrial zones for convenient access to transportation. The primary issue that most packaging converters face regarding utilities is the cost of electric power, which has increased sharply in the last couple of years compared to energy costs in neighboring countries and is expected to rise by 40%. A solution proposed by the utility – running machinery at off-peak times – simply is not practical for companies that generally run three shifts, many around the clock. It is expected that energy costs continue to rise, starting at the beginning of 2008.

### **D. Financial Resources**

The availability of financial resources is a critical component of competitiveness, especially in the packaging sector as it is regarded as a capital intensive industry, due to the cost of large, complex machines and industrial equipment. However, the packaging sector profile identified that capital and access to financial resources have not been major impediments to the competitiveness of the sector, as some packaging converters are well-funded and financial resources for the packaging sector are available for converters with less financial capabilities through commercial loans from local banks and donor agencies.

### **E. Production Machinery, Equipment and Technology:**

Some of the Jordanian packaging converters have the ability to provide high quality products due to the level of sophistication of their industry where they have purchased (and continue to do so) the latest equipment and technology (Asia, Europe and North America). Although converters have the capital assets to perform most functions in the packaging process, packaging solutions tend to be traditional and less innovative. This cap on innovation results from the relatively small sales volume limiting production runs which make customized packaging forms uneconomical. It is both easier and less expensive to purchase standard components (such as bottle caps) from foreign suppliers.

While there are numerous companies using modern equipment and processes there is little evidence of any Jordanian firms adopting cutting edge technology. Instead, many local firms are supplying established customer bases with products and services that meet the needs of their commercial customers without regard to the evolving preferences of end-users. Jordanian packaging converters are helping to emphasize a perception that conventional Jordanian products tend to be sold with conventional packaging – at best.

The Jordanian packaging industry is lagging behind in marketing appeal and technical innovation just by months, but by years. Computer technology undergoes a generational evolution every three to six months, and computer technology now drives manufacturing

process. Major packagers and converters in the EU and USA are being swept up into similar high technology development cycles. Being five years behind the times is no longer a viable option for economies aspiring to improve their international competitive position. The Jordanian packaging industry needs to increase its investment in research and development programs, and develop its capability in advanced technologies, including computer-aided design and manufacture.

### **3.3.1.2 DEMAND CONDITIONS**

Demand conditions influence the shaping of particular factor conditions. They have an impact on the pace and direction of innovation and product development. According to Porter, demand is determined by three major characteristics: their mixture (the mix of customers needs and wants), their scope and growth rate, and the mechanisms that transmit domestic preferences to foreign markets. Porter states that a country can achieve national advantages in an industry if home demand provides clearer and earlier signals of demand trends to domestic suppliers than to foreign competitors.

#### **Home Demand Conditions**

In reviewing the home demand conditions of the Jordanian packaging industry, it can be clearly noted that the local demand is generated from the productive sectors in Jordan, prominently the pharmaceutical, Dead Sea products and cosmetics, food, vegetables and fruits, chemicals, and other products, which are referred to in this study as the Business/Commercial Customers – or Manufacturers. Their demand for packing products revolves around their need to package their own products, to get market products, and sell them to the end-consumer. Since these products differ in nature and usability, the packaging required also differs in design, size and packaging material. Therefore, both local and international demand of packaging products can be described as a “sophisticated demand”.

The domestic market increasingly feels the influence of global economic powerhouses importing attractive, consumer packaged goods (CPG) from the EU and USA. Whether or not the imported products compete directly with corresponding Jordanian offers, consumer experiences are being shaped and expectations raised by the sophisticated imported products now on offer in Jordan. Therefore, the domestic demand conditions for Jordanian packaging products are quite the opposite to what in theory would contribute to shaping a competitive advantage for the packaging sector in Jordan, as the end local consumers’ packaging preferences are evolving and, consequently, the local manufacturers’, the experiences of the home demand are being shaped and expectations raised by the sophisticated imported products now on offer in Jordan.

#### **International Demand Conditions (Export Markets):**

Section 3.2.2 of this study (Analysis of the Jordanian Exports of Packaging Articles) sheds light on the performance of Jordan’s exports of packaging articles by sub-sector over the last five years (2003 – 2007) as well as the main export markets for Jordanian packaging products in 2007.

The below chart shows that the most important export destinations are as follows: Iraq with an export market share of 49%, followed by the Free Zones (which a large portion of its exports eventually gets exported to Iraq also) with a share of 11%, followed by Saudi Arabia with a share of 10%, Lebanon with a share of 9%, and Syria with a 4% of total Jordanian packaging exports. These four export destinations (taking into account the Free Zones as well) constitute 85% of Jordan's total exports of packaging articles.<sup>38</sup>



Jordan's packaging industry has significant growth potential – if it increases its ability to understand, anticipate and meet consumer wants and needs. Jordan's prominent role within the Middle East region and its established industrial base give it a strong foundation to build on.

There are major opportunities in the Middle East, North Africa and emerging economies of Southern Europe in the areas of quality and standards. There are also new potential export markets in Eastern Europe. With institutions like the Jordanian Institute of Standards and Metrology and widespread support of the International Organization for Standards (ISO), Jordan has. Furthermore, Jordan's information and communications technology (ICT) industry is highly developed and could play a stronger role in integrating technology into industrial design that supports the development of advanced packaging processes. A long-term goal of establishing an Arab Council for Advanced Packaging Standards and Technology could provide industry stakeholders with the motivation to overhaul and revitalize the industry.

### 3.3.1.3 INDUSTRY STRATEGY AND RIVALRY

Industry strategy, structure and rivalry, a factor that recognizes that the way in which sector firms establish their objectives and the type of management will be very important for their success, together with the presence of intense rivalry from competitors, which will create pressures to innovate in order to enhance competitiveness of the sector. Porter argues that

<sup>38</sup> Source: based on a calculation of 2007 trade data obtained from the ITC Trade Map (UNCTAD/WTO).

domestic rivalry and the search for competitive advantage within a nation can help provide sector firms with bases for achieving such advantage on a more global scale.

The Jordanian packaging sector is not being led by a clear strategic approach and most company's operating within the Jordanian packaging sector lack well-defined business and marketing strategies as evident by the notion that price tweaking is being adopted by converters and manufacturers alike as a key ploy to go about competition and gain quick wins.

On the other hand, as exposure to the influence of appealingly and fancily packaged Consumer Packaged Goods (CPG) imported from EU and USA grows, local consumers packaging preferences are evolving and their experiences are being shaped and expectations raised by the sophisticated imported products now on offer in Jordan. Although some converters have the capital assets and latest equipment and technology to perform most functions in the packaging process to offer high quality products, they refrain from providing products with such standards because of the relatively small volumes limiting production runs which make customized packaging forms uneconomical.

Consequently, packaging standards and requirements are being dictated by converters rather than manufacturers or specialized marketing, branding and packaging consultants and brand development strategies are not based on in-depth end customer understanding.

Economic success across an entire sector requires that all major players take a broader definition of who they provide value to. If converters are to succeed in the long term, they need their manufacturing clients to succeed with their own customers too. Consequently converters and manufacturers alike need to take joint ownership of quality shortcomings, and poor perceived brand image as well as sales and marketing management issues. At this time the converters seem to be more vulnerable than manufacturers and it would therefore be appropriate for converters to take the initiative in reaching out to acquire knowledge of best practices in packaging with a special focus on graphic design and package design innovation.

Moreover, designers tend to be outsourced vendors or back office in-house support staff. This positioning is symptomatic of an industry which places marketing at the low end of the hierarchy of business needs. The repositioning of design and marketing management into the business decision-making process will require a substantial investment, culturally as well as financially. Industries and companies that can benefit from more advanced marketing should play an active role in advancing the function and recognition of marketing as an essential element for business success. Consequently, the packaging industry itself should sponsor the creation of a stand-alone marketing association or institute in Jordan.

Market research has always played a prominent role among the world's leading producers and exporters of packaged goods. Rather than viewing packaging from an engineering or production perspective, these successful companies have an established track record of investing heavily in market research, consumer behavior and preference analysis, and focus groups.

A further limitation of the Jordanian packaging industry is caused by graphic design standards which are competent but limited in imagination and originality. A conservative approach by brand owners, coupled with a tendency to copy existing designs keeps the packaging industry's design process behind fast-evolving international standards.

Innovations in materials, colors, shapes and functions tend to be market-driven. Test marketing and experimentation are frequently used tools. Consumer interaction, responsiveness to public opinion (e.g. sustainable packaging), and high standards of quality control facilitate market perceptions that the brand can relate to the consumer. As a result, the consumer is more willing to relate to the brand, building greater customer loyalty and increasing brand equity.

### **Management Skills and Training Policies**

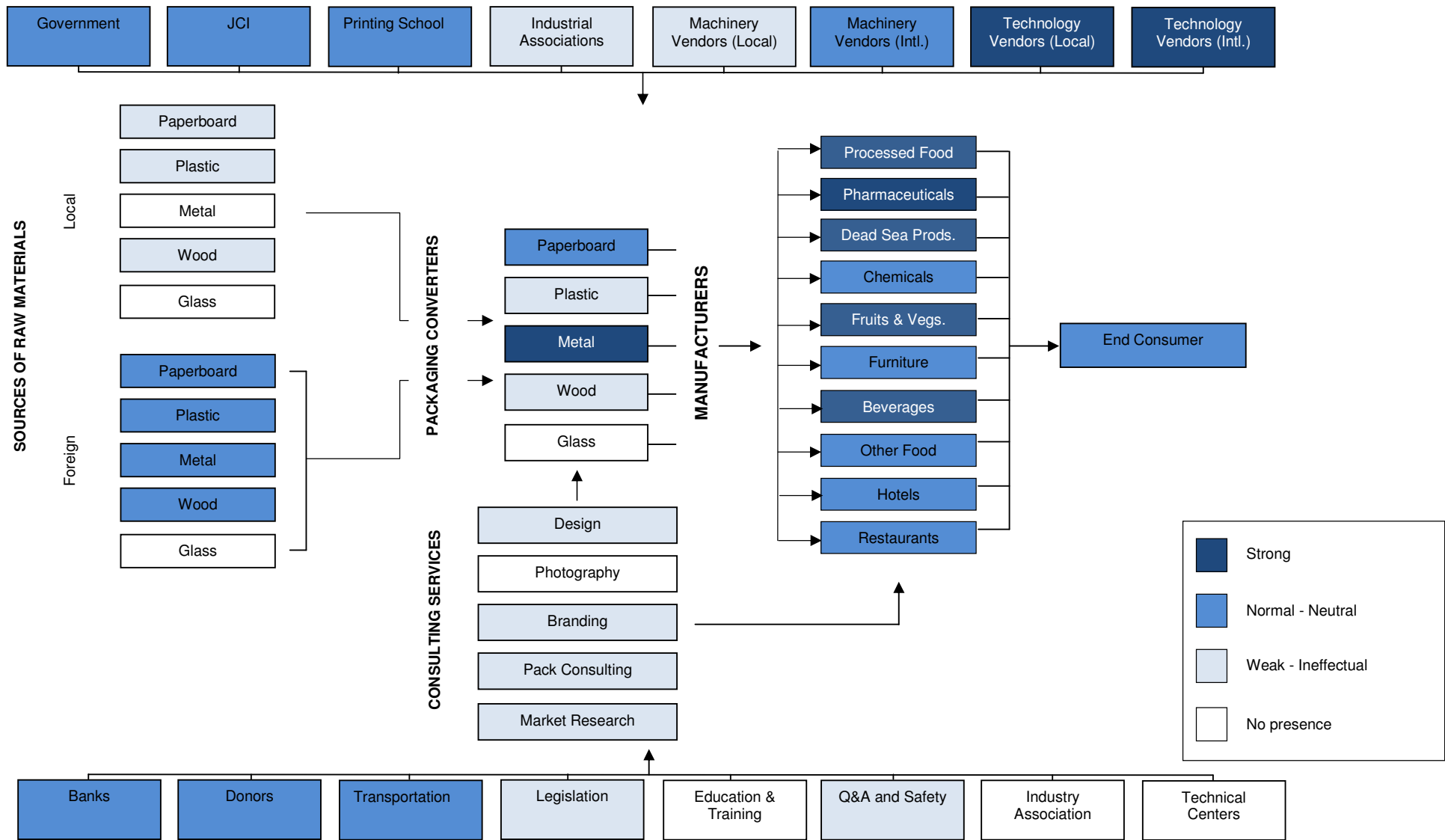
Management skills at Jordanian manufacturing companies and converters should also be advanced if the sector is to become competitive. Human resource training and retention need to be prioritized for the sector to benefit from institutional memory, knowledge transfer and experience. This goal is ambitious, especially in an industry where standards of factory cleanliness, hygiene and plant organization leave much to be desired.

#### **3.3.1.4 RELATED AND SUPPORTING SERVICES AND INDUSTRIES: CLUSTER ANALYSIS**

Another determinant of an industry's state of competitiveness is the presence of related and supporting industries that are competitive and well interlinked. Related and supporting industries can supply important inputs and services for the innovation and commercialization of companies and firms in the sector. They can also use and coordinate particular activities in the value chain together.

By mapping where the production and supporting industries and entities are on the cluster map, particular gaps, needs and strategic points of leverage can be identified for the sector as a whole. In addition, the cluster map shows the key gaps in capabilities that can be identified leading to tailored and specific intervention programs for enhancing and accelerating competitiveness.

The cluster map helps in gaining insights into the competitive capabilities, which can lead to the effectiveness of interventions to be more accurately assessed.





## **Design Services**

New graphic design firms are emerging to meet Jordan's increased needs for design and marketing services. Increased availability of consumer packaged goods and the growing cellular telecommunications business have opened up the Jordanian market to more competitive marketing standards. However, there is a lack of originality in graphic art and design and images, themes and messages are often borrowed from innovative local and international companies.

Most importantly, local designers are lacking in technical expertise to meet the special needs of the packaging industry. Structural design of packaging is always left for the converter to decide upon. At the same time, manufacturers do not realize that package design should start with the design of the product itself. Many manufacturers view design as a cost and not as an integral investment in product development.

While design and marketing impact may be weak, production quality is usually good and most companies are using up-to-date design software. Some companies even use state-of-the-art technology for producing artwork and plates such as Computer to Plate Technology (CTP). At this stage, technical capabilities are not in question as opposed to the willingness to invest in integrating marketing into product design, distribution and promotion.

## **Photography**

This service actually supports the design services. In Jordan, there is a lack in professional industrial photographers. In addition, specialists in styling products such as food stylists are unavailable.

## **Testing Facilities**

A specialized testing facility dedicated to packaging does not exist. Although some of testing can be done at the Royal Scientific Society (RSS), available tests are not comprehensive. Much of the necessary testing equipment is not available, leaving the industry to learn through trial and error while not having access to documented performance standards data.

## **Specialized Consultants**

Specialized consultants in packaging and design are few primarily as a result of the lack of demand from the converters and the manufacturers side although many of these do suffer from packaging related problems. Also the role and benefits that can be gained from such consultants are not yet appreciated.

## **Educational Centers**

Jordan does not have any educational programs related to the packaging industry except for the Printing School which provides educational programs at the secondary level. However, this school is equipped with outdated equipment. Currently there are no educational programs or materials for skills training in packaging.

## **Information**

Packaging technology continues to evolve. It is essential to seek out and adopt advanced packaging technologies. It is also imperative to understand and adhere to the regulations, standards and market requirements of potential export markets. Jordan lacks a specialized trade information channel to meet the knowledge needs of the local packaging industry. Information should be generated from a wide variety of sources, including industry reference books and directories, publications, official regulations, and proprietary commercial information services. At the same time, there is little reliable statistical information related to packaging.

### **3.3.1.5 THE GOVERNMENT**

The government may affect the four aspects mentioned earlier by affecting conditions for the supply of key production factors, demand conditions and competition patterns among companies in the sector. The government's interventions can also have influence at local and international levels. At the national level, the government can (and should) consider the policies that it should follow to establish national advantages, which enable a certain industry to develop a strong competitive position globally. According to Porter, governments can foster such advantages by ensuring high expectations of product performance, safety or environmental standards, or encourage vertical cooperation between suppliers and buyers on a domestic level and so on.

In the case of the Jordanian packaging industry, aggravating the problem of an adequate, sustained supply of trained labor are government restrictions on the hiring of foreign labor. Based on interviews with factory owners, the process for doing this is not so much prohibitive as unduly complicated and time-consuming, thereby limiting the practical ability of factory owners to gain easy access to foreign labor.

In addition, there is no facilitation and incentives that are specific for the packaging sector. The facilitation and incentives provided by Jordan Investment Board are general and include:

#### **1. Income and Social Services Tax Exemptions**

As part of the industrial sector, the packaging industry enjoys the exemptions and facilities provided by the Law of Investment, where the Council of Ministers and upon recommendation of both the Minister of Industry and Trade and the Committee, may offer a packaging project incentives or guarantees or other privileges for the number of

years the Council of Ministers sees fit according to the its nature, its geographic location, its contribution to increasing exports, creating jobs, exploiting national natural resources and accelerating economic development.

Exemptions of income and social services taxes vary depending of the development area as follows:

- 25% if the Project is in a class a development area.
- 50% if the Project is in a class B development area.
- 75% if the Project is in a class C development area.

The exemption period upon the committee's decision is (10) ten years starting from the date of commencement of work for services projects, or from the date of commencement of production for manufacturing projects.

The Committee grants an additional exemption if the project has been expanded, developed or modernized with the result of increasing its production capacity. The additional exemption period will be for one year per each increase in production capacity not less than 25%, and for a maximum of four years.

## **2. Custom and sales Tax Exemptions**

The fixed assets of the packaging project are exempted from fees and taxes provided that they are imported into the Kingdom within a period of three years from the date of the Committee's decision approving the lists of fixed assets of the project. The Committee may extend this period if it deems that the nature of the Project and the size of work required that.

Imported spare parts for the project are exempted from fees and taxes provided that the value of such spares does not exceed 15% of the value of the fixed assets for which they are required, and provided that they are imported into the Kingdom or used in the project within a period of ten years from the date of commencement of production or work, in accordance with a decision taken by the Committee approving the lists of spare parts and their quantities.

The Committee exempts from fees and taxes fixed assets that are required for the expansion, development or modernization of the project if such expansion, development or modernization will result in an increase in the production capacity of the project by not less than 25%.

The Committee exempts from fees and taxes any increase in the value of the fixed assets which are imported for the project if such increase is a result of a rise in the prices of such assets in the country of origin, or a rise in the freight charges applicable thereto or of changes in the exchange rate.

If the Project is transferred from one development area to another during the granted exemption period, then for the purposes of the exemption, and provided that the Jordan Investment Board is (duly) notified (of the transfer), the Project will be afforded, for the remaining period of the exemption, the same treatment as Projects located in the (new development) area to which the Project has been transferred.

Any existing project, whether approved as an “Economical Project” or as an “Approved Economical Project” pursuant to the provisions of the Encouragement of Investment Law No. (11) of 1987 and its amendments or the proceeding laws, and any other project that did not benefit from the provisions of these laws, will enjoy the exemptions and privileges provided by this Law if it meets the requirements of a regulation that will be issued for this purpose, and adjusts its status according to the provisions thereof.

Packaging industry established within the industrial estates of Jordan enjoys facilitation and incentives provided by the party responsible for this area such as:

1. Abdullah II Ibn Al- Hussein Industrial Estate (AIE) Amman – Sahab.
2. Al-Hassan Industrial Estate (HIE-QIZ) Irbid.
3. Al-Hussein Bin Abdullah II Industrial Estate (HUIE-QIZ) Al-Karak.
4. Maan Industrial Estate/ Maan.
5. Aqaba International Industrial Estate / Aqaba.

Industrial estates offer the following incentives to investors:

- 100% exemptions for two years on income and social services tax for industrial projects located only within industrial estates owned & managed by Jordan Industrial Estate Corporation.
- Total exemption from buildings & land tax.
- Exemption or reduction on most municipalities' fees.
- 100% exemption of taxes and fees on fixed assets for the project, fixed assets for expansion or modernization, and on spare parts.

In addition, there is a full package of ancillary services at each industrial estate.

### **3.3.1.6 CONCLUSION**

In general, the unique sources of competitive advantage within the sector are rare with the only significant advantages being the fair adequacy of the industry infrastructure as well as access to transportation and financial resources, yet even these advantages are not being taken full advantage of.

The continuous process of innovation needed for gaining and sustaining competitive advantage is not taking place. The interactions between the determinants are weak, and industry clustering and geographic concentration have not occurred. The key sources of competitive advantage and disadvantages can be seen in the following chart:

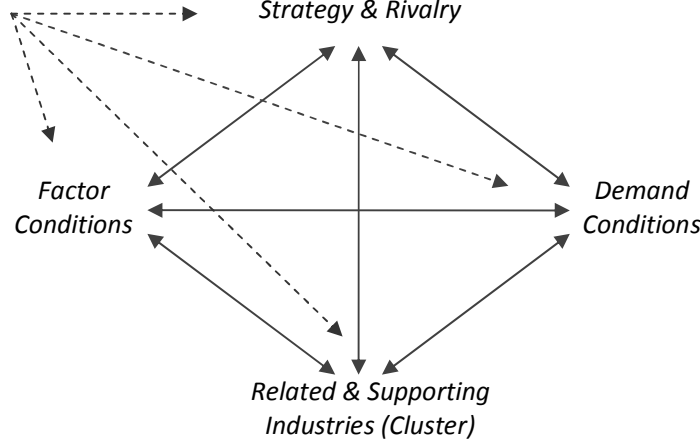
### ***The Packaging Sector in Jordan - Assessment of Main Competitiveness Factors, Summary (2008)*** **Porter Diamond Model**

- + General income and social services taxes and other facilities provided by the Investment Law apply to the packaging sector.
- + Packaging industry established within the free zones and QIZs enjoy facilitation and incentives.
- Government restrictions on hiring foreign labor.
- Custom and sales tax exemptions apply to the packaging sector under specific terms and conditions.
- Lack of special investment facilitation initiatives for the packaging sector.

- The sector is not being guided by a clear strategic direction (lack of a collective vision by the main players in the packaging sector).
- Negligible investment in R&D, market research and product development.
- Ineffectual labor retention policies and conditions.
- Brand development strategies are not based on in-depth customer understanding.
- Focus is centered on commercial customers' "conventional" packaging standards.
- Packaging is often viewed from engineering or production rather than a strategic marketing perspective.
- Negligence of the strategic significance of market research and intelligence.
- Reliance on price tactics rather than brand positioning or other marketing considerations to deflect competition.
- Only few converters and manufacturers have a strategic marketing plan.
- The industry faces fierce competition in the international markets.

*Government*

*Context for Firm  
Strategy & Rivalry*



- + Raw materials import sources are diverse.
- + Availability of an adequate infrastructural base and production for converters to build on.
- + Access to an adequate transportation.
- + Some converters have sufficient financial resources.
- + Ease of access to financial resources (mainly banks now interested in SME financing and donor funds).
- + Some converters have first class machinery.
- Raw materials are mostly imported
- Increased energy and power costs
- Lack of senior management talents
- Local workforce lacks specialized packaging expertise.
- Imported raw materials lack innovation

- Lack of a packaging industry association
- Very few designers are familiar with up-to-date trends of the packaging industry.
- Lack of professional industrial photographers
- Lack of a technical center or a marketing institute to connect with the research and information for the packaging sector.
- Lack of special testing facilities.
- Lack of educational institutions that teach packaging courses.
- Lack of vocational training centers.

- + Domestic demand is becoming increasingly more sophisticated and end-consumers' preferences are evolving by the more appealing imported products now available in the local market.
- + Export opportunities exist in some ME, EE and SA markets.
- The domestic market is small in size.
- The domestic purchasing power is declining.
- Inability of converters to meet increased customized packaging demands because of small demand volumes and economy of scale reasons.
- Track record of domestic customers' bad experiences with various types of packaging made in Jordan.
- Present international demand volume is small.
- Inconsistent export operations (trial and error experiments).

### ***Factor Conditions***

It is evident that there are several weaknesses in various factor conditions of packaging in Jordan. The level of technical expertise and of operational skills, the lack of supply of graduates and a healthy national image were all identified as relatively weakness elements. Additionally, the packaging industry in Jordan solely depends on importing the raw materials used in the production of all packaging manufacturing, whether plastic, paper and paperboard, wood or metal packaging, from import markets. This is due to the scarcity of these products in Jordan, which therefore increases the cost of production to Jordanian packaging converters, and consequently weakens their competitiveness against similar products manufactured in neighboring and international countries that depend on their local resources. Additionally, there is no training for skilled labor to have practical, specialized knowledge in the production of packaging. Moreover, the local labor force in the packaging sector, which is anyway relatively limited in number, also lacks the specific scientific background experience in the production of packaging. This reflects the shortcoming of another of the competitiveness factors - the related and supporting industries cluster, since no universities exist in Jordan that provide specialized educational courses related to the technology and engineering of packaging, as is the case in countries where the packaging industry is more advanced. There are also no vocational training centers specialized in this area. Therefore, the skills of the Jordanian labor force in general emanated from actual practice and not based on scientific methods. This weakness is also impacted by the context for firm strategy and rivalry as companies have no labor retention policies. In addition, most packaging converters pay low wages compared to the attractive offers which similar companies provide in other countries such as Saudi Arabia and other Gulf countries, as they continuously work in earnest towards attracting these skills.

### ***Demand Conditions***

On the domestic demand side, the end-consumers' tastes and preferences are constantly developing because of their increased exposure to imported products that have modern packaging as far as design and materials used in the packaging of these products. However, because the domestic market is small in size, converters are unable to meet increased demands for customized packaging because of small demand volumes and production economies of scale. This increases the gap and differences in packaging demand between the end-consumer and the Jordanian manufactures, on one hand, and the Jordanian manufacturers (business customers) and Jordanian packaging converters, on the other hand.

On the foreign demand side, the export performance of the Jordanian industry in most sectors is limited. There are many reasons. The most important is the lack of export readiness of most Jordanian manufactured products. These products do not meet the export market access requirements, especially those related to quality and other factors that influence the competitiveness of those products in the export markets, particularly, the level and quality of the packaging, which still does not meet the packaging criteria necessary to

compete in export markets regarding look, design, solidness and internal materials used in packaging.

### ***Context for Firm Strategy and Rivalry***

The sector is distinguished by its weak end-customer focus and the degree of importance given to R&D and product development is very low. In addition, most Jordanian companies working in the packaging field lack clear business and marketing strategies that are scientifically studied through market research, which would respond to the dynamism of the local market reflected by the business customers and their clients, the end-consumer, and changing domestic and foreign demands. Most of these companies revert to tweaking with the price factor as a clear and easy option against competition, due to the lack of marketing and strategic thinking at management level. There is also find negligence in research and development (R&D) that is meant to enhance the level of innovation. This negligence is evident by the limited budget of these companies for R&D. It is further worth mentioning that packaging in general is still viewed by most packaging producers and even some business customers (manufacturers) from an engineering and production perspective rather than from a marketing perspective. This further proves that there is a shortcoming in the sector's strategy in general. In addition, packaging converters do not have clear strategies to develop their product readiness for export, nor any planning activity for sustainable export activity. Most export transactions are the result of trials or "hits" of trading deals that are not within a clear strategy and are mostly unplanned. It is reasonable to conclude that the structure, strategies and rivalry of the Jordanian packaging industry have a negative impact on the overall sector competitiveness.

### ***Related and Supporting Industries***

The level of clustering in the Jordanian packaging industry is low and the degree of integration between related and supporting services and industries is not strong as related and supporting industries do not seem to make a significant contribution towards the competitiveness of the packaging sector.

The linkages between the existing cluster services and the companies working in the packaging industry are weak and do not contribute to enhancing the sector's competitiveness. The most prominent proof is the lack of an industry association for the packaging industry, or a technical center. These industry-specialized entities would work towards facilitating the flow of marketing and technical information on the latest in the international packaging industry: developments in packaging products, materials used, modern production practices, latest design crazes and other information pertinent to companies in this sector. Moreover, as previously mentioned in this analysis, professional industrial photographers barely have a role, teaching institutions that provide packaging industry-related specialties are lacking, in addition to strategic weakness in the linkages between designers, consultants, marketers, and consultants specialized in the packaging industry on the one hand, and between packaging converters on the other hand. The media

and educational sectors also lack a role, proven through the absence of magazines or publications specialized in packaging design and engineering, as is the case ,for example with interior decoration and furniture articles.

In addition, the majority of designers lack creativity and imagination, and most converters and even manufacturers lack awareness about the significance of packaging in marketing being an important factor in brand positioning and in the purchasing decision of the end-consumer.



## 3.4 BENCHMARKING ANALYSIS

### 3.3.2.1 BENCHMARKING OF COMPETITIVENESS FACTORS

**Table 15: Paper and Paper Board Industry**

Factor	Jordan	UK*	Remarks
<b>R&amp;D capacity</b>	<ul style="list-style-type: none"> <li>No expenditures on packaging R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>Some companies invest in R&amp;D in the UK others have them abroad (example Smurfit has facilities in France) and others do not have.</li> <li>R&amp;D activity is limited to few large converters or suppliers.</li> <li>Average R&amp;D spending in UK packaging is about GBP 3.236 million**.</li> </ul>	<ul style="list-style-type: none"> <li>Successful innovation may be based around new design concepts for which the basic technology already exists.</li> <li>Some R&amp;D is carried out independently of the UK packaging industry, then adopted by industry through technology transfer.</li> </ul>
<b>Workforce skills and availability</b>	<ul style="list-style-type: none"> <li>Quality of recruits an issue – packaging not seen as an attractive career prospect for graduates.</li> <li>The local workforce lacks specialized packaging knowledge, experience and skills across functions.</li> <li>The National for Employment and Training is attracting much of the available new workforce.</li> </ul>	<ul style="list-style-type: none"> <li>Quality of recruits an issue – packaging not seen as an attractive career prospect for graduates.</li> <li>The Department of Trade and Industry analysis suggests <i>“that economic performance has been held back by poor skills and a shortage of intermediate-level vocational skills”</i>.</li> <li>The downward trend in employment is likely to continue, whilst demand for new skills, retraining and new approaches to management are likely to increase.</li> <li>The level of skills in printing in the UK is amongst the best in the world.</li> </ul>	<ul style="list-style-type: none"> <li>At a time of accelerating technological change, UK has an ageing workforce and a skills deficit resulting from insufficient recruitment and training.</li> <li>UK suffers more greatly from inappropriately qualified workforce</li> <li>UK economic performance has been held back by poor skills and a shortage of intermediate-level vocational skills.</li> <li>Skills shortages in the UK are already handicapping the industry and will become worse in the future.</li> <li>Productivity affected by difficulty in recruiting high caliber graduates</li> <li>The skills level of the industries' employees is a key element in competitiveness</li> </ul>

**Table 16: Paper and Paper Board Industry**

Factor	Jordan	UK*	Remarks
<b>Education and Training</b>	<ul style="list-style-type: none"> <li>No higher education is available and no training organizations specialized in packaging</li> </ul>	<ul style="list-style-type: none"> <li>UK is well endowed with Higher Education resources and research institutes in the core technologies needed by the industry.</li> <li>Recognizing the need for a strong and independent training organization, the British Printing Industries Federation (BPIF) in a joint initiative, are proposing to develop training through a funding proposal based on modest contributions from all companies and underpinned by legislation.</li> </ul>	<ul style="list-style-type: none"> <li>The current trend towards modern apprenticeships is welcome in the UK, it is perhaps the whole further education system which needs revisiting.</li> <li>There is still too much predominance on university entrants for a “knowledge-based” society as opposed to a system</li> <li>Based on both academic and vocational achievement which can both satisfy those students who are not academically gifted or interested in such a path as well as fill the growing gap for qualified skilled manual workers</li> </ul>
<b>Proximity to suppliers</b>	<ul style="list-style-type: none"> <li>All raw materials and equipment suppliers are located outside Jordan</li> </ul>	<ul style="list-style-type: none"> <li>Many raw material and equipment suppliers to the packaging industry are located outside the UK.</li> </ul>	
<b>Specialized services</b>	<ul style="list-style-type: none"> <li>No technology centers exist only some tests can be done at the RSS.</li> <li>No brand design consultancies exist</li> </ul>	<ul style="list-style-type: none"> <li>Technology centers exist at some Universities such as Industrial Technology at University of Eindhoven and School of Packaging at University of Reims.</li> <li>There are brand design consultancies that are looking after brand owner needs and are focused on creating and differentiating the brand image, a process which often includes packaging design.</li> </ul>	
<b>Machine builders &amp; software designers</b>	<ul style="list-style-type: none"> <li>Few local packaging machinery suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Packaging machinery suppliers tend to be situated outside the UK</li> </ul>	

**Table 17: Plastics Packaging Industry**

Factor	Jordan	UK*	Remarks
<b>R&amp;D capacity</b>	<ul style="list-style-type: none"> <li>No expenditures on packaging R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>Many of the major polymer producers have their</li> <li>R&amp;D activity and technical back-up geographically distant. (The exception to this is PET.)</li> </ul>	<ul style="list-style-type: none"> <li>A great proportion of supplier research and development takes place outside the UK Those packaging manufacturers who do conduct their own R&amp;D tend to be the major multi-nationals, who may also have their facilities outside the UK As a result there is perhaps a lack of focus on creation and exploitation of scientific knowledge and technology in the UK packaging industry</li> </ul>
<b>Workforce skills and availability</b>	<ul style="list-style-type: none"> <li>Quality of recruits an issue – packaging not seen as an attractive career prospect for graduates.</li> <li>The local workforce lacks specialized packaging knowledge, experience and skills across functions.</li> <li>The National for Employment and Training is attracting much of the available new workforce.</li> </ul>	<ul style="list-style-type: none"> <li>The plastics packaging industry has a skills shortage. There are fewer graduates with skills in engineering, chemicals and other appropriate disciplines.</li> <li>Quality of recruits an issue – packaging not seen as an attractive career prospect for graduates.</li> </ul>	<ul style="list-style-type: none"> <li>Productivity affected by difficulty in</li> <li>recruiting high caliber graduates</li> </ul>
<b>Education and Training</b>	<ul style="list-style-type: none"> <li>No higher education is available and no training organizations specialized in packaging</li> </ul>	<ul style="list-style-type: none"> <li>UK is well endowed with Higher Education resources and research institutes in the core technologies needed by the industry.</li> </ul>	
<b>Proximity to suppliers</b>	<ul style="list-style-type: none"> <li>All raw materials and equipment suppliers are located outside Jordan</li> </ul>	<ul style="list-style-type: none"> <li>Many raw material and equipment suppliers to the packaging industry are located outside the UK.</li> </ul>	

Table 18: Paper and Paper Board Industry			
Factor	Jordan	UK*	Remarks
<b>Networks and alliances</b>	<ul style="list-style-type: none"> <li>• Print Association exist but with no influence.</li> <li>• No association for paper and paperboard.</li> <li>• A committee exist for the paper at JCI</li> </ul>	<ul style="list-style-type: none"> <li>• British Print Industry Association</li> <li>• Confederation of Paper Industries</li> <li>• Faraday Packaging Partnership (The Faraday Packaging Partnership now involves a network of over 40 University groups and specialist commercial suppliers)</li> </ul>	
<b>Entrepreneurial climate</b>	<ul style="list-style-type: none"> <li>• Jordan is working on a conducive investment climate.</li> </ul>	<ul style="list-style-type: none"> <li>• UK does not attract new investment due to unfavorable investment climate.</li> </ul>	Generally, packaging is not seen as an exciting investment by the financial analysts in the UK.
<b>Innovation and imitation</b>	<ul style="list-style-type: none"> <li>• Designs are highly imitative</li> </ul>	<ul style="list-style-type: none"> <li>• Registration of Designs and Patents</li> <li>• Designs are in general innovative</li> </ul>	
<b>Presence of market leaders and innovators</b>	<ul style="list-style-type: none"> <li>• No presence of market leaders and innovators</li> </ul>	<ul style="list-style-type: none"> <li>• St Regis Paper &amp; David S Smith Packaging), Kappa Packaging UK Ltd, Linpac Containers, Mondi Packaging (UK) Ltd, SCA Packaging Ltd, Smurfit UK Ltd, Chesapeake Corporation, Mayr-Melnhof Packaging UK Ltd, A &amp; R Carton (UK) Ltd, Stora Enso Ltd, M Y Holdings, CPC Packaging</li> </ul>	

Table 19: Plastics Packaging Industry			
Factor	Jordan	UK*	Remarks
<b>Specialized services</b>	<ul style="list-style-type: none"> <li>No technology centers exist only some tests can be done at the RSS.</li> <li>No brand design consultancies exist</li> </ul>	<ul style="list-style-type: none"> <li>Technology centers exist at some Universities such as Industrial Technology at University of Eindhoven and School of packaging at University of Reims.</li> <li>There are brand design consultancies that are looking after brand owner needs and are focused on creating and differentiating the brand image, a process which often includes packaging design.</li> </ul>	
<b>Machine builders and software designers</b>	<ul style="list-style-type: none"> <li>Few local packaging machinery suppliers.</li> </ul>	<ul style="list-style-type: none"> <li>Packaging machinery suppliers tend to be situated outside the UK</li> </ul>	
<b>Networks and alliances</b>	<ul style="list-style-type: none"> <li>No association for plastic.</li> <li>A committee exists for the plastic at JCI.</li> </ul>	<ul style="list-style-type: none"> <li>British Plastics Federation Faraday Packaging Partnership.</li> </ul>	
<b>Entrepreneurial climate</b>	<ul style="list-style-type: none"> <li>Jordan does not attract new investment due to low incentives to new investments</li> </ul>	<ul style="list-style-type: none"> <li>Plastics packaging companies are disadvantaged when it comes to investment as shares in this industry sector are not seen to be attractive.</li> </ul>	<ul style="list-style-type: none"> <li>Generally, packaging is not seen as an exciting investment by the financial analysts in the UK.</li> </ul>

**Table 20: Plastics Packaging Industry**

Factor	Jordan	UK*	Remarks
<b>Innovation and imitation</b>	<ul style="list-style-type: none"> <li>• Designs are highly imitative</li> </ul>	<ul style="list-style-type: none"> <li>• Registration of Designs and Patents.</li> <li>• Designs are in general innovative</li> </ul>	
<b>Presence of market leaders and innovators</b>	<ul style="list-style-type: none"> <li>• No presence of market leaders and innovators.</li> </ul>	<ul style="list-style-type: none"> <li>• Many of the major polymer producers are headquartered outside the UK. St Regis Paper &amp; David S Smith Packaging), Linpac Containers, Nampak, RPC, Huhtamaki, Rexam (formerly Bowater), Pactiv, Amcor Flexibles Europe, British Polythene Industries, Lawson Mardon, Britton Group</li> </ul>	
<b>External connections</b>		<ul style="list-style-type: none"> <li>• Relatively little data exists from which to carry out effective benchmarking. Further work should be undertaken to benchmark UK Industry over a range of key performance indicators against overseas competitors</li> </ul>	

Table 21: Metal Packaging Industry			
Factor	Jordan	UK*	Remarks
<b>R&amp;D capacity</b>	<ul style="list-style-type: none"> <li>No expenditures on packaging R&amp;D.</li> </ul>	<ul style="list-style-type: none"> <li>There is investment in R&amp;D although it is lower than it was 10 years ago. Crown Cork &amp; Seal still retains its CarnaudMetalbox research centre in the UK.</li> </ul>	<ul style="list-style-type: none"> <li>A great proportion of supplier research and development takes place outside the UK Those packaging manufacturers who do conduct their own R&amp;D tend to be the major multi-nationals, who may also have their facilities outside the UK As a result there is perhaps a lack of focus on creation and exploitation of scientific knowledge and technology in the UK packaging industry</li> </ul>
<b>Workforce skills and availability</b>	<ul style="list-style-type: none"> <li>Quality of recruits an issue – packaging not seen as an attractive career prospect for graduates.</li> <li>The local workforce lacks specialized packaging knowledge, experience and skills across functions.</li> </ul>	<ul style="list-style-type: none"> <li>The UK industry finds it difficult to attract the most able graduates. It is also losing experienced process engineers and finds it difficult to recruit skilled workers at all levels.</li> <li>All companies find it difficult to recruit and retain people with good programming and other IT skills.</li> </ul>	<ul style="list-style-type: none"> <li>UK metal packaging is not perceived as an exciting career for school leavers or graduates apart from the graphic design area.</li> <li>There is difficulty of encouraging good graduates into the UK industry.</li> <li>Recruitment in the UK seems to be a problem at all levels; there is competition from service-based industries such as retailing for unskilled labor, and graduate recruitment is an ongoing problem, particularly as there are fewer graduates in disciplines such as engineering and chemistry.</li> </ul>
<b>Education and Training</b>	<ul style="list-style-type: none"> <li>No higher education is available and no training organizations specialized in packaging.</li> </ul>	<ul style="list-style-type: none"> <li>It takes around 2 years to train a fresh recruit as no higher education establishment runs courses that prepare students specifically for work in packaging or the metal packaging industry.</li> </ul>	

**Table 22: Metal Packaging Industry**

Factor	Jordan	UK*	Remarks
<b>Proximity to suppliers</b>	<ul style="list-style-type: none"> <li>All raw materials and equipment suppliers are located outside Jordan.</li> </ul>	<ul style="list-style-type: none"> <li>Many raw material and equipment suppliers to the packaging industry are located outside the UK.</li> </ul>	
<b>Specialized services</b>	<ul style="list-style-type: none"> <li>No technology centers exist only some tests can be done at the RSS.</li> <li>No brand design consultancies exist</li> </ul>	<ul style="list-style-type: none"> <li>The Print Unions have inhibited the introduction of new technology in some companies through restrictive practices. Technology centers exist at some Universities such as Industrial Technology at University of Eindhoven and School of packaging at University of Reims.</li> <li>There are brand design consultancies that are looking after brand owner needs and are focused on creating and differentiating the brand image, a process which often includes packaging design.</li> </ul>	
<b>Machine builders and software designers</b>	<ul style="list-style-type: none"> <li>Few local packaging machinery suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Packaging machinery suppliers tend to be situated outside the UK.</li> </ul>	
<b>Networks and alliances</b>	<ul style="list-style-type: none"> <li>No association exist</li> </ul>	<ul style="list-style-type: none"> <li>Metal Packaging Manufacturers Association British Aerosol Manufacturers Association Faraday Packaging Partnership</li> </ul>	



**Table 23: Metal Packaging Industry**

Factor	Jordan	UK	Remarks
<b>Entrepreneurial climate</b>	<ul style="list-style-type: none"> <li>Jordan is working on a conducive investment climate.</li> </ul>	<ul style="list-style-type: none"> <li>UK does not attract new investment due to unfavorable investment climate.</li> </ul>	<ul style="list-style-type: none"> <li>Generally, packaging is not seen as an exciting investment by the financial analysts in the UK.</li> <li>Lack of investment is seen as one of the key issues of the UK packaging industry.</li> </ul>
<b>Innovation and imitation</b>	<ul style="list-style-type: none"> <li>Designs are highly imitative</li> </ul>	<ul style="list-style-type: none"> <li>The new technology on digital design and communications.</li> <li>Several of the smaller companies contacted said that they lacked the investment needed for new technology.</li> </ul>	<ul style="list-style-type: none"> <li>Patents and licenses are not perceived to be as important to the UK industry as they were in the 1980's in the UK.</li> </ul>
Presence of market leaders and innovators	<ul style="list-style-type: none"> <li>No presence of market leaders and innovators</li> </ul>	<ul style="list-style-type: none"> <li>The UK industry has a number of major global players with manufacturing plants in the UK plus successful SMEs, which occupy specialist niches in the market place.</li> <li>Linpac Containers, Rexam plc, Crown Cork &amp; Seal, Impress Metal Packaging, Continental Can Company, US Can Europe</li> </ul>	

### 3.3.2.2 BENCHMARKING ANALYSIS IN TERMS OF INTERNATIONAL TRADE PERFORMANCE: THE CASES OF KINGDOM OF SAUDI ARABIA AND EGYPT

**Table 24: Paper and Paperboard Packaging Industry  
External Trade Benchmark with Egypt and Saudi Arabia (2006)**

Indicator	Jordan	Egypt	Saudi Arabia
Total Imported Value (2006, JOD thousand)	27,294	37,634	37,794
Total Exported Value (2006, JOD thousand)	14,886	7,643	139,173
Trade Balance (2006, JOD thousand)	-12,408	-29,991	101,379
Share in World Exports in 2006 (%)	0.27	0.07	0.37
Ranking in World Exports (2006)	47	67	36
Main Import Markets (2006)	Israel, Saudi Arabia, Germany, Turkey, Lebanon, Cyprus, Bahrain, Switzerland, Italy, Syria	Saudi Arabia, Israel, Italy, UK, Jordan, Netherlands, France, China, Turkey, Germany	UAE, Jordan, China, Germany, Bahrain, Kuwait, USA, Switzerland, Egypt, Lebanon
Main Export Markets (2006)	Saudi Arabia, Iraq, Yemen, Egypt, Sudan, Syria, Free Zones, UK, UAE	UK, France, Saudi Arabia, Sudan, Finland, Algeria, Morocco, Greece, Jordan, Syria	Egypt, UAE, Kuwait, Morocco, Yemen, Jordan, Bahrain, Iran, Oman, Libya

**Plastic Packaging Industry  
External Trade Benchmark with Egypt and Saudi Arabia (2006)**

Indicator	Jordan	Egypt	Saudi Arabia
Total Imported Value (2006, JOD thousand)	22,732	33,103	65,434
Total Exported Value (2006, JOD thousand)	17,357	8,192	159,995
Trade Balance (2006, JOD thousand)	-5,375	-24,911	94,521
Share in World Exports in 2006 (%)	0.07	0.03	0.68
Ranking in World Exports (2006)	68	79	29
Main Import Markets (2006)	Saudi Arabia, Israel, Lebanon, France, Turkey, China, Germany, UAE, Free Zones, Italy	Saudi Arabia, Syria, Italy, China, India, France, Germany, Israel, Spain, Netherlands	UAE, Bahrain, UK, China, Germany, Italy, USA, Egypt, Jordan, Kuwait
Main Export Markets (2006)	Iraq, Saudi Arabia, Algeria, USA, Free Zones, Syria, UAE, Yemen, Lebanon, Israel	Saudi Arabia, Morocco, USA, Sudan, Pakistan, Philippines, Jordan, South Africa, Syria, Cyprus	Yemen, UAE, Sudan, Kuwait, Egypt, Jordan, Bahrain, Morocco, Oman, USA

**Aluminum Packaging Industry**  
**External Trade Benchmark with Egypt and Saudi Arabia (2006)**

Indicator	Jordan	Egypt	Saudi Arabia
Total Imported Value (2006, JOD thousand)	2,815	5,617	6,800
Total Exported Value (2006, JOD thousand)	55,145	1,126	77,867
Trade Balance (2006, JOD thousand)	52,330	-4492	71,068
Share in World Exports in 2006 (%)	2.21	0.05	3.13
Ranking in World Exports (2006)	16	65	10
Main Import Markets (2006)	Turkey, Germany, Italy, Austria, Bulgaria, Switzerland, China, Hungary, India, Iran, Saudi Arabia	Jordan, Romania, Hungary, Switzerland, Germany, UK, France, Saudi Arabia, Czech Republic, India	UAE, China, India, Switzerland, Jordan, Sweden, Pakistan, UK, Lebanon, Egypt
Main Export Markets (2006)	Iraq, Free Zones, Syria, Lebanon, Egypt, Saudi Arabia, Morocco, Greece, Turkey, Palestine	Morocco, Saudi Arabia, Syria, Algeria, Sudan, Germany	UAE, Kuwait, Jordan, Bahrain, Bahrain, Qatar, Sudan, Lebanon, Libya, Italy

**Metal Packaging Industry (Excluding Aluminum Containers)**  
**External Trade Benchmark with Egypt and Saudi Arabia (2006)**

Indicator	Jordan	Egypt	Saudi Arabia
Total Imported Value (2006, JOD thousand)	8,358	4,467	31,197
Total Exported Value (2006, JOD thousand)	3,452	4,165	18,541
Trade Balance (2006, JOD thousand)	-4,906	-302	-12,656
Share in World Exports in 2006 (%)	0.11	0.13	0.59
Ranking in World Exports (2006)	60	53	29
Main Import Markets (2006)	Saudi Arabia, Turkey, Denmark, Lebanon, UAE, Israel, China, Netherlands, Syria	UK, Saudi Arabia, Italy, Germany, Netherlands, Israel, China, Jordan, USA, Denmark	USA, Korea, Italy, China, Austria, UAE, Germany, India, Jordan, Denmark
Main Export Markets (2006)	Sudan, Iraq, Saudi Arabia, Free Zones, Egypt, Algeria, Iran, Syria, Turkey, UK	Morocco, Sudan, Jordan, Tanzania, Saudi Arabia, Qatar, Italy, Yemen, Greece	UAE, Kuwait, Oman, Jordan, India, Bahrain, Yemen, Iran, Egypt, Qatar

**Wood Packaging Industry**  
**External Trade Benchmark with Egypt and Saudi Arabia (2006)**

Indicator	Jordan	Egypt	Saudi Arabia
Total Imported Value (2006, JOD thousand)	1,403	614	3,584
Total Exported Value (2006, JOD thousand)	317	8	4,462
Trade Balance (2006, JOD thousand)	-1,086	-606	842
Share in World Exports in 2006 (%)	0.02	0	0.28
Ranking in World Exports (2006)	74	120	43
Main Import Markets (2006)	Brazil, Israel, Turkey, UK, Saudi Arabia, Syria,	UK, Italy, China, Poland, Netherlands, USA, Slovakia, Sweden, France	China, UAE, Brazil, USA, Italy, Pakistan, Germany, Thailand Netherlands,
Main Export Markets (2006)	Free Zones, Saudi Arabia	Saudi Arabia, Sudan, Germany, Jordan	Bahrain, Kuwait, Netherlands, Germany, UAE, Morocco, Somalia, Qatar, Belgium, Sudan

# 4.0 THE PACKAGING SECTOR STRATEGY

## 4.1 Strategy Recommendations

Based on the previous analysis, the strategy for enhancing the packaging sector's competitiveness in Jordan must emanate from a strategic vision that aims to emphasize completeness and strengthen the inter-linkages among the competitive factors in order that they complement each other's work in a harmonious package. Therefore, the strategy must be assembled towards achieving industrial integration and completeness and should emanate from the following strategic platforms:-

### A. Regulatory Framework

The Ministry of Industry and Trade should consult with the industry represented by Jordan Chamber of Industry (JCI) to review the current legislations (mainly tariffs, energy costs and exports incentives) to ensure that competitiveness of the industry is not adversely affected. On the other hand, the Ministry of Industry and Trade should work through Jordan Institute for Standards and Meteorology (JISM) to harmonize local packaging standards with international standards and enforce the standards in the food, fresh fruits and vegetables, pharmaceutical, and Dead Sea sectors (as a first stage) according to a plan defining the grace period of each standard)

**Actions:** MIT to consult with JCI to review legislations  
MIT through JISM to harmonize and mandate standards

### B. Employment

The Ministry of Industry and Trade in coordination with the Ministry of Labor should consult with JCI to identify real needs of the industry in terms of employment of all level of skills. On the other hand, the packaging academy initiative headed by JCI should be supported in order to become a reality and up to the aspiration of the industry. Universities should be encouraged to educate undergraduates in the field of packaging technology. The packaging industry headed by JCI and supported by SABEQ should conduct a campaign to improve the recruitment process. In addition, JCI should identify the skills and training needs of the packaging industry through a skills mapping project.

**Actions:** MIT, MOL and JCI to identify real needs of the packaging industry  
MIT and SABEQ to support establishment of a packaging academy  
JCI conduct a campaign to improve recruitment process for the industry  
JCI conduct skills mapping project

### **C. Image**

Packaging in Jordan generally suffers from its poor image from the perspective of the manufacturers and the consumers as well. An image survey could be conducted to evaluate the extent of the problem and to recommend 'best practice' for dealing with this issue. The assistance of a credible source would be essential to achieve the necessary objectivity and ensure the success of this initiative.

**Action:** SABEQ to conduct image survey

### **D. Technical Assistance**

There is a need for specific assistance to be given to packaging converters in terms of technical assistance in order to ensure the enhancement of their competitiveness. Technical assistance is needed in areas such as: 1. design (structural and graphic design); 2. dedicated packaging consultancy to a group of companies having similar products or products with similar characteristics would be very effective, 3. secondary and tertiary packaging of export oriented products for selected sectors in terms of quality, attractiveness, cost and other parameters. 4. Branding assistance should be along all value chain of packaging production marketing

**Action:** SABEQ, JUMP and TATWEER to provide technical assistance.

### **E. Research and Development (R&D)**

Jordan has no R&D activities when it comes to packaging. This is due to the lack of packaging labs and the lack of packaging technologists. But the adoption of Intellectual Property law and the existence of design and patent laws are in favor of these activities. Promotion of R&D in packaging is a joint responsibility of Universities and the industry. Incentives would also spur the R&D activities.

**Actions:** Universities with JCI to promote R&D  
HCST to support Universities by the provision of financial aids to specific packaging R&D

### **F. Data**

There is lack of data regarding the packaging industry. A survey should be done to each of the packaging targeted sub-sectors to: 1. collect the necessary data and 2. analyze the status of the industry for benchmarking future development.

**Action:** JCI to conduct the survey in coordination with SABEQ

### **G. Sub-sectors Unions**

The Unions would focus on those actions which are common to their specific packaging materials sub-sector and which would be of benefit to industry as a whole in coordination with other sub-sectors unions to avoid duplicating their activities. The role of the unions should not be one of political lobbying but work with the government for the benefits of enhancing the competitiveness of their sub-sector.

**Action:** JCI work with industry to form sub-sectors unions

### **H. Packaging Technology Center**

Establishing of a comprehensive fully fledged packaging centre would have impact on enhancing the competitiveness of the packaging sector. The center would provide information, training, technology transfer, laboratory testing and technical support to packaging companies working in the fields of paper and paperboard, plastics and metals.

**Action:** SABEQ to support a business plan for the establishment of the center. A concept paper for establishing such a technology center has been proposed by the consulting team in Appendix (D)

### **I. Communications**

The strategic plan of the packaging sector needs to be communicated to the sector through a series of seminars. The most effective way of briefing businesses about the content of the strategic plan needs to be defined with an objective that all packaging manufacturing businesses will know about the plan within a defined period of time.

**Action:** JCI in coordination with MIT and JUMP to conduct seminars on the strategic plan.

### **J. Training**

Training needs to be target three sectors, namely the packaging converters, the manufactures and the supporting industries. The obvious areas that the manufacturers need include: branding, marketing, specifications, requirements of export markets, while the converters needs include strategic planning, management, design, fundamentals of packaging, safety, good manufacturing practices GMP, quality assurance and control, on the other hand the supporting industries need training in design, innovation, marketing and branding, distribution packaging among other training areas.

**Action:** JCI in coordination with JUMP to conduct workshops on each topic.

## 4.2 STRATEGIC OBJECTIVES AND ACTION PLAN TO ENHANCE THE COMPETITIVENESS OF THE PACKAGING SECTOR IN JORDAN

Action Plan for Packaging Strategy																
#	Outcome Goals/Objectives/Actions		08	2009				2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
G1	Packaging Sector Enjoys Sound Regulatory Environment															
O1	Review current legislations (tariffs, energy costs and exports incentives)															
A1	Conduct a study on the effects of tariffs, energy and export incentives on packaging competitiveness and on other manufacturing sectors competitiveness.	P													MIT & SABEQ	
		A														
A2	Lobbying to pressure change in regulations to be in favor of packaging industry	P													MIT, SABEQ, JCI, JUMP	
		A														
A3	Participate in new regulations formulation	P													MIT & JCI	
		A														
O2	Harmonize and mandate standards															
A1	Identify European Standards relating to packaging	P													MIT & JISM	
		A														
A2	Harmonize Jordanian Standards with European Standards	P													JISM	
		A														
A3	Identify grace period to mandate each	P													JISM	



	standard	A																	
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P: Planned A: Actual

Action Plan for Packaging Strategy																
#	Outcome Goals/Objectives/Actions		08	2009				2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
G2	Packaging sector has no difficulty in recruiting skilled and un-skilled labor															
O1	Resolve the lack of local skilled and un-skilled labor shortages issue for all target sub-sectors															
A1	Identify real needs of the packaging industry for the targeted sub-sectors based on mapping current skills	P													MIT and JCI with SABEQ	
		A														
A2	Negotiate with the Ministry of Labor to give permissions for acquiring foreign labor when locals are not really available	P													MIT and MOL	
		A														
O2	Make available vocational training and academic education related to packaging technology															
A1	Provide support to the establishment of a vocational packaging academy at the Printing School	P													MIT, SABEQ, JUMP with JCI	
		A														
A2	Make a study for potential numbers of graduates in packaging technology in Jordan. Identify prospects of cooperation with US or UK Universities in this regard and present findings to Interested universities.	P													SABEQ & interested Universities	
		A														

A3	Design and implement a campaign to improve recruitment process for the industry	P													JCI & SABEQ	
		A														

P: Planned A: Actual

Action Plan for Packaging Strategy																
#	Outcome Goals/Objectives/Actions		08	2009				2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
G3	Jordanian Packaging Image is positive															
O1	Improve the image of the Jordanian packaging related to target sub-sectors.															
A1	Conduct image survey to identify the extent of the problem	P													SABEQ	
		A														
A2	Identify examples of packaging innovation and good quality of Jordanian packages, examples of companies divert their abroad packaging suppliers to local suppliers and other positive cases	P													Industry & JCI	
		A														
A3	Recommend best practices to improve the image	P													SABEQ	
		A														
O2	Targeted packaging sub-sectors have all needed technical expertise															
A1	Assessment of primary, secondary and tertiary packaging of export oriented products for selected sectors	P													SABEQ	
		A														
A2	Direct technical assistance to group of	P													SABEQ	

	companies having similar products or products with similar characteristics	A															
A3	Continue in the provision of packaging technical assistance areas for manufacturers, converters and design houses.	P														JUMP, TATWEER	
		A															

Action Plan for Packaging Strategy																
#	Outcome Goals/Objectives/Actions		08	2009				2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
G4	Jordan has R&D activities related to targeted packaging sub-sectors															
O1	At least three scientific research centers are interested in packaging R&D (paper, plastics and metals)															
A1	Identify areas of R&D based on surveying potential areas of R&D and provide them to interested Universities and research centers.	P													SABEQ	
		A														
A2	Support scientific research and development through financial aids	P													HCST	
		A														
A3	Promote R&D at research centers including universities.	P													JCI & SABEQ	
		A														
G5	Packaging sectors' data is available															
O1	Collecting missing and inaccurate information related to the sector.	P													JCI & SABEQ	
		A														
A1	Design questionnaire and conduct personal survey to collect data from each of the packaging targeted sub-sectors and then	P													JCI	
		A														

	analyze it																		
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#	Outcome Goals/Objectives/Actions		08	2009					2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3			
G6	Sub-sectors are represented by Unions having influential weight																
O1	Establish Union for each of the targeted sub-sectors																
A1	Define mission, structure, responsibilities and objectives of unions related to target sub-sectors in coordination with JCI packaging committees.	P														JCI & industry	
		A															
A2	JCI committees to be the nuclei for the Unions and go through the registration process and the establishment of these unions.	P														JCI & industry	
		A															
G7	Packaging Industry are supported by a Jordanian Packaging Technology Center																
O1	Establishing a Jordanian Packaging Technology Center (See Appendix (D) for a suggested concept paper for establishing a Jordanian Packaging Technology Center)																
A1	Conduct a business plan for the center	P														SABEQ	
		A															

P: Planned A: Actual

Action Plan for Packaging Strategy																	
#	Outcome Goals/Objectives/Actions		08	2009					2010				2011			Party Responsible	Budget
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3			
G8	All targeted sub-sectors are aware of their role in the strategic plan and is working towards achieving it																
O1	Communicate the strategic plan to all targeted sub-sectors and gain their support.																
A1	Conduct a series of seminars to explain the strategic plan and the expected benefits from its implementation.	P													JCI		
		A															
G9	All targeted sub-sectors received specialized training																
O1	Assess training needs of packaging converters, manufacturers and supporting industries, prioritize needed training and allocate suitable experts locally or internationally.	P													SABEQ/JUMP		
		A															
A1	Organize workshops for packaging converters, manufacturers and the supporting industries.	P													JCI + JUMP		
		A															

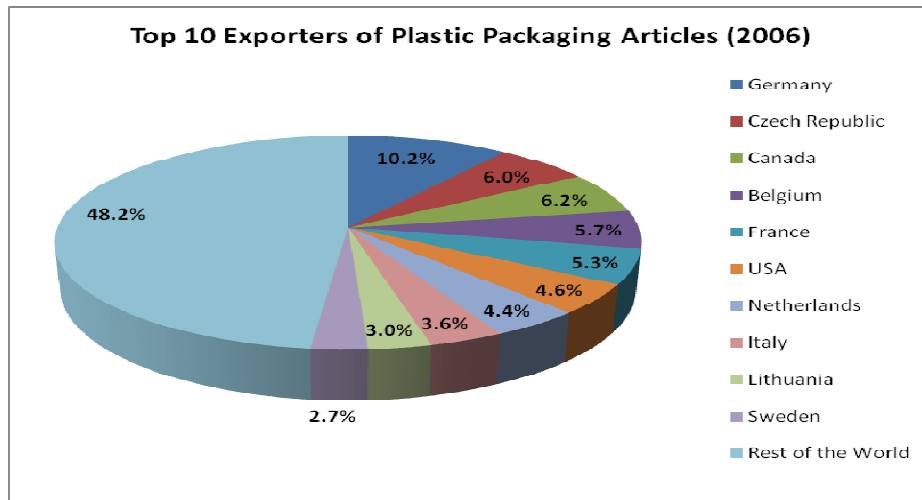
P: Planned A: Actual

# APPENDIX

## APPENDIX (A): GLOBAL EXPORTS OF PACKAGING ARTICLES

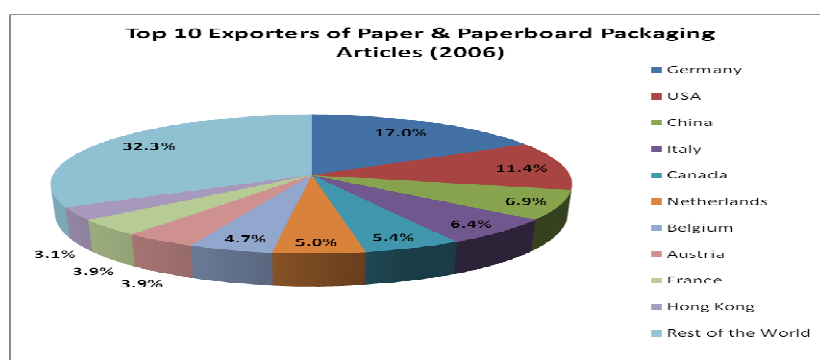
TABLE (A.1): GLOBAL EXPORTS OF PLASTIC PACKAGING

World Exports of Plastic Packaging Articles - Top 20 Export Markets						
Exporters	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007	Share in World Exports (2006)
<b>World</b>	<b>1,784,514</b>	<b>2,047,597</b>	<b>2,078,212</b>	<b>2,243,162</b>	<b>N/A</b>	
Germany	146,427	169,826	200,885	229,150	274,979	10.22%
Czech Republic	87,182	125,512	110,625	134,702	190,157	6.01%
Belgium	105,172	117,015	120,935	128,111	171,990	5.71%
Canada	128,924	149,345	156,637	139,764	129,484	6.23%
France	74,997	90,202	105,107	118,938	126,345	5.30%
Italy	63,752	76,966	77,994	80,394	105,618	3.58%
Netherlands	66,638	87,817	94,010	98,320	104,255	4.38%
USA	84,750	80,476	99,329	103,137	94,962	4.60%
Lithuania	36,466	49,485	57,753	67,898	93,448	3.03%
Sweden	55,283	65,728	54,585	61,136	81,333	2.73%
Latvia	39,585	37,084	42,800	55,408	72,690	2.47%
Slovakia	17,849	20,779	27,216	42,405	64,998	1.89%
China	42,223	48,588	59,758	62,776	60,994	2.80%
Estonia	28,115	29,785	32,337	25,174	41,182	1.12%
UK	166,055	118,225	45,548	40,506	39,911	1.81%
Brazil	14,828	21,592	23,404	30,791	38,738	1.37%
Malaysia	18,651	20,469	25,020	28,340	36,758	1.26%
Austria	18,622	18,501	19,536	24,253	34,306	1.08%
Mexico	22,315	18,959	23,316	31,046	32,309	1.38%
Turkey	9,209	14,155	19,159	17,954	23,884	0.80%



**TABLE (A.2): GLOBAL EXPORTS OF PAPER AND PAPERBOARD PACKAGING**

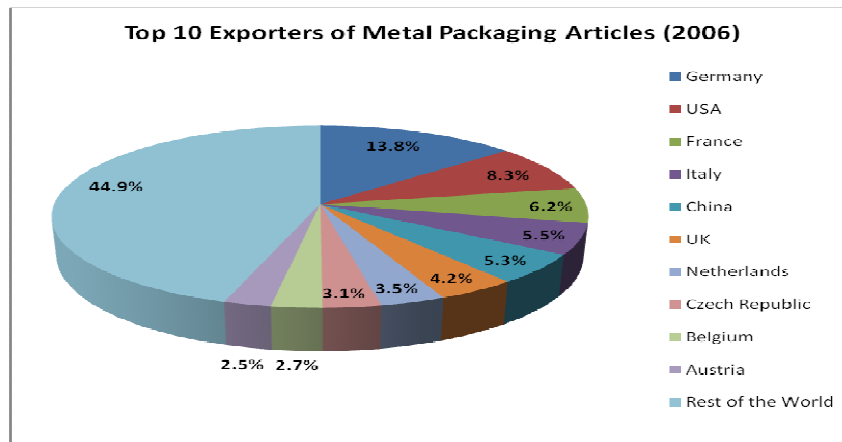
<b>World Exports of Paper &amp; Paperboard Packaging Articles - Top 20 Export Markets</b>						
Exporters	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007	Share in World Exports (2006)
<b>World</b>	<b>10,984,074</b>	<b>12,366,239</b>	<b>13,222,344</b>	<b>14,470,559</b>	<b>N/A</b>	
Germany	1,738,963	1,951,513	2,207,581	2,458,929	2,886,405	16.99%
USA	1,406,927	1,526,439	1,517,163	1,650,517	1,635,892	11.41%
China	451,603	609,122	770,383	998,885	1,234,786	6.90%
Italy	689,798	838,825	864,597	927,853	1,076,462	6.41%
Netherlands	574,596	629,372	710,659	727,456	796,291	5.03%
Belgium	630,838	757,470	672,460	676,593	777,001	4.68%
Canada	644,296	678,549	716,336	774,490	762,763	5.35%
Austria	479,295	555,996	564,300	571,252	683,035	3.95%
France	458,756	480,473	502,487	563,804	654,883	3.90%
UK	363,331	395,870	397,919	438,265	462,150	3.03%
Hong Kong	337,038	375,607	420,208	442,715	455,585	3.06%
Switzerland	259,251	297,987	291,485	301,353	331,646	2.08%
Czech Republic	126,526	159,839	190,795	217,938	294,516	1.51%
Sweden	193,160	207,561	204,151	215,724	211,991	1.49%
Mexico	135,166	115,108	155,424	185,973	199,703	1.29%
Turkey	81,199	98,551	116,718	72,108	120,976	0.50%
Singapore	83,697	94,785	82,333	96,205	118,778	0.66%
Malaysia	44,594	57,038	67,776	80,000	112,301	0.55%
Thailand	76,689	89,437	96,150	106,326	111,937	0.73%
Republic of Korea	92,738	101,231	114,165	116,455	90,304	0.80%





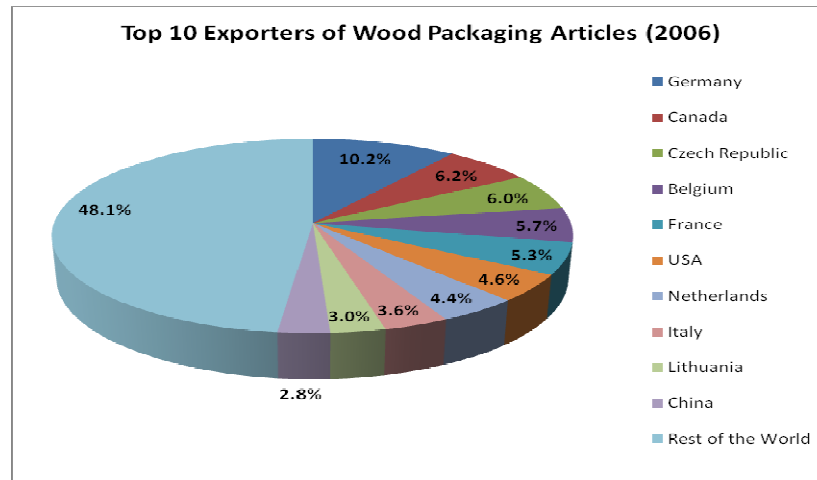
**TABLE (A.3): GLOBAL EXPORTS OF METAL PACKAGING**

World Exports of Metal Packaging Articles - Top 20 Export Markets						
Exporters	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007	Share in World Exports (2006)
<b>World</b>	<b>6,857,466</b>	<b>7,975,460</b>	<b>8,964,114</b>	<b>10,569,022</b>	<b>N/A</b>	<b>100.00%</b>
Germany	830,713	922,770	1,108,295	1,491,070	1,736,047	14.11%
USA	538,848	623,526	732,501	904,210	1,053,577	8.56%
France	540,476	583,913	623,078	669,529	841,489	6.33%
Italy	419,746	490,823	521,364	600,699	804,965	5.68%
China	265,511	359,272	433,022	576,510	797,175	5.45%
UK	333,438	381,537	397,424	457,694	531,980	4.33%
Czech Republic	188,937	247,366	289,549	333,738	487,097	3.16%
Netherlands	318,733	346,279	387,316	374,762	439,345	3.55%
Austria	193,510	184,322	204,142	271,105	371,917	2.57%
Belgium	250,495	276,328	272,175	289,991	358,864	2.74%
Canada	243,129	264,721	286,075	304,551	297,785	2.88%
Republic of Korea	94,007	122,512	175,338	333,231	287,917	3.15%
Sweden	181,351	219,725	203,567	198,169	247,826	1.87%
Thailand	91,091	123,922	147,841	177,194	210,121	1.68%
Mexico	172,115	204,784	206,544	216,538	204,603	2.05%
Switzerland	102,049	110,264	113,011	130,356	154,265	1.23%
Slovakia	44,333	64,760	64,052	73,474	99,177	0.70%
Hong Kong	98,844	101,989	96,637	100,977	94,103	0.96%
Malaysia	60,181	74,905	70,196	88,044	87,982	0.83%
Jordan	10,964	17,698	39,276	77,889	83,696	0.74%



**TABLE (A.4): GLOBAL EXPORTS OF WOOD PACKAGING**

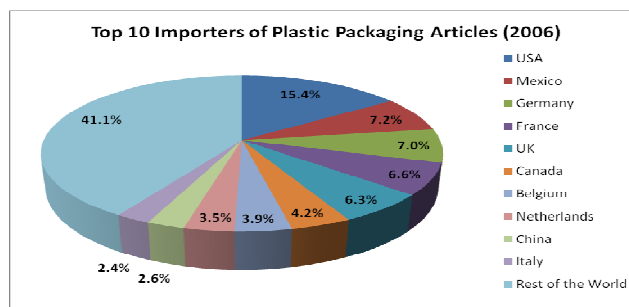
World Exports of Wood Packaging Articles - Top 20 Export Markets						
Exporters	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007	Share in World Exports (2006)
<b>World</b>	<b>1,784,514</b>	<b>2,047,597</b>	<b>2,078,212</b>	<b>2,243,162</b>	<b>N/A</b>	<b>100.00%</b>
Germany	146,427	169,826	200,885	229,150	274,979	10.22%
Czech Republic	87,182	125,512	110,625	134,702	190,157	6.01%
Belgium	105,172	117,015	120,935	128,111	171,990	5.71%
Canada	128,924	149,345	156,637	139,764	129,484	6.23%
France	74,997	90,202	105,107	118,938	126,345	5.30%
Italy	63,752	76,966	77,994	80,394	105,618	3.58%
Netherlands	66,638	87,817	94,010	98,320	104,255	4.38%
United States of America	84,750	80,476	99,329	103,137	94,962	4.60%
Lithuania	36,466	49,485	57,753	67,898	93,448	3.03%
Sweden	55,283	65,728	54,585	61,136	81,333	2.73%
Latvia	39,585	37,084	42,800	55,408	72,690	2.47%
Slovakia	17,849	20,779	27,216	42,405	64,998	1.89%
China	42,223	48,588	59,758	62,776	60,994	2.80%
Estonia	28,115	29,785	32,337	25,174	41,182	1.12%
United Kingdom	166,055	118,225	45,548	40,506	39,911	1.81%
Brazil	14,828	21,592	23,404	30,791	38,738	1.37%
Malaysia	18,651	20,469	25,020	28,340	36,758	1.26%
Austria	18,622	18,501	19,536	24,253	34,306	1.08%
Mexico	22,315	18,959	23,316	31,046	32,309	1.38%
Turkey	9,209	14,155	19,159	17,954	23,884	0.80%



## APPENDIX (B): GLOBAL IMPORTS OF PACKAGING ARTICLES

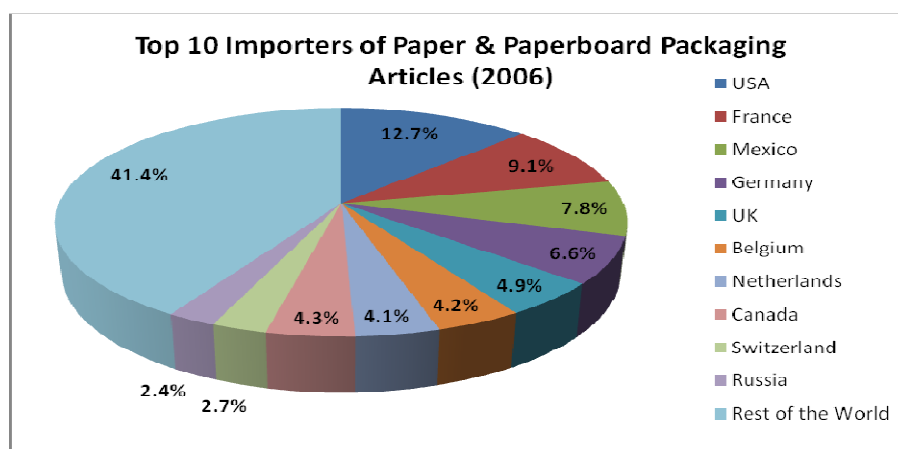
TABLE (B.1): GLOBAL IMPORTS OF PLASTIC PACKAGING

World Imports of Plastic Packaging Articles - Top 20 Import Markets						
Importers	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007	Share in World Imports (2006)
<b>World</b>	<b>23,615,246</b>	<b>27,136,346</b>	<b>30,796,596</b>	<b>33,872,864</b>	<b>N/A</b>	<b>100%</b>
USA	3,411,246	3,982,418	4,701,759	5,222,204	5,169,892	15.42%
Germany	1,485,513	1,729,472	2,102,367	2,352,657	2,766,547	6.95%
France	1,608,884	1,834,636	2,020,223	2,221,800	2,670,327	6.56%
Mexico	2,137,134	2,145,754	2,323,432	2,442,014	2,494,546	7.21%
UK	1,489,322	1,807,155	1,972,744	2,138,194	2,400,777	6.31%
Canada	1,057,693	1,053,245	1,264,812	1,407,344	1,581,705	4.15%
Belgium	959,438	1,106,308	1,147,395	1,318,833	1,486,317	3.89%
Netherlands	875,337	979,964	1,070,378	1,170,708	1,297,636	3.46%
China	479,773	606,208	713,887	880,706	1,011,968	2.60%
Italy	618,126	707,275	747,680	806,951	961,604	2.38%
Switzerland	418,082	486,643	512,454	562,530	688,585	1.66%
Hong Kong	622,276	657,112	645,429	645,744	646,040	1.91%
Austria	359,026	412,114	477,302	504,615	576,959	1.49%
Australia	279,395	345,692	405,612	429,349	513,077	1.27%
Sweden	307,155	360,062	370,559	437,302	502,163	1.29%
Republic of Korea	265,105	325,430	383,678	409,680	486,589	1.21%
Russia	171,436	203,217	311,224	371,021	456,030	1.10%
Ireland	271,957	300,950	317,054	358,905	405,387	1.06%
Norway	216,347	246,367	273,666	321,155	370,074	0.95%
Thailand	186,526	229,576	260,873	306,916	339,792	0.91%



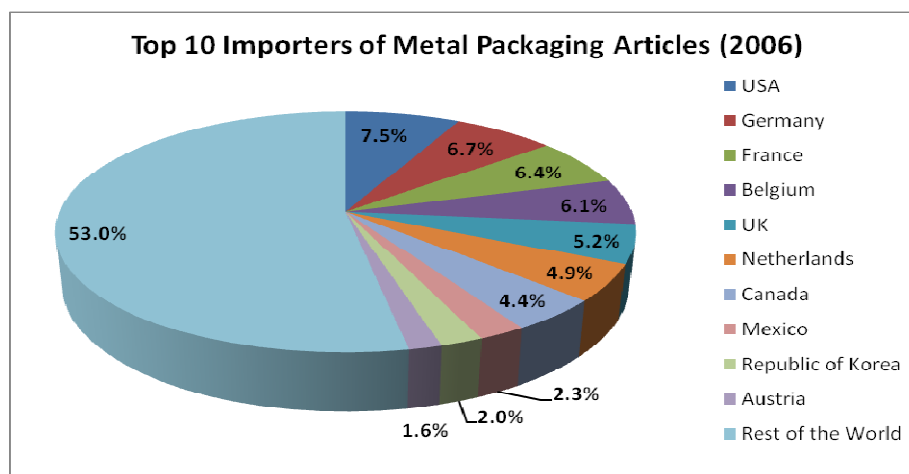
**TABLE (B.2): GLOBAL IMPORTS OF PAPER AND PAPERBOARD PACKAGING**

<b>World Imports of Paper &amp; Paperboard Packaging Articles - Top 20 Import Markets</b>						
Importers	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007	Share in World Imports (2006)
<b>World</b>	<b>11,096,605</b>	<b>12,455,388</b>	<b>13,254,450</b>	<b>14,413,581</b>	<b>N/A</b>	<b>100%</b>
USA	1,310,751	1,449,044	1,594,273	1,827,774	1,801,528	12.68%
France	1,047,527	1,178,901	1,241,436	1,317,943	1,584,613	9.14%
Mexico	936,481	1,026,683	1,031,661	1,118,011	1,151,660	7.76%
Germany	695,202	756,285	894,932	957,882	1,100,324	6.65%
UK	477,713	605,223	648,373	703,820	823,499	4.88%
Belgium	477,930	612,783	576,170	601,020	725,059	4.17%
Netherlands	572,548	588,330	555,708	584,742	678,081	4.06%
Canada	490,599	536,344	577,398	612,699	642,595	4.25%
Switzerland	290,953	339,656	352,931	385,510	488,466	2.67%
Russia	266,588	274,504	292,573	340,191	422,846	2.36%
Hong Kong	280,563	314,982	336,476	355,136	362,504	2.46%
Australia	215,901	235,354	244,757	254,238	329,096	1.76%
Italy	169,680	201,245	229,724	245,768	314,571	1.71%
Sweden	147,320	167,915	178,902	206,745	240,488	1.43%
Ireland	172,718	149,988	162,578	178,777	221,739	1.24%
China	161,524	170,036	162,132	164,924	174,636	1.14%
Romania	94,043	104,200	115,141	135,577	157,867	0.94%
Norway	87,705	113,558	109,851	115,181	147,961	0.80%
Greece	80,966	90,037	86,643	96,694	119,763	0.67%
Australia	44,915	60,052	68,629	84,538	110,375	0.59%



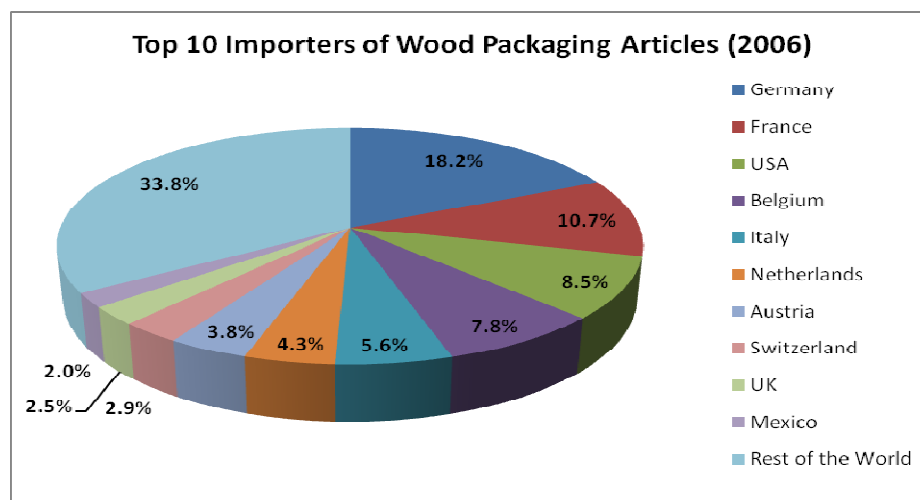
**TABLE (B.3): GLOBAL IMPORTS OF METAL PACKAGING**

<b>World Imports of Metal Packaging Articles - Top 20 Import Markets</b>						
Importers	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007	Share in World Imports (2006)
<b>World</b>	<b>6,916,114</b>	<b>7,863,758</b>	<b>8,766,330</b>	<b>10,177,035</b>	<b>N/A</b>	<b>100.00%</b>
USA	576,047	652,398	703,611	764,192	806,139	7.51%
France	470,033	554,776	594,695	650,601	802,213	6.39%
Germany	456,281	483,856	601,810	679,660	791,000	6.68%
Belgium	409,382	493,432	546,443	615,901	744,641	6.05%
Netherlands	447,245	450,548	439,001	497,869	538,712	4.89%
UK	380,982	420,609	459,902	532,361	568,635	5.23%
Canada	283,281	305,029	338,082	448,314	513,605	4.41%
Mexico	116,120	188,162	192,770	230,685	241,428	2.27%
Republic of Korea	116,201	115,596	166,918	207,482	268,988	2.04%
Austria	174,068	149,651	144,966	160,137	188,658	1.57%
Italy	128,240	146,616	133,353	147,083	195,496	1.45%
Switzerland	79,833	95,368	106,253	158,134	206,468	1.55%
Norway	74,724	121,067	103,684	125,946	147,433	1.24%
China	55,181	83,448	82,339	96,358	122,172	0.95%
Sweden	70,951	70,769	73,956	98,931	113,378	0.97%
Russia	58,646	57,204	67,755	93,467	118,024	0.92%
Ireland	64,752	74,463	77,672	66,308	77,803	0.65%
Hong Kong	79,321	67,313	67,046	68,559	60,501	0.67%
Australia	32,862	46,644	58,835	72,132	92,898	0.71%
Thailand	33,196	41,218	45,468	67,077	104,182	0.66%



**TABLE (B.4): GLOBAL IMPORTS OF WOOD PACKAGING**

World Imports of Wood Packaging Articles - Top 20 Import Markets						
Importers	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007	Share in World Imports (2006)
<b>World</b>	<b>1,742,704</b>	<b>1,866,480</b>	<b>1,922,617</b>	<b>2,108,694</b>	<b>N/A</b>	<b>100.00%</b>
Germany	294,809	275,480	320,588	382,868	467,046	18.16%
France	155,620	162,175	190,402	225,218	306,761	10.68%
Belgium	115,944	126,054	148,928	164,634	212,857	7.81%
USA	159,768	187,345	196,959	179,252	154,690	8.50%
Italy	108,992	113,205	95,006	117,275	149,139	5.56%
Netherlands	69,061	76,652	78,505	90,758	140,290	4.30%
Austria	54,365	61,962	75,125	80,973	107,338	3.84%
Switzerland	35,875	46,270	50,835	61,842	81,244	2.93%
UK	171,906	184,140	44,542	52,407	67,104	2.49%
Norway	24,029	27,770	33,160	34,787	49,356	1.65%
Sweden	24,654	25,817	28,752	31,909	49,347	1.51%
Singapore	25,620	30,103	32,111	36,617	45,654	1.74%
Mexico	40,554	34,882	43,371	41,555	43,969	1.97%
Czech Republic	25,116	40,065	26,770	36,515	41,656	1.73%
Canada	35,431	33,197	35,874	40,628	40,360	1.93%
Slovakia	10,854	13,748	15,440	24,573	28,924	1.17%
Finland	14,785	15,107	17,334	18,986	24,815	0.90%
Japan	28,195	33,350	33,075	31,027	24,624	1.47%
Jordan	107	913	1,800	1,982	22,557	0.09%
Romania	3,020	4,140	6,163	12,559	20,350	0.60%



## APPENDIX (C): JORDAN EXTERNAL TRADE ANALYSIS OF PACKAGING RAW MATERIALS

### 1.1 EXPORTS AND IMPORTS OF PACKAGING RAW MATERIALS

With regards to the export of raw materials, Jordan has few factories that manufacture paper and paperboard from recycled paper and pulp but not from wood. Still the total amount exported is very low about 1.4 million JDs. Other than paper and paperboard, the export of raw materials in Jordan is negligible. The figures of plastic raw materials exports must be for semi finished plastic products such as parisons since Jordan does not have a factory for manufacturing raw plastic materials. The growth rate of paper and paperboard export is decreasing with a decrease of 19% in 2006 over the year before.

Domestic Exports of Packaging Raw Materials in JD for the Years 2002-2006											
Year	Plastics		Paper		Metal		Glass		Wood		Total Per Year
	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	
2002	3,022,464	NA	2,341,672	NA	19,354	NA	0	NA	0	NA	5,383,490
2003	1,157,489	-62%	2,574,315	10%	102,428	429%	0	-	0	-	3,834,232
2004	1,472,331	27%	2,512,620	-2%	50,483	-51%	0	-	0	-	4,035,434
2005	4,106,152	179%	1,696,278	-32%	0	-100%	0	-	0	-	5,802,430
2006	3,669,387	-11%	1,370,703	-19%	0	-	0	-	0	-	5,040,090
Average	2,685,565	33%	2,099,118	-11%	34,453	-	0	-	0	-	4,819,135

\* Source: Department of Statistics

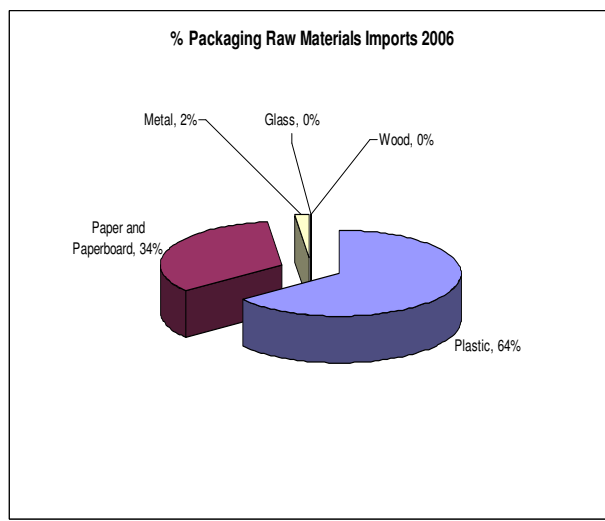
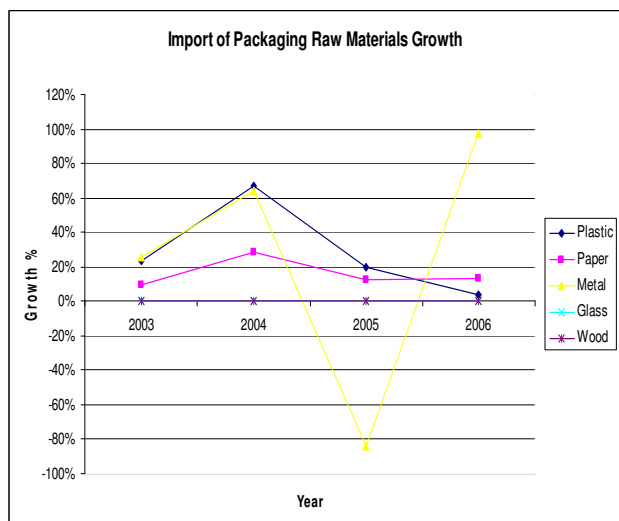
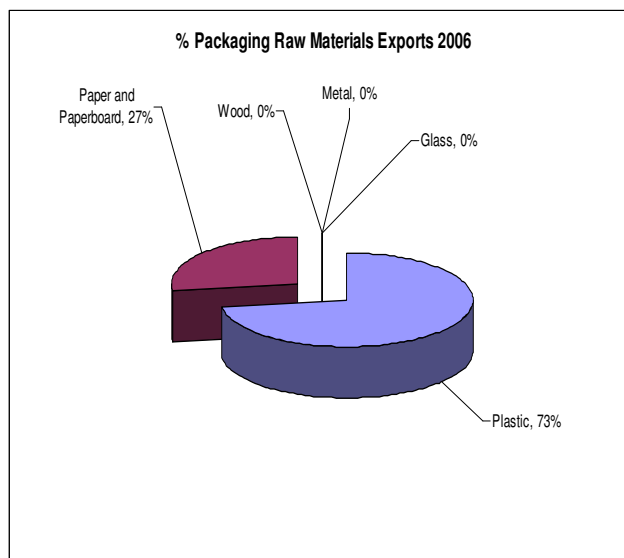
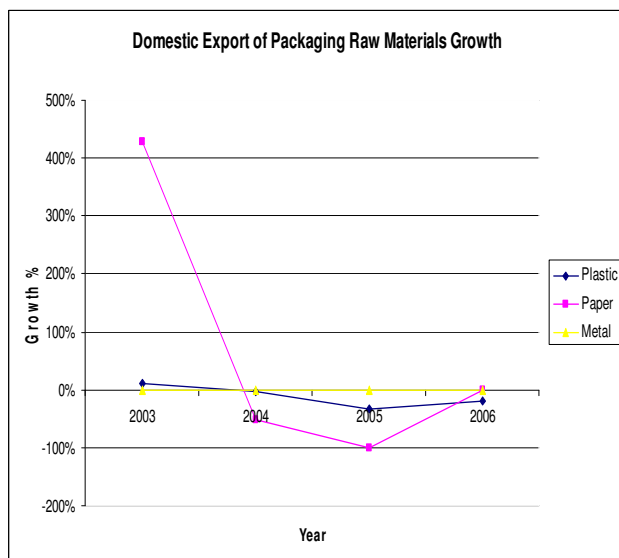
Total Exports Packaging Raw Materials in JD for the Years 2002-2006											
Year	Plastics		Paper		Metal		Glass		Wood		Total Per Year
	Import	Growth Rate	Import	Growth Rate	Import	Growth Rate	Import	Growth Rate	Import	Growth Rate	
2002	4,703,587	NA	3,310,155	NA	42,595	NA	0	NA	0	NA	8,056,337
2003	6,080,207	29%	3,578,212	8%	148,820	249%	0	-	0	-	9,807,239
2004	9,382,915	54%	3,578,879	0%	59,558	-60%	0	-	0	-	13,021,352
2005	14,248,567	52%	2,982,630	-17%	0	-100%	0	-	0	-	17,231,197
2006	10,808,239	-24%	2,366,245	-21%	0	-	0	-	0	-	13,174,484
Average	9,044,703	28%	3,163,224	-7%	50,195	-	0	-	0	-	12,258,122

\* Source: Department of Statistics

As for the imports of raw materials, the figures in the table below show that the main imported materials are the plastics with an amount of 112,694,671 JD in 2006 which constitutes about 64% of the total imported packaging raw materials. The growth in imports of plastic packaging raw materials is about 4% in 2006. The next share is taken by the imports of paper and paperboard with an amount of 60,592,147 JD in 2006 and a share of 34% with growth rate of 13% followed by metals with a share of 2% and a growth rate of 98%. There are no imports of glass raw materials since Jordan does not have a glass factory and the wood raw material is not indicated since the wood used to make pallets and cases are from wood imported for other uses.

Imports of Packaging Raw Materials in JD for the Years 2002-2006											
Year	Plastics		Paper		Metal		Glass		Wood		Total Per Year
	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	Export	Growth Rate	
2002	44,029,189	NA	33,786,260	NA	5,275,955	NA	0	NA	0	NA	83,091,404
2003	54,404,411	24%	36,973,524	9%	6,624,026	26%	0	-	0	-	98,001,961
2004	90,986,069	67%	47,517,194	29%	10,860,788	64%	0	-	0	-	149,364,051
2005	108,736,180	20%	53,582,213	13%	1,739,101	-84%	0	-	0	-	164,057,494
2006	112,694,671	4%	60,592,147	13%	3,440,331	98%	0	-	0	-	176,727,149
Average	82,170,104	28%	46,490,268	16%	5,588,040	26%	0	-	0	-	134,248,412

- Source: Department of Statistics



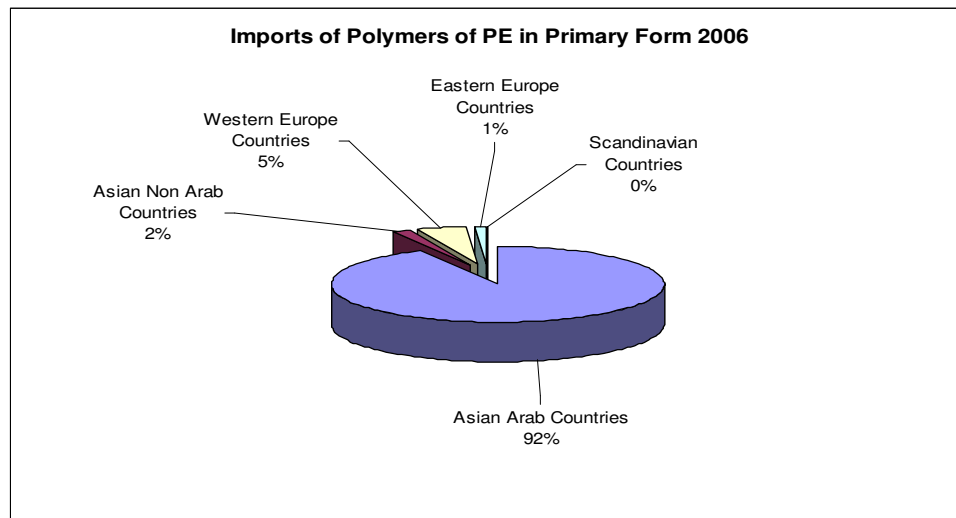


## 1.2 EXPORTS AND IMPORTS COUNTRIES OF PACKAGING RAW MATERIALS

### 1. Plastics

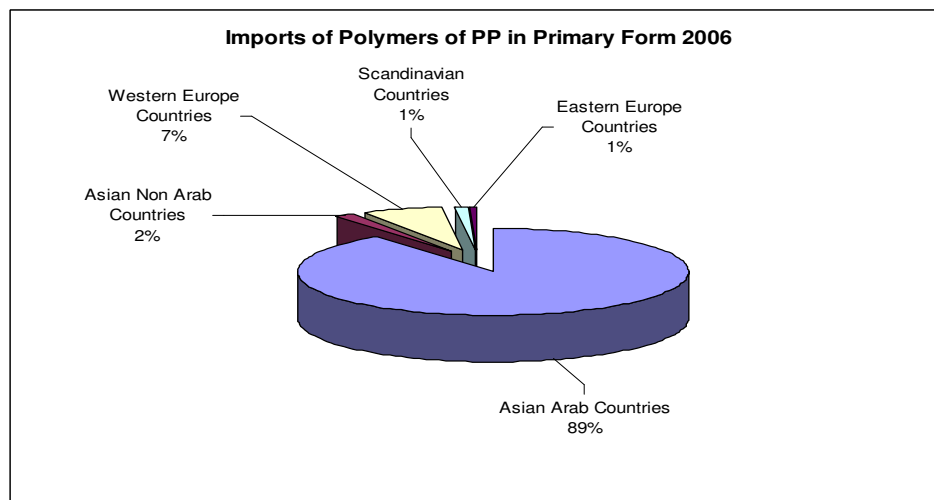
#### - Polyethylene (PE)

The total imports of Polyethylene in its primary form in 2006 were JD 52,321,564. The imports are mainly from Asian Arab Countries with a share of 92% followed by imports from Western European Countries with a share of 5%.



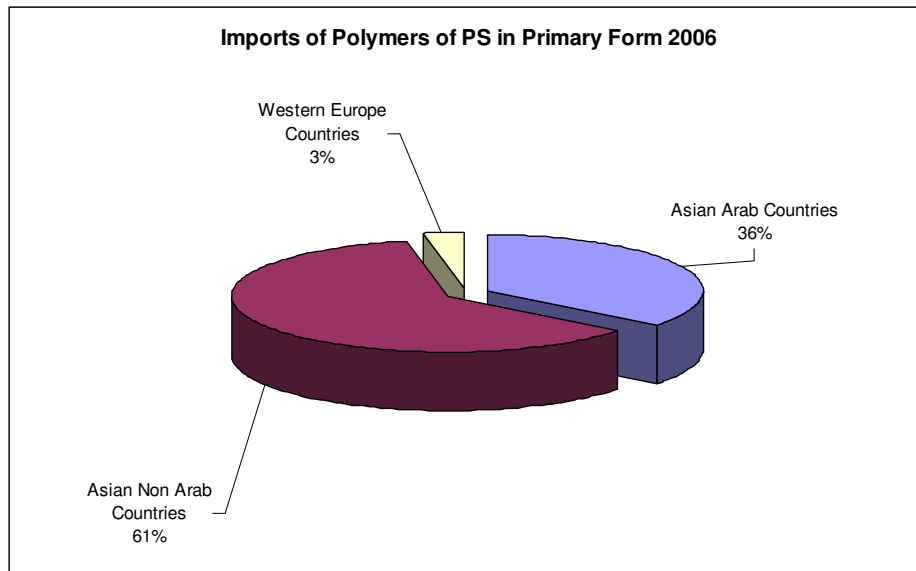
#### - Polypropylene (PP)

The total imports of Polypropylene in its primary form in 2006 were JD 26,148,013. The main imports were from Asian Arab countries with a share of 89% followed by imports from Western European Countries with a share of 7%.



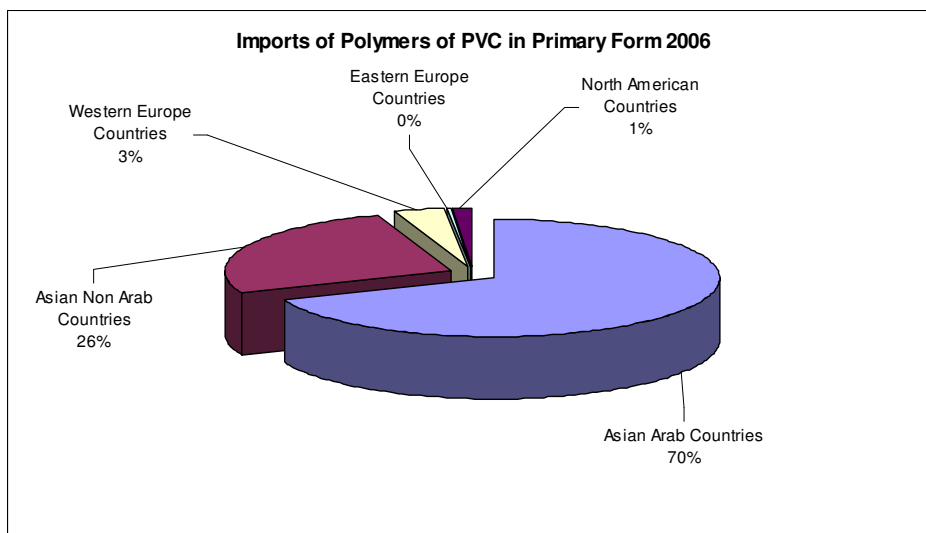
- Polystyrene (PS)

The total imports of Polystyrene in its primary form in 2006 were JD 14,244,997. The main imports in 2006 were from Asian Non Arab Countries with a share of 61% followed by imports from Asian Arab Countries with a share of 36%.



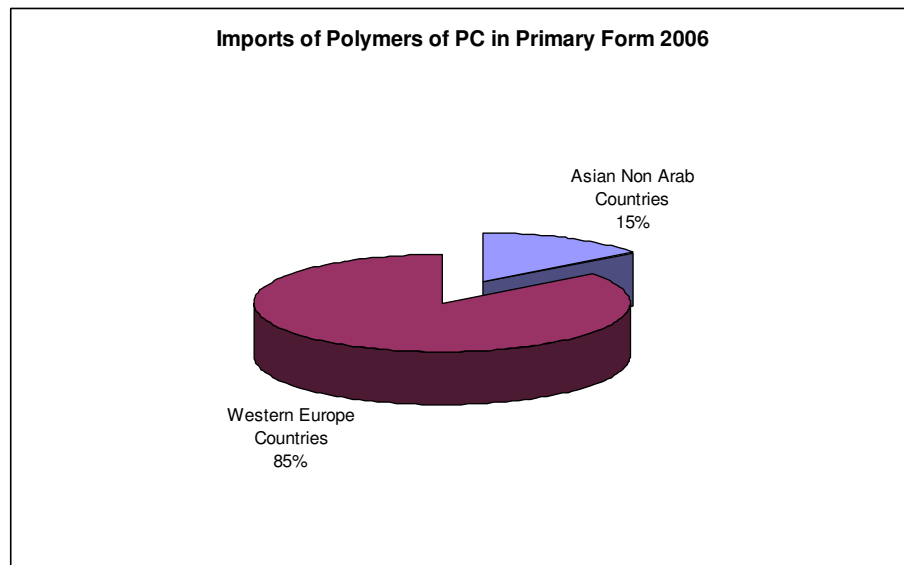
- Polyvinyl Chloride (PVC)

The total imports of Polyvinyl Chloride in its primary form in 2006 were JD 17,279,397. The main imports in 2006 were from Asian Arab countries with a share of 70% followed by imports from Asian Non Arab Countries with a share of 26%.



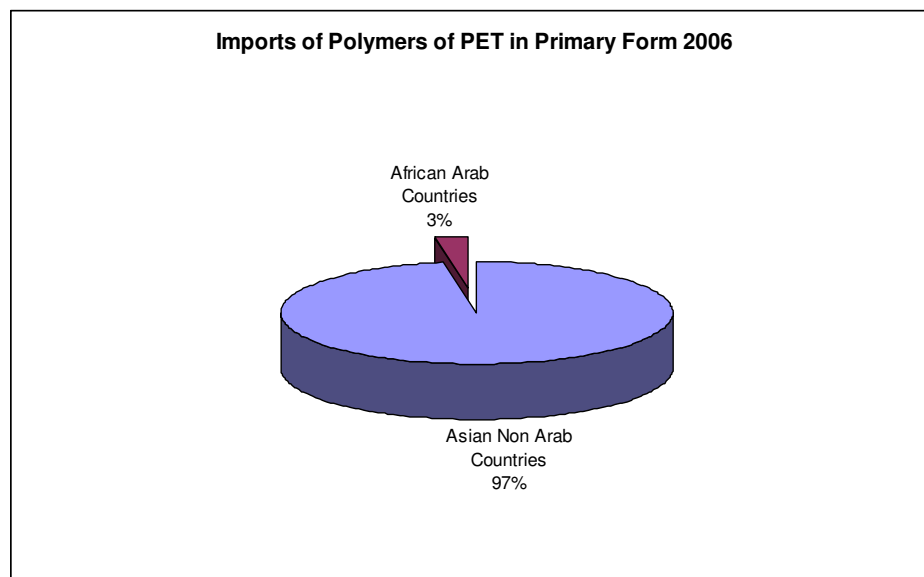
- Polycarbonate (PC)

The total imports of Polycarbonates in their primary forms in 2006 were JD 248,772. The main imports in 2006 were from Western European Countries with a share of 85% followed by imports from Asian Non Arab Countries with a share of 15%.



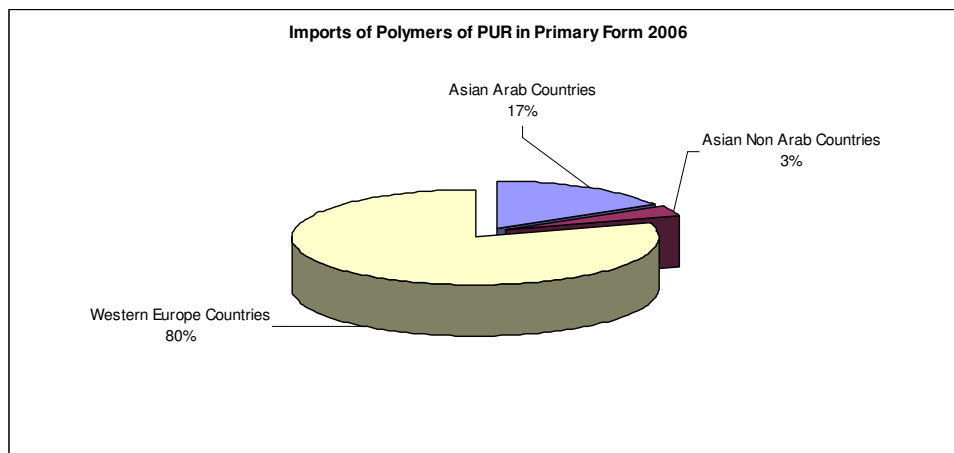
- Polyethylene Terephthalate (PET)

The total imports of Polyethylene Terephthalate (Polyester) in its primary forms in 2006 were JD 1,309,072. The main imports in 2006 were from Asian Non Arab Countries with a share of 97% followed by imports from African Arab Countries with a share of 3%.



- Polyurethanes (PUR)

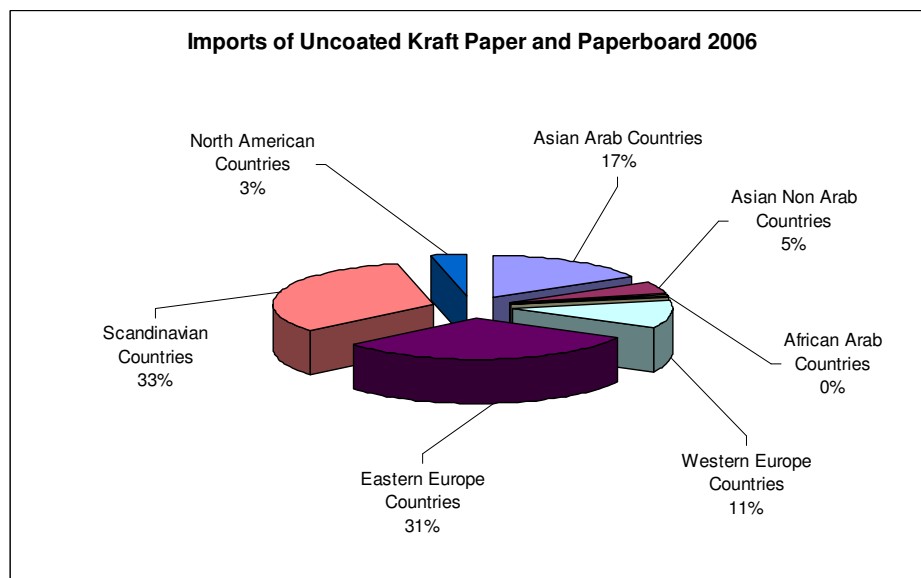
The total imports of Polyurethanes in its primary form in 2006 were JD 11,39,733. The main imports are mainly from Western European Countries with a share of 80% followed by imports from Asian Arab Countries with a share of 17%.



## 2. Paper and Paperboard

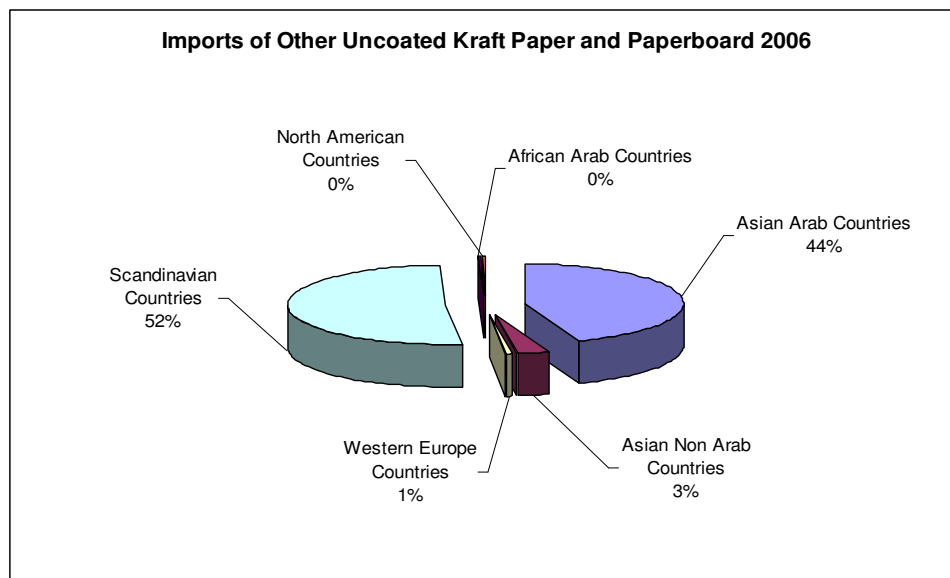
- Uncoated Craft Paper and Paperboard

The total imports of Uncoated Kraft Paper and Paperboard in 2006 were JD 13,267,889. The main imports in 2006 were from imports of are mainly from Scandinavian Countries with a share of 33% followed by imports from Eastern European Countries with a share of 31%.



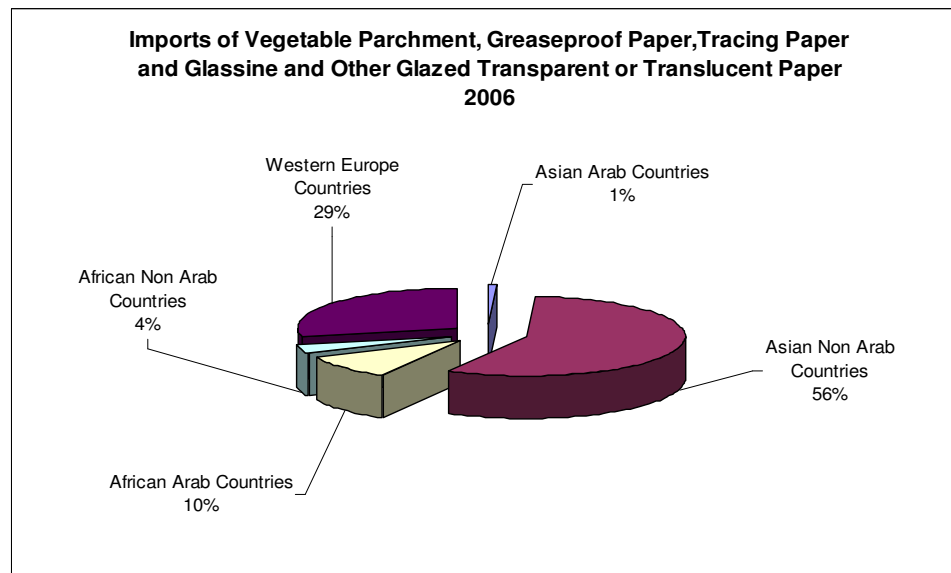
- Other Uncoated Craft Paper and Paperboard

The total imports of Other Uncoated Kraft Paper and Paperboard in 2006 were JD 4,522,822. The main imports in 2006 were from Scandinavian Countries with a share of 55% followed by imports from Asian Arab Countries with a share of 44%.



- Vegetable Parchment, Greaseproof Paper, Tracing Paper and Glassine and Other Glazed Transparent or Translucent Paper

The total imports of Vegetable Parchment, Greaseproof Paper, Tracing Paper and Glassine and Other Glazed Transparent or Translucent Paper in 2006 were JD 59,987. The main imports in 2006 were from Asian Non Arab Countries with a share of 56% followed by imports from Western European Countries with a share of 29%..



## **APPENDIX (D): CONCEPT PAPER FOR ESTABLISHING A PACKAGING TECHNOLOGY CENTER IN JORDAN**

### **The Need**

Jordan does not have a national packaging development institution despite the fact that the packaging sector has a substantial economic importance to both local and export oriented industries. There is a gap between the Jordanian packaging companies and their foreign competitors and a surge to transfer technology to the local packaging sector.

Among other services, testing of raw materials and finished packages in addition to pre-shipment testing are needed to ensure the quality of the Jordanian packages. Although the Royal Scientific Society (RSS) does have some tests albeit at high cost, the available tests at the RSS are not comprehensive.

### **Services**

The center will be fully a fledged packaging centre and would have impact on enhancing the competitiveness of the packaging sector. The center would provide information, training, technology transfer, laboratory testing and technical support to packaging companies working in the fields of paper and paperboard, plastics and metals.

### **Beneficiaries**

The direct beneficiaries of the center are all industrial sectors relevant to the Packaging industries and all other supportive industries such as inks, paper etc. The indirect beneficiaries are the manufacturers and users (in various sectors such as, food, pharmaceuticals, Dead Sea, chemicals etc.), exporters, traders and consumers who will eventually benefit from the services of the center.

### **Setup**

Among the other proposed scenarios for the setup structure of the center, the following setup would be a viable one:

- Packaging converters (plastics, paper & paperboard, metal, ...)
- Manufacturers or packaging users (food, pharmaceuticals, cosmetics, etc.)
- Exporters (including NGO's)
- Research Centers including RSS and Universalities
- Jordan Chamber of Industry
- Packaging Vocational Academy
- Public Institutions (Ministry of Industry and Trade and Jordan Institute for Standards and Metrology)

The center is suggested to be a non-profit center with a private-public partnership.

### **Funding**

#	Phase	Funds
1	Establishment	<ul style="list-style-type: none"><li>- Foreign and Local Donors</li><li>- Government Support</li><li>- Equipment Suppliers</li><li>- Materials Suppliers</li></ul>
2	Operation	<ul style="list-style-type: none"><li>- Services</li><li>- Memberships</li><li>- Government</li><li>- Local Donors</li></ul>

### **The Challenges**

The establishment of the Packaging Technology Center in Jordan might face several challenges, such as lack of industry support, bias and lack of funding.

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